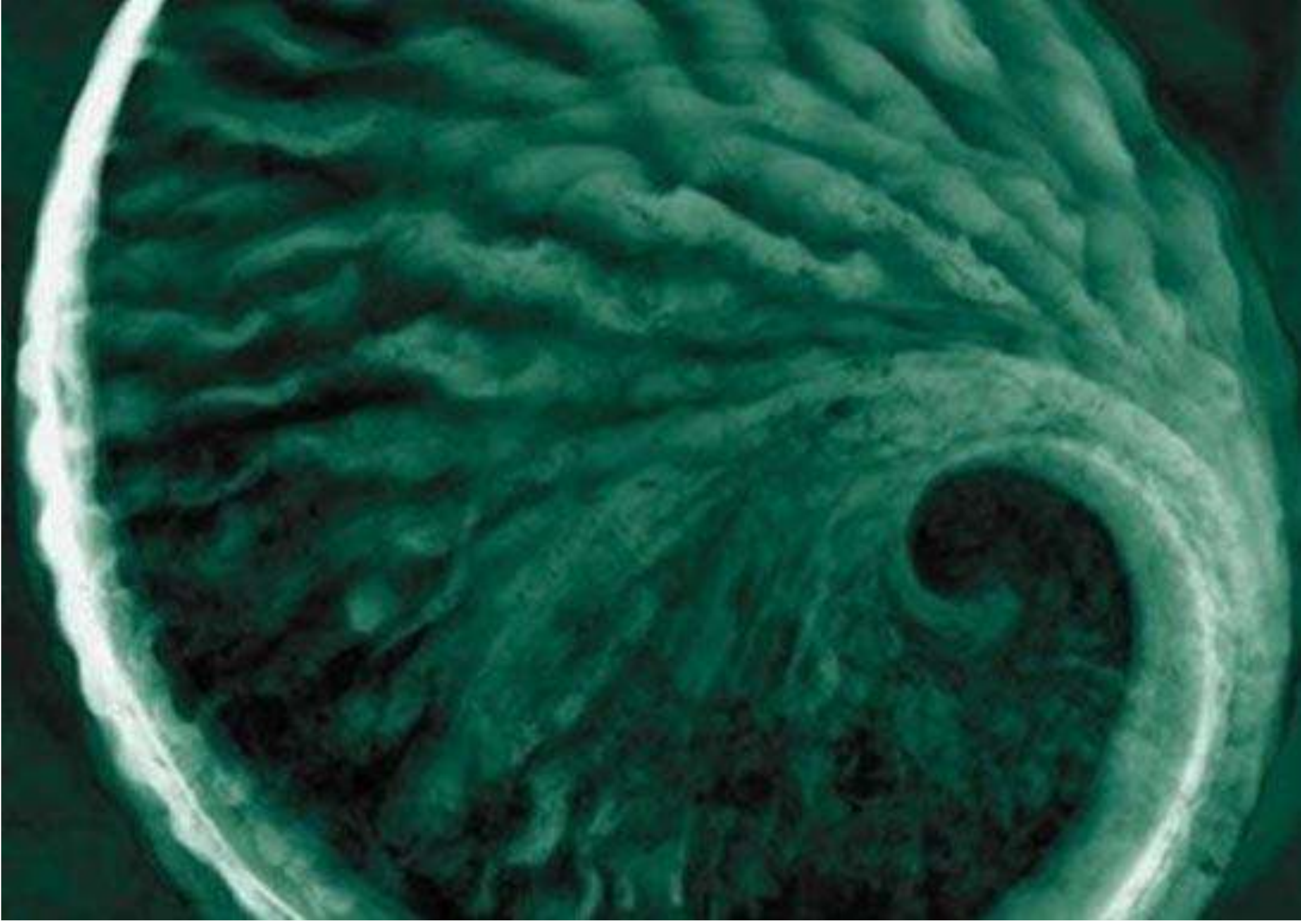

Owenreagh/Craignagapple Wind Farm

Ørsted Onshore Ireland Midco Limited

Environmental Statement- Technical Appendix A9.1 Peat Slide Risk Assessment

06 September 2023

Project No.: 0696177

The business of sustainability

Signature Page

06 September 2023

Owenreagh/Craignagapple Wind Farm

Environmental Statement- Technical Appendix A9.1 Peat Slide Risk Assessment

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CONTENTS

List of Tables

Acronyms and Abbreviations

Name	Description
AOD	Above Ordnance Datum
DAERA	Department of Agriculture, Environment and Rural Affairs
DfI	Department for Infrastructure
DTM	Digital Terrain Model
DHMEP	Draft Habitat Management Enhancement Plan
EIA	Environmental Impact Assessment
ECoW	Ecological Clerk of Works
ES	Environmental Statement
FEI	Further Environmental Information
GCoW	Geological Clerk of Works
GSNI	Geological Service Northern Ireland
IDW	Inverse Distance Weighting
km	kilometre
NED	Natural Environmental Division
NIEA	Northern Ireland Environment Agency
oDCEMP	Outline Decommissioning and Construction Environmental Management Plan
oPMP	Outline Peat Management Plan

PHRS	Peatslide Hazard Rating System
PSA	Peat Survey Area
PSRA	Peat Slide Risk Assessment
WFD	Water Framework Directive

1 INTRODUCTION

1.1 Background

Environmental Resources Management Ltd (ERM) was commissioned by Ørsted Onshore Ireland Midco Limited (the Applicant) to carry out a Peat Slide Risk Assessment (PSRA) to support an application for consent to install and operate Owenreagh / Craignagapple Wind Farm ('the Development'), located approximately 5 kilometres (km) east of Strabane, in County Tyrone and centred on Irish NGR 242862, 396786.

The Development layout is shown in **Figure 3.1** of the ES.

This PSRA has been prepared to inform consultees to the application of the potential risk of any peat slide.

This PSRA will ensure the Development constitutes a construction project that complies with good practice in accordance with Scottish Government, 2017 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments'[1] in assessing the likelihood and consequence of such an event as recommended in Irish Wind Energy Association, 2012 Best Practice Guidance for the Irish Wind Energy Industry[2].

The PSRA is accompanied by the following appendices:

- Appendix A: Figures;
- Appendix B: Site Photographs;
- Appendix C: Peat Coring Records;
- Appendix D: Factor of Safety calculations;
- Appendix E: Hazard Rank calculations; and,
- Appendix F: Historical PSRA Reporting.

The survey area for the PSRA is shown on **Figure A9.1.1: Geomorphology Map** as the "Peat Survey Area" (PSA).

1.2 Scope and Purpose

The scope of this PSRA is to:

- Review available desk-based information on the PSA;
- Undertake a site walkover survey and peat probe surveys to characterise the prevailing ground conditions and identify existing or potential peat instability;
- Report on the findings of the survey and assess the potential instability risk and estimate the hazard from any potential peat slide; and
- Recommend mitigation measures and specific construction methodologies that should be considered during the construction period, if required.

This PSRA provides factual information on the peat survey results relating to the Development. The desk-based information and site surveys have been utilised to assess the potential risk of any peat slide. The methodology adopted, and details on the assessment, are outlined in Sections 3, 4 and 5 of this PSRA.

[1] Scottish Government, 2017. Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments [Online] Available at: Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (www.gov.scot) (Accessed 12/07/2023)

[2] Irish Wind Energy Association, 2012. Best Practice Guidance for the Irish Wind Energy Industry. Available at: Microsoft Word - LE11-563-01_Rpt001-2.doc (windenergyireland.com) (Accessed 12/07/2023)

1.3 Project team

Team Member	Job Title	Qualifications	No. Years Experience
Calum Sydney	Engineer	MSc	3 Years
Gregor Hirst	Senior Engineer	BSc (Hons)	7 Years
Tomos Ap Tomos	Technical Director	BEng (Hons) MCIHT	25 Years

This assessment was undertaken by Calum Sydney, an engineer with 3 years' experience, and was supported by Gregor Hirst (BSc Hons), a Geo-Environmental Engineer with 7 years' experience in ground condition assessment. This PSRA has been technically reviewed by Tomos Ap Tomos, Technical Director of Engineering.

2 SITE INFORMATION AND DESK STUDY

2.1 Site Description and Topography

The PSA is located approximately 5 kilometres (km) east of Strabane, covering an area of approximately 623 hectares (ha), and is centred on Irish NGR 242862, 396786. The PSA is located within the administrative boundary of Derry City and Strabane District Council ('the Council').

The topography of the PSA and immediate vicinity is complex and largely consists of improved acid grassland, acid grassland, improved grassland and modified blanket bog. The PSA itself varies significantly in elevation ranging from approximately 150 m above ordnance survey datum (AOD, approximately equivalent to sea level) in the west of the PSA, to approximately 400 m AOD in the south of the PSA. There are several hilltops bordering the PSA, with no summits located within the PSA; Owenreagh Hill to the South (453 m AOD), and Evish Hill to the west (249 m AOD). There are approximately four watercourses which run from the PSA to the north and west which run into the Glenmornan River, located approximately 500 m north of the PSA. There is also one water body nearby in Moor Lough, which is 0.44 km north-east of the PSA Boundary.

There are two National Nature Reserves (NNR) within 15 km of the PSA, the Boorin NNR is located 11.8 km south-east of the PSA Boundary. The Ness and Envy Wood NNR is also located 14.2 km north-east of the PSA.

2.2 Site Walkover

The purpose of the desk study and site visit was to gain a thorough understanding of site conditions including topography, geology, existing peat instability and hydrology. The outcome of this stage of the study was to determine which areas required detailed intrusive survey (by peat probing) and ultimately provide data for the assessment of PSRA.

A site walkover was undertaken in November 2021 prior to the commencement of the peat probing exercise. The PSA was examined for evidence of peatlands, presence of landslip and localised hagging. Geological mapping and areas of interest were pre-loaded to a handheld device for reference during the site walkover. Following a review of these in parallel with the initial site walkover, the desk study aimed to identify and or verify the following:

- The general condition of peat deposits;
- Evidence of any previous peat instability;
- The presence of low lying wet/peat lands; and,
- Watercourses and other potential receptors.

2.3 Published Geology

2.3.1 Superficial Soils

Published geological mapping[3] of superficial soils indicates the PSA to be underlain by a variety of deposits. Peat deposits are present across a majority of the eastern and north-eastern areas of the PSA, with Diamicton Till and Glacofluvial deposits (sand and gravel) present across central, western and north-western areas of the PSA. No superficial deposits are recorded within the southern PSA area.

The Glacofluvial deposits were deposited by meltwater streams and include mostly coarse-grained sediments (i.e. sand and gravel) with some finer-grained layers (i.e. clay and silt). Sand and gravel are embedded locally with lenses of silt, clay or organic material. The Diamicton Till is unsorted and unstratified drift, generally overconsolidated, deposited directly by and underneath a glacier without subsequent reworking by water from the glacier. It consists of a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape (diamicton).

Figure 9.1 of the ES illustrates the 'Superficial Soils' across the PSA.

[3] British Geological Survey Mapping Website http://mapapps.bgs.ac.uk/geologyofbritain/home.html Accessed 12/07/2023)

2.3.2 Solid Geology

Published bedrock geology mapping indicates the PSA to be underlain by quartzite from the Argyll Group in central, southern and eastern areas, with Psammite, Semipelite and Pelite from the Argyll Group present across the northern and western areas of the PSA.

The Geological Survey of Northern Ireland (GSNI) GeoIndex[4] records two geological faults on the PSA, one of which runs NNE-SSW through the central PSA area with the downthrow unspecified. The second fault runs NE-SW through the south-eastern PSA area, it is recorded to be a reverse or thrust fault with the hang wall to the north-west.

Figure 9.2 of the ES illustrates the 'Solid Geology' across the PSA.

2.4 Hydrology and Hydrogeology

The PSA is predominantly situated within the River Foyle catchment with sub catchments including Glenmornan River, Owenreagh Burn, Bunnyboe Burn and Douglas Burn. As a result of previous land use, including the construction of the operational Owenreagh I Wind Farm (Planning Ref: J/93/0286) and the operational Owenreagh II Wind Farm (Planning Ref: J/2004/1015/F), there are many artificial drainage channels present across the PSA.

The western area of the PSA slopes west and consists of numerous drainage channels. To the south-west of the PSA, these drainage channels are largely natural but some are artificial. These channels all drain into an unnamed tributary of Owenreagh Burn. To the north of the PSA, the north-east of the PSA is bound by Glenmornan Road. Within this area, the surface hydrology consists of natural drainage channels and several artificial channels as a result of peat cutting. These drainage channels flow into Glenawanda Burn, which is another tributary of Owenreagh Burn. Owenreagh Burn is within the catchment of Glenmornan River which has a Water Framework Directive (WFD) classification of "Moderate" as can be seen on NIEA online mapping[5]. Glenmornan River flows downstream before intersecting with the River Foyle which has an overall water quality classification of "Moderate".

Based on the Department for Agriculture, Environment and Rural Affairs (DAERA) Groundwater bodies dataset (2015) [6], the PSA is underlain by the Claudy groundwater body (IDUKGBNI4NW003) which has an overall status of 'Good'.

The productivity of the bedrock aquifer at the PSA is defined as "limited potential productivity – fractured flow", while the groundwater vulnerability is classified as moderate-high. Effects on the hydrological and hydrogeological environment are discussed in **Chapter 8: Hydrology and Hydrogeology.** BGS 1:625,000 digital mapping and the GSNI GeoIndex mapper shows the bedrock aquifer underlying the majority of the PSA to consist of psammite, pelite and semipelite of the Argyll Group, and sandstone of the Owenkillew sandstone group to the west and south-west. To the west there are also smaller intrusions of metalimestone and mafic igneous rock. These are separated by a large thrust fault, that bisects the PSA from north-west to south-east. There are several other perpendicular faults along this larger fault. The bedrock groundwater units are overlain by peat superficial deposits within the PSA. These deposits are found widely across the PSA. Alluvium and glacial till deposits are also found widely across the PSA.

As shown by GSNI Geoindex[7], the bedrock aquifer is classified as limited productivity where "Moderate yields unusual. Low yields more common. Regional flow limited. Mainly shallow, local flow". The majority of the PSA is underlain with a bedrock aquifer with a vulnerability of 4 and 5. This reflects to a moderate-high level of groundwater vulnerability.

Figure A9.1.1 illustrates the Geomorphology of the PSA and is included in **Appendix A.**

[4] Geological Survey of Northern Ireland (2020) GSNI GeoIndex [Online] Available at: GSNI GeoIndex (bgs.ac.uk) (Accessed 12/07/2023)

[5] WFD (2021) via NIEA (2023): NIEA Water Information Request Viewer [online] available at: NIEA Water Information Request Viewer (daera-ni.gov.uk) (accessed 12/07/2023)

[6] Department for Agriculture, Environment and Rural Affairs (DAERA) (2015) *Groundwater bodies dataset.* Available at https://www.daera-ni.gov.uk/publications/groundwaters-digital-datasets (Accessed 12/07/2023)

[7] Geological Survey of Northern Ireland (2022) Geoindex [online] Available at: GSNI GeoIndex (bgs.ac.uk) (Accessed 12/07/2023)

2.5 Historical PSRA Reporting

Several reports on peat slide risk have been completed for the PSA under previous planning applications. A PSRA was carried out as part of the original Craignagapple Wind Farm Environmental Impact Assessment (EIA) in 2009 for the erection of 9 turbines, an extension of the existing Owenreagh Wind Farms I &II. The 2009 PSRA is discussed in greater detail in Section 2.5.1.

In February 2012, Further Environmental Information (FEI) was provided, including an updated PSRA, for an amended layout of Craignagapple Wind Farm. The PSRA produced was reviewed in Technical Note 3, which is discussed in Section 2.5.2. Further amendments were made to the design layout of the wind farm in 2014, prompting further review of the PSRA in Technical Note 4, which was provided as part of the 2014 FEI. Technical Note 4 is discussed in Section 2.5.3.

In 2016, the wind farm development was revised to a six-turbine design. The PSRA was reviewed in light of these changes by Jacobs in consultation with the Northern Ireland Environment Agency Natural Environment Division (NIEA-NED). The findings of this review are summarised in Section 2.5.4, and the reports are included in full in **Appendix F** of this PSRA.

2.5.1 2009 PSRA Enviros Consulting Ltd

A PSRA was completed in 2009 for the Craignagapple Wind Farm in Northern Ireland (Planning Reference: J/2010/0481/F). This proposal was for the erection of 9 turbines, extending the existing 16 turbines that comprise the Owenreagh I and II Wind Farms.

The Peatslide Hazard Rating System (PHRS) was used to determine the risk of peat slides on the Craignagapple site. The PHRS method was applied at positions on a 200 m grid over the site in order to provide a comparative method for ranking areas by peatslide geohazard potential. PHRS scores are intended as a means of comparing different sites and so they were used to classify risk estimations in support of the layout design process. The PHRS system itself does not attach any particular significance to the total score for each site and leaves it to the project engineers to draw their own conclusions based on an understanding of the local conditions that apply. However, as a rule of thumb, sites with a rating of less than 200 are assigned a low priority while those with a rating of more than 400 are identified for urgent attention.

A PHRS score of 93 for the entire Craignagapple site was calculated as the arithmetic average.

This report identified past peatslide activity, the location of these peatslides is shown in Plate 1 below. For the most part the peatslides shown in the figure appear intimately associated with watercourses, usually around the outer bends of meanders, and are considered to be a normal part of the development of river systems.

However, one noteworthy ancient peatslide of large dimensions was encountered at point Ps1 shown in Plate 1 below. It measures about 80 m wide by 120 m long and the peat profile consists of 1.3 m of brown fibrous peat overlying gravel-rich boulder clay. Numerous large blocks of peat rafted down the slope and pockets of exceedingly soft ground formed within the intervening ground between the blocks. The ground movements appear to be due predominantly to failure at the head of an old turbary on a steep stretch of the hillside with the rafted blocks sliding down the floor. The PSRA concluded that further detailed investigations would be required to fully characterise the PSA. Plate 1 displays an extract from Section 3.4 of the 2009 PSRA which shows the locations of a number of previous peat slides recorded at the Site.

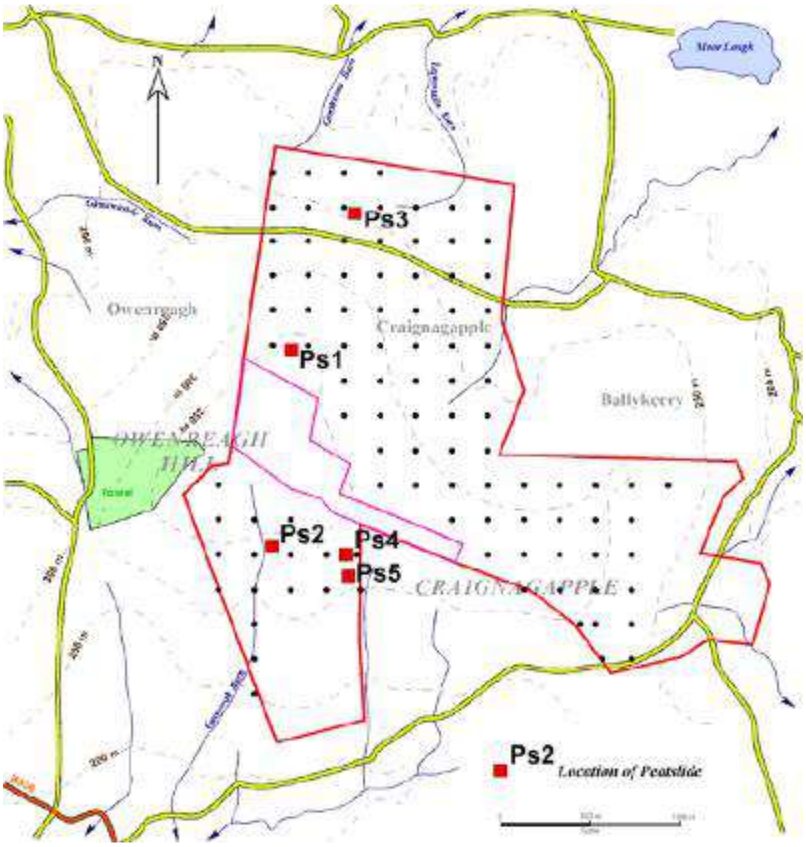

Plate 1.Locations of past peat slides at the Craignagapple Wind Farm as identified in the 2009 Craignagapple Planning Application

2.5.2 Technical Note 3, part of FEI No.1(2012)

This document updated the peat slide risk for a new layout of the Craignagapple Wind Farm proposal, and to investigate the effects of acid flushes on peat stability in the vicinity of Craignagapple turbines T4 and T8.

The calculated PHRS scores for the updated layout was 96, as compared with a previous average score of 93. All of the turbines individually also scored either negligible, very low or low risk of peat slide. The risk zones are indicated in Plate 2 below.

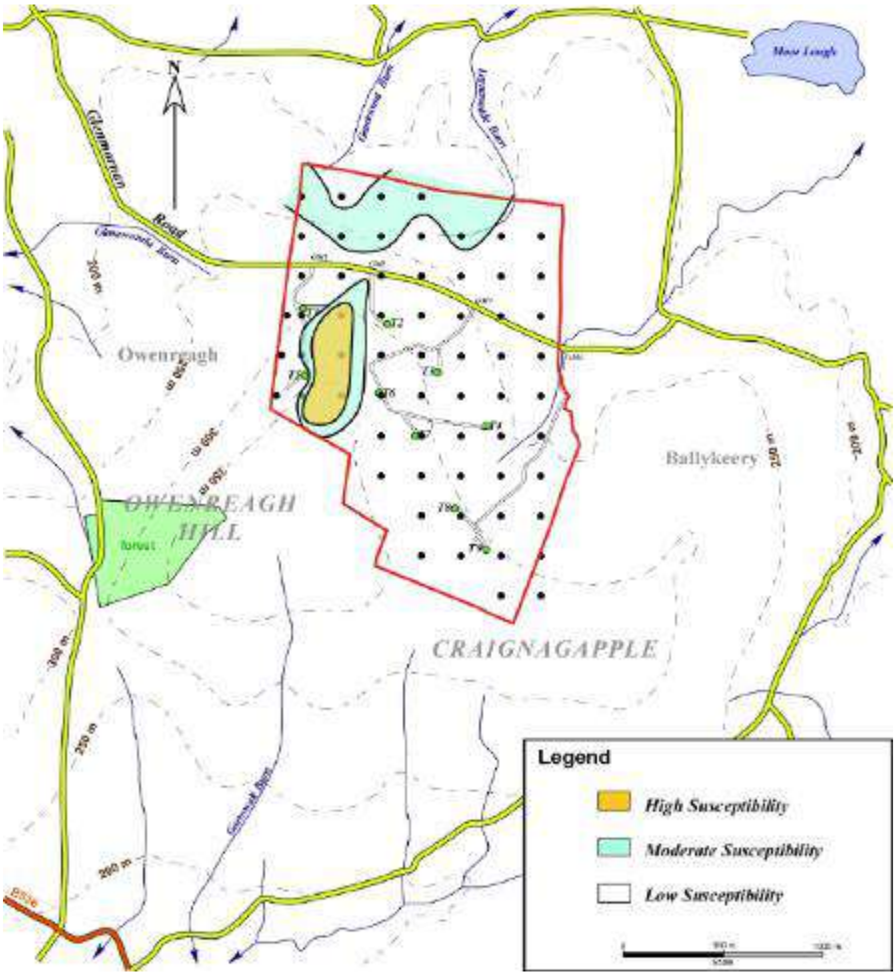

Plate 2. Peat Slide Risk Zones, as identified in Technical Note 3.

2.5.3 Technical Note 4, part of FEI No.1 (2014)

In July 2014 the Craignagapple site was visited and a geotechnical re-assessment was carried out in order to determine the risk of peat slide for the final turbine layout.

The calculated PHRS scores for the updated layout was 99, as compared with a previous average score of 96 (2012) and 93 (2009). The only individual turbine with a risk category of low was turbine T9 – special provision was made for geotechnical supervision of earthworks to provide a rapid response to any unforeseen circumstances resulting from peat extraction activities.

Overall, based on the findings of the PHRS scores, the level of potential damage or degree of loss due to instability of peat within the development envelope was determined to be low to negligible.

2.5.4 Jacobs Review for 2016 Layout

NIEA-NED provided a response to consultation on the 2014 'FEI' for Craignagapple, in a letter to the Derry City and Strabane District Planning Office, dated 12th October 2015. This letter raised several concerns with the PSRA including:

- The number of sinkholes and collapsed peat pipes that were identified in the PSRA;
- The drainage method used;
- The location of Craignagapple turbine T6 and associated access track, due to the potential for construction work to destabilise a significant block of peat and give rise to an increased peat slide risk; and
- Craignagapple turbine T7 was located within a natural drainage gully.

This report found that there is an extensive network of peat pipes located in the blanket bog on Owenreagh Hill. The downstream reaches of the network have largely collapsed, forming natural gullies. These gullies appear to be extremely effective in draining the peat mass and help to relieve porewater pressures locally.

There is a transition zone on the Craignagapple site where a succession of collapses has occurred and formed a chain of sink holes. Several such sink holes were correctly identified by NIEA-NED personnel during the site visits of 2015. Some of the most recently collapsed peat pipes were observed to measure up to 0.5 m in diameter, and these will continue to serve an important function in the relief of porewater pressure, as long as the drainage pathway remains uninterrupted.

Following the NIEA-NED response, Jacobs updated the PSRA. The hazard rankings assigned to the turbines in the previous assessments were revised and made higher in several cases. The calculated PHRS scores for the updated layout was 126, as compared with a previous average score of 99 (2014), 96 (2012), and 93 (2009). The turbines remained in the negligible, very low and low risk categories, with T4 and T9 falling into the low risk category. The revised layout and PSRA for the 2016 FEI Report were reviewed by the GSNI and NIEA-NED, who were both content for the application to be consented subject to planning conditions.

2.6 Historical Landslip and Geomorphology

2.6.1 Historical Landslip

Historically the blanket bog at Craignagapple has been modified by peat cutting for fuel. Historic imaging suggests that peat working has occurred locally over many decades. Access tracks and drains were cut through the peat to facilitate the safe working of peat. In addition to this, tributaries were formed working upslope from the foot of the hill, resulting in the removal of support at the toe of the slope. Due to this approach peat blocks located above the workings were destabilised and may have led to historical peat slide and flow.

A number of minor peat slides were identified during the walkover survey completed in June 2016 by Jacobs. These minor slides were located on the central eastern flank of Owenreagh Hill and were located above former peat workings. The slides appear to have been initiated by the removal of peat supporting the toe of the respective peat blocks as described above. While the slides were noted to be dormant during the 2016 site walkover survey, Jacobs stated that it is possible that movement could recommence if adverse groundwater conditions were to arise through severe or prolonged rainfall; particularly if such rainfall was to follow a sustained period of dry weather, when shrinkage cracks are likely to form within the peat, providing a direct route for surface water ingress.

During the 2016 site walkover a note was also made of a major peat slide on the eastern flank of Owenreagh Hill, where slopes in the region of 10 degrees and peat depths of around 2 m were recorded.

A recent peat landslide was also recorded to have taken place on the site sometime between 22-25th July 2022.

The recent landslide occurred on the western aspect of Owenreagh Hill, approximately 150 m west and downslope of an existing turbine, where peat depths are shallow, generally ranging from 0.5-0.7 m with localised areas up to 1 m; however, slopes are very steep with inclines of up to 18 degrees in the area and specifically 15 degrees at the location of the recent slide. It is noted in a Technical Note assessing the peat slide by RSK that the peat slide has had no immediate significant direct impact on receptors located downslope of the slide.

Field investigations were carried out at the location of the peat slide by RSK Ireland in August 2022, these investigations included:

- Validatory peat depth probing of the area assessed to corroborate existing peat data;
- Delineate the extents of the landslide;
- Assess ground conditions at and in proximity to the landslide extents. Including immediate impact of landslide and indicators of acute stability issues;
- Assess hydrological / hydrogeological regime;
- Borehole / well dipping within the assessed area;

- Recording of GPS-coordinated for all investigation sampling points; and,
- Digital photograph of significant features along with field notes.

Additional to the severe incline, a number of contributing factors to the slide were identified, including:

- Amorphous / weakly bounded peat with low shear strength with extensive evidence of basal layer flow and pipe flow of bog water. High variable and degraded topography which allows for rapid infiltration of surface runoff;
- Topography, whereby the landslide extent is within an area of preferential flow in terms of both surface water runoff and local groundwater flow direction;
- Iron pan layer between peat basal layer and underlying tills; and,
- Severe weather event / storm event with relatively large volumes of rain over a short period of time.

A combination of factors occurring simultaneously are considered to have resulted in a mass movement at this location, these include:

- Concentration of runoff, infiltration and groundwater flow at low points in the topography;
- Rapid groundwater flow through extensive pipe network;
- Inundation of rain and in turn runoff, infiltration and groundwater flow;
- Inundation and backing up of groundwater pipe system, increasing pore water pressure in groundwater;
- Severe incline; and,
- Iron pan at the failure plane.

The triggering mechanism was likely situated at either the toe of the landslide extent whereby a crack observed during a site visit in August 2022 was originally a large pipe which may have burst, or pressure increasing at the location of iron pan potentially causing an initial slip or fold at this location.

Based on an interpretive understanding of the site, RSK concluded that there is potential for additional significant mass movements to occur on the western aspect of Owenreagh Hill, given that the likely contributing factors outlined above are still present in this area.

The area within the PSA is extremely variable in terms of topography, peatland characteristics and geomorphology. With the interpretation of the recent landslide event and a general knowledge of the PSA, general principles can be applied in terms of risk assessing the PSA:

- Areas with severe slopes (greater than 15 degrees) are considered a significant hazard and constraint and avoided when possible. The recent landslide occurred in this type of area;
- Areas with moderate to significant slopes (7-15 degrees) are considered a moderate hazard and constraint. The 2016 landslide occurred in this type of area;
- Landslides and localised stability issues can still arise in areas of less than 7 degree slopes. A suspected historical landslide in the northern aspect of Owenreagh Hill, identified using aerial imagery, occurred in this type of area;
- The PSRA should consider site specific anomalies, such as iron pan and extensive pipe flow networks, as these hazards are difficult to detect or map, potentially complicating the assessment. A geomorphological assessment of the PSA should be carried out to identify areas where contributing factors to mass movement may present an elevated risk of slide; and,
- Works during and for a period after heavy rainfall events will be postponed.

2.6.2 Geomorphology Walkover

Following initial assessment and identification of likely triggering mechanisms of historic peat slides within the PSA and consultations with GSNI, who recommended that a specific geomorphology walkover to identify indicators for potential future peat slide events at the PSA should be undertaken to strengthen the PSRA.

The walkover was undertaken in January and February 2023, with a particular focus on areas surrounding suspected historical peat slide events, proposed infrastructure locations and areas determined to pose moderate or high risk of slide, following initial risk modelling.

Observations from the geomorphology walkover are presented in Table A9.1.1.

Table A9.1. 1 Geomorphology Observations

Description	Localised slide on steep slope on western aspect of Owenreagh Hill. Peat depth approximately 0.3 m.
Location	E 241852 N 396272


Description	Line of sinkholes down the eastern flank of Owenreagh Hill suggesting the presence of peat piping. Up to 1.6 m deep.
Location	E 242536 N 396494 to E 242702 N 396473


Description	Emergence point of subterranean watercourse (issue) adjacent to historic peat slide, identified during 2016 walkover on the eastern flank of Owenreagh Hill.
Location	E 243078 N 396549


Description	Pooling of water at saturated area, attributed to limited drainage features in the near vicinity on eastern flank of Owenreagh Hill.
Location	E 242640 N 396665


Description	Collapsed peat piping approx. 1 m deep, in area of cracking with evidence of bare peat on eastern flank of Owenreagh Hill.
Location	E 242973 N 396564


Description	Surface water runoff and pooling in area of limited drainage on eastern flank of Owenreagh Hill.
Location	E 242789 N 396582
	

Many of the features recorded during the walkover are consistent with features identified as contributing factors to historic peat slides within the PSA. These findings have informed the PSRA and the level of risk present within different areas of the PSA, as discussed in more detail in Section 7 of this PSRA.

3 SITE SURVEYS AND RESULTS

3.1 Investigations

In addition to the available historic peat depth information from previous surveys, for the purposes of the Development proposals, initial phase 1 peat probing was carried out between July and August 2021 in accordance with Scottish Government guidance and James Hutton Institute guidance for investigating peat[8] in the absence of equivalent NIEA guidance. This comprised a 100 m grid carried out across the developable area where no previous data was available, as well as 10 m cross-hairs at turbine locations within the scoping layout, with the information gathered informing the preliminary layout design.

Phase 2 probing took place in September 2022, with the focus of the survey being the proposed Development layout following outline civil design and consideration of all environmental constraints. The methodology for the phase 2 survey was as follows:

- Substation and control building and construction compound areas – 50 m x 50 m grid to the extent of the proposed footprint;
- Wind turbines – 10 m x 10 m grid out to a 50 m radius, with the exception of turbines T7, T13 and T14 which have been probed in a crosshair through the centre of the turbine at 10 m intervals out to a 50 m radius; and
- Tracks – every 50 m along the centreline with perpendicular offsets, 15-25 m either side.

It should be acknowledged that natural variations in peat depth/thickness could occur between probe positions, although areas of infrastructure have undergone intensely spaced probing and this would be less likely.

3.2 Summary of Peat Depths

Throughout the peat surveys to date, a total of 2,100 probes were sunk. Over 23 % of these recorded peat depths of 0.5 m or less and over 53 % of all probes recorded peat depths of 1 m or less.

The maximum peat depth recorded was 4.3 m in the north-east of the PSA out with any proposed infrastructure. Localised areas of deep peat in excess of 3 m were recorded throughout the PSA, most of which were found in topographically flat areas. Table A9.1.2 summarises the peat depths recorded across the PSA.

Table A9.1. 2 Peat Depth Summary

Peat Depth Range (m)	No of peat probes	Percentage of Total (%)
0 – 0.50	496	23.6
0.51 – 1.00	625	29.8
1.01 – 1.50	422	20.1
1.51 – 2.00	384	18.3
2.01 – 2.50	125	6.0
2.51 – 3.00	34	1.6
3.01 – 3.50	10	<1.0
3.51 – 4.00	3	<1.0
4.01 – 4.50	1	<1.0

[8] Scottish Government, Scottish Natural Heritage and James Hutton Institute (2017) Guidance on Developments on Peatland (Online). Available at: Guidance+on+developments+on+peatland+-+peatland+survey+-+2017.pdf (www.gov.scot) [Accessed 12/07/2023].

Total	**2,100**

The peat slide risk assessment was undertaken on the finalised layout provided by the design team. Table A9.1.3 indicates the average peat depths encountered at each proposed turbine location in the surrounding 50 m.

Table A9.1. 3 Average Peat Depths Recorded at Turbines

Proposed Turbine No.	Average Peat Depth at a 50 m Radius (m)
T1	0.51
T2	0.84
T3	1.01
T4	1.03
T5	1.62
T6	0.80
T7	0.67
T8	1.44
T9	1.35
T10	1.51
T11	1.19
T12	1.51
T13	0.79
T14	0.75

The peat probe locations and depths are shown on **Figure A9.1.2** appended with this PSRA. The Interpolated Peat Depths were determined using the Inverse Distance Weighting (IDW) method of interpolation to a resolution of 5 m and are illustrated on **Figure A9.1.3**.

3.3 Peat Cores

Peat samples were taken during a survey by ERM in September 2022. At each sample location, the characteristics of the extracted peat were assessed and recorded, including surface firmness, vegetation observations and peat observations.

One of the characteristics recorded is the degree of humification, or von Post scale, which assesses the type of decomposition that the peat has undergone. A small amount of peat is squeezed in the hand and an assessment can be made based upon the quantity and nature of the soil or water exuded by the soil under pressure.

The depth at which the samples were taken for each location was 0.5 m, whereas the assessment of the characteristics of the peat was carried out at a depth of 0.6 m. From the samples taken during the peat coring survey at the PSA, it was observed that the peat is generally fibrous with varying degrees of decomposition recorded across the PSA. The majority of cores tested were evaluated as having a von Post classification of H4 or H5, suggesting that the peat resource across the PSA is partially decomposed.

A detailed description of the parameters evaluated during the coring survey as well as the results obtained are contained within **Appendix C – Peat Coring Records.**

4 GUIDANCE AND METHODOLOGY

4.1 Overview of Guidance and Peat Failure Mechanisms

4.1.1 Peat Depth and Slope

The Scottish Government guidance divides peat instability into two categories: 'peat slides' and 'bog bursts'. The guidance states that peat slides have a greater risk of occurrence in areas where:

- Peat is encountered at or near to ground surface level;
- The thicknesses are recorded in the region of 2 m (above which, in general terms, peat instability would increase with peat thickness); and
- The slope gradients are steep (between 5 and 15 degrees).

Bog bursts are defined in the Scottish Government guidance as instances where the peat blanket surface ruptures due to subsurface creep or swelling. They are often characterised by sunken areas of blanket bog and are considered to have a greater risk of occurrence in areas where:

- Peat depth is greater than 1.5 m; and
- Slope gradients are shallow (between 2 and 10 degrees).

It should be noted however that peat instability events, although uncommon, can occur out with these limits. Reports of bog bursts are generally restricted to the Republic of Ireland and Northern Ireland.

Further to the general guidance above, in relation to peat depth, it is considered that the extent and depth of peat is controlled to a degree by rainfall and elevation, giving rise to three common types of peat (Boylan et al. 2008[9]):

- Upland Blanket Bog: Blanket bogs are typically about 3 m thick however; they can be up to 5 m thick. Generally thinning at greater elevations;
- Raised Bog: Raised bogs generally tend to be 3-12 m thick, averaging 7 m with their growth occurring above the water table; and,
- Lowland Blanket Bog: Much the same as the upland version; however, they form around sea level in areas of very high rainfall.

Generally, the potential for peat instability increases with peat depth, however other instability indicators need considered, namely slope and substrate.

4.1.2 Substrate

Peat slide failures tend to occur at the interface of the peat and underlying substrate therefore, understanding the nature of the underlying substrate can provide a key factor when considering the risk stability.

Using the peat probe refusal, an estimation of the underlying materials can be determined based on:

- Gradual refusal – Clay;
- Crunching/Gritty – Weathered Rock/Sand and Gravel; or
- Abrupt Refusal/Hard – Rock.

Where sand and/or gravel is recorded, the interface is the best-case scenario with the highest friction value.

Where clay is recorded, the upper horizons of the clay are typically softened through poor drainage in this soil group with low shear strengths expected. While rock substrate provides a high strength, the surface being smooth can lead to a weak interface, with similar risk to that of a clay substrate.

The presence of slip material, or evidence of peat instability would represent the worst-case scenario for the assessment of substrate.

[9] Boylan et al (2008) Peat Slope Failure in Ireland

The substrate parameters are included in the Hazard and Exposure Assessment in Section 5 of this PSRA.

4.1.3 Other Considerations

Preparatory factors which affect the stability of peat slopes in the short to medium-term include:

- Loss of surface vegetation (deforestation);
- Changes in sub-surface hydrology;
- Increase in the mass of peat through accumulation, increase in water content and growth of tree planting; or,
- Reduction in shear strength of peat or substrate due to chemical or physical weathering, progressive creep and tension cracking.

Triggering factors which can have immediate effect on peat stability and act on susceptible slopes include:

- Intensive rainfall or snow melt causing pressures along existing or potential peat/substrate interfaces;
- Alterations to drainage patterns, both surface and sub-surface;
- Peat extraction at the toe of the slope reducing the support of the upslope material;
- Peat loading (commonly due to stockpiling) causing an increase in shear stress; and,
- Earthquakes or rapid ground accelerations such as due to blasting or mechanical movement.

Consideration of peat stability should form an integral part of the design of infrastructure to be constructed on peatlands. While peat does not wholly provide a development constraint, areas of deep peat or peat deposits on steep slopes should be either avoided through design and micro-siting; or mitigation measures should be designed to avoid instability and movement.

4.2 Methodology

Despite being an application to the Department for Infrastructure (DfI) for consent under Planning Act (Northern Ireland) 2011[10], the PSRA has been carried out in accordance with Scottish Government, 2017 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments[11] in assessing the likelihood and consequence of such an event as recommended in Irish Wind Energy Association, 2012 Best Practice Guidance for the Irish Wind Energy Industry[12].

The PSRA undertaken is based on consultation with GSNI, who agreed with the project team approach to the assessment. The methods used to complete the PSRA are:

- Desk based assessment;
- Site Walkover;
- Infrastructure specific probing; and
- A hazard and risk ranking assessment.

The area of the PSA, represented by the Site Boundary, subject to assessment was determined by the Development layout which considered both recorded peat deposits as well as other physical and environmental constraints.

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[10] Northern Ireland Assembly (2011). *The Planning Act Northern Ireland 2011* [Online] Available at: https://www.legislation.gov.uk/nia/2011/25/contents (Accessed 12/07/2023)

[11] Scottish Government, 2017. Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments [Online] Available at: Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (www.gov.scot) (Accessed 12/07/2023)

[12] Irish Wind Energy Association, 2012. Best Practice Guidance for the Irish Wind Energy Industry. Available at: Microsoft Word - LE11-563-01_Rpt001-2.doc (windenergyireland.com) (Accessed 12/07/2023)

4.2.1 Development of Hazard Rank

The early stages of the PSRA including the desk study, site visit and peat probing were carried out in parallel with the assessment of wider constraints to inform the layout of the Development. Following identification of peat depths within the PSA, the assessment has determined the potential effects on the peat resource from construction activities which would include:

- Construction of tracks;
- Foundation construction;
- Construction of hardstanding;
- Temporary storage of peat and soils; and,
- Peatland restoration

An assessment of the peat probing data and a review against desk study information was undertaken and a hazard rank was calculated for different zones across the PSA reflecting risk of peat instability/constraint to construction.

Where practical, the Development design would be progressed to avoid areas of a risk score above 'low'. Where this would not be achievable, areas affected would be discussed as having significant effect, with relative mitigation measures proposed to reduce this, and recorded on a risk register which sets out specific mitigation measures which are considered necessary to reduce the risk of inducing instability.

Details of the hazard and risk ranking assessment is included in Sections 5 and 6 of this PSRA.

5 HAZARD AND EXPOSURE ASSESSMENT

5.1 Background

A 'Hazard Ranking' system has been applied across the PSA based on the analysis of risk of peat slide as outlined in the Scottish Government guidance. This is applied on the principle:

Hazard Ranking = Hazard x Exposure

Where 'Hazard' represents the likelihood of any peat slide event occurring and 'Exposure' being the impact or consequences that a peat slide may have on sensitive receptors that exist on and around the PSA.

5.2 Methodology

The determination of Hazard and Exposure values is based on a number of variables which impact the likelihood of a peat slide (the Hazard), and the relative importance of these variables specific to the PSA.

Similarly, the consequences or Exposure to receptors is dependent on variables including the particular scale of a peat slide, the distance it will travel and the sensitivity of the receptor.

In the absence of a predefined system, the approach to determining and categorising Hazard and Exposure is determined on a site by site basis. The particular system adopted for the PSRA assessment is outlined in the following sub sections.

5.3 Hazard Assessment

The potential for a peat slide to occur during the construction depends on several factors, the importance of which can vary from site to site. The factors requiring considerations would typically include:

- Peat depth;
- Slope gradient;
- Substrate material;
- Evidence of instability or potential instability;
- Vegetation cover; and
- Hydrology.

Of these, peat depth and slope gradient are considered to be principal factors. Without a sufficient peat depth and a prevailing slope, peat slide hazard would be negligible.

The Slope Gradient has been established using a Digital Terrain Model (DTM) to a resolution of 5 m which is illustrated in **Figure A9.1.4**. For the Development, the substrate material is also considered a relevant factor in relation to slide.

Vegetation cover and evidence of instability or potential instability were assessed during site surveys and, alongside satellite photography, informed the Geomorphology Map presented in **Figure A9.1.1**. This information was also considered during the adoption of hazard zones across the PSA, which are presented in **Figure A9.1.6**: **Hazard Rank Zonation Plan**.

Due to the nature of the assessment and number of data points used to establish hazard ranking, gathering hydrological data at each probe point through the use of groundwater boreholes and a subsequent monitoring period is considered impractical. Therefore, an assumption on groundwater levels has been adopted for the assessment that 90% of the peat at each probe location is below the water table. As such, it is assumed that the water table across the PSA is relatively high.

5.4 Hazard Rating

When several factors may impact on the Hazard potential, a relative ranking process is applied attributing different weighting to each factor as shown below.

Table A9.1. 4 Coefficients for Slope Gradients

Slope Angle (degrees)	Slope Angle Coefficients
Slope < 2°	1
2° < Slope < 4°	2
4° < Slope < 8°	4
8° < Slope < 15°	6
Slope >15°	8

Table A9.1. 5 Coefficients for Peat Thickness and ground conditions

Peat Thickness	Ground Conditions Coefficients
Peaty or organic soil (<0.5 m)	1
Thin Peat (0.5 – 1.0 m)	2
Deep Peat (>1.0 m)	3*
Deep Peat (>3.0 m)	8

* - Note that thicker peat generally occurs in areas of shallow gradient and records and research indicate that thick peat does not generally occur on the steeper gradients.

Table A9.1. 6 Coefficients for Substrate

Substrate Material	Substrate Coefficients
Sand/gravel	1
Rock	1.5
Clay	2
Not proven	2
Slip material (Existing materials)	5

The Hazard Rating Coefficient for a particular location is calculated using the following equation:

Hazard Rating Coefficient = Slope Gradient x Peat Thickness x Substrate

From the Hazard Rating Coefficient, the risk to stability can be ranked as set out in Table A9.1.7.

Table A9.1. 7 Hazard Rating

Hazard Rating Co-efficient	Potential Stability Risk (Pre-Mitigation)
<5	Negligible
5 to 15	Low
16 to 30	Medium
31 to 50	High
> 50	Very High

5.5 Peat Stability Assessment

The likelihood of a particular slope or hillside failing can be expressed as a Factor of Safety. For any potential failure surface, there is a balance between the weight of the potential landslide (driving force or shear force) and the inherent strength of the soil or rock within the hillside (shear resistance).

The guidance states that the 'Infinite Slope' method of analysis, after Skempton and DeLory (1957), is the most well established and commonly applied method for the assessment of peat slope stability. This method of analysis was also recommended by GSNI in consultation. The stability of a slope can be assessed by calculating the factor of safety F, which is the ratio of the sum of resisting forces (shear strength) and the sum of the destabilising forces (shear stress):

$$F = \frac{c' + (\gamma - m\gamma_w) z \cos^2 \beta \tan \phi'}{\gamma z \sin \beta \cos \beta}$$

Where c' is the effective cohesion, γ is the bulk unit weight of saturated peat, γw is the unit weight of water, m is the height of the water table as a fraction of the peat depth, z is the peat depth in the direction of normal stress, β is the angle of the slope to the horizontal and ϕ' is the effective angle of internal friction. Values of F < 1 indicate a slope would have undergone failure under the conditions modelled; values of F > 1 suggest conditions of stability.

Peat failures occur due to a combination of pre-existing factors including the morphological, geomorphological, hydrological, and geological and trigger factors. Trigger factors could include heavy rainfall events, the loading of the peat, and excavation of the peat. Peat slides occur when a mass of peat moves as an intact body down a slope. Slides generally occur on a shear plane, usually located close to the base of the peat. The dominant failure method in peat failures looked at by Boylan et al (2008) in Ireland was planar failure as opposed to bog bursts.

5.5.1 Geotechnical Parameters

Peat possesses significant shear strength considering that it can consist of moisture contents of more than 900%. This can be attributed to the small amounts of solid plant matter present within the peat. Water within peat is held in three states, free water within cavities in the soil matrix, capillary water within plant matter and adsorbed water bound to soil particles. Most of the water is held in the soil cavities and can therefore be removed by drainage or consolidation. The hydrological properties of peat play a significant role in the failure of peat (Boylan et al., 2008). Assumed geotechnical parameters have been utilised in the formula to inform the stability assessment, based on literature values to inform the stability analysis, as included in Table A9.1.8.

Table A9.1. 8 Literature for Geotechnical Parameters of Peat

Reference	Effective Cohesion C' (kPa)	Effective Angle of Friction ϕ (°)	Unit Weight ϒ (kN/m2)	Comments

Hanrahan et al (1967)[13]	5.5 – 6.1	36.6 – 43.5	-	Remoulded H4 Sphagnum peat
Hollingshead and Raymond (1972)[14]	4.0	34	-	-
Hollingshead and Raymond (1972)	2.4 – 4.7	27.1 – 35.4	-	Sphagnum peat (H3, mainly fibrous)
Carling (1986)[15]	6.52	0	10	-
Kirk (2001)[16]	2.7 – 8.2	26.1 – 30.4		Ombrotrophic blanket peat
Warburton et al (2003)[17]	5.0	23	9.68	Basal Peat
Warburton et al (2003)	8.74	21.6	9.68	Fibrous Peat
Dykes and Kirk (2006)	3.2	30.4	9.61	Acrotelm
Dykes and Kirk (2006)	4.0	28.8	9.71	Catotelm

C' – effective cohesion (kPa), typically ranging from 2.5 to 8.5 therefore 5.0 has been adopted for the purposes of the assessment.

Φ – effective angle of friction (°), typically ranging from 21.6 to 43.5 therefore 23 has been adopted for the purposes of the assessment.

ϒ – unit weight (kN/m2), typically ranging from 9.61 to 10, therefore 10 has been adopted for the purposes of the assessment. In accordance with the best practice method, F values of <1.0 indicate slopes that would experience failure under the modelled conditions and as such are considered areas of high risk. However, Boylan et al (2008) indicate that a relatively high value of F=1.4 should be used to identify slopes with the potential for instability. Adopting this approach, high risk areas are indicated where F is <1.0, medium risk areas are indicated as 1.00 to 1.50 and >1.5 are low risk.

According to Boylan et al (2008), it is unlikely that undrained conditions would exist for many in situ tests due to the higher permeability of peat as compared to clay soils. They found that the application of both drained and undrained analysis in peat failure analysis are questionable. Furthermore, they found that the mode of failure for peat is likely partially drained. Due to this the effective stress strength method (assuming steady seepage of groundwater parallel to ground level) was used with the abovementioned mitigation measure of increasing the F value where slip occurs.

Using digital terrain modelling and GPS co-ordinates of each peat probe, a Factor of Safety, F has been calculated for each probe location which has been interpolated through ArcGIS Spatial Analyst tools. The 'Factor of Safety Plan' is shown on **Figure A9.1.5**.

[13] Hanrahan et al (1967) - Hanrahan, E.T., Dunne, J.M., and Sodha, V.G. 1967. Shear strength of peat. Proceedings Geotechnical Conference, Oslo, Vol. 1, pp. 193–198.

[14] Hollingshead and Raymond (1972) - Hollingshead, G.W., and Raymond, G.P. 1972. Field loading tests on Muskeg, Canadian Geotechnical Journal, 9(3): 278–289.

[15] Carling (1986) - Peat slides in Teesdale and Weardale, northern pennines, September 1983: Description and failure mechanisms

[16] Kirk (2001) - Initiation of a multiple peat slide on Cuilcagh Mountain, Northern Ireland

[17] Warburton et al (2003) - Anatomy of a Pennine peat slide, Northern England

5.6 Exposure Assessment

The main exposure receptors identified within the PSA and surrounding area which could potentially be affected in the event of a peat slide were existing and/or proposed infrastructure, watercourses and associated tributaries and sensitive habitats.

The impact of a peat slide on receptors can be assessed on a relative scale based on the potential for loss of habitat, a historical feature or disruption/danger to the public. To effectively assess the impact, the assessment of exposure effect must also consider the distance between the hazard and the receptor, and the relative elevation between the two.

5.7 Exposure Rating

Similar to the Hazard Rating, the exposure ratings were determined using relative ranking process by attributing the different weighting systems to each factor as shown below:

Table A9.1. 9 Coefficients for Receptor Type

Receptor	Receptor Coefficients
Road, path or track	3
Minor water feature	6
Site infrastructure	6
Dwelling	8
Major water feature	8
Blanket bog	8

Table A9.1. 10 Coefficients for Distance from Receptor

Distance from Receptor	Distance Coefficients
> 1 km	1
100 m to 1 km	2
10 m to 100 m	3
<10 m	4

Table A9.1. 11 Coefficients for Receptor Elevation

Receptor Elevation	Elevation Coefficients
< 10 m	1
10 m to 50 m	2
50 m to 100 m	3
> 100 m	4

The Exposure Rating Coefficient for a particular location is calculated using the following equation:

Exposure Rating Coefficient = Receptor x Distance x Elevation

From the Exposure Rating Coefficient, the risk to stability can be ranked as set out in Table A9.1.12.

Table A9.1. 12 Exposure Rating

Exposure Rating Co-efficient	Potential Stability Risk (Pre-Mitigation)
<6	Very Low
6 to12	Low
13 to 24	High
24 to 30	Very High
>30	Extremely High

5.8 Rating Normalisation

In order to achieve an overall Hazard Ranking in accordance with the Scottish Government Guidance, the Hazard and Exposure Rating Coefficient derived from the coefficient tables are normalised as shown in Table A9.1.13.

Table A9.1. 13 Rating Normalisation

Hazard Rating		Exposure Rating	
Current Scale	**Normalised Scale**	**Current Scale**	**Normalised Scale**
< 5 Negligible	1	<6 Very Low	1
5 to 15 Low	2	6 to 12 Low	2
15 to 30 Medium	3	13 to 24 High	3
30 to 50 High	4	25 to 30 Very High	4
>50 Very high	5	>30 Extremely High	5

The record of the Hazard Rank Assessment is included in **Appendix E** of this PSRA.

6 HAZARD RANKING

Having identified the rating coefficients in Section 5 of this PSRA, it is possible to categorise areas of the PSA with a Hazard Ranking by multiplying the Hazard and Exposure Rating. Hazard Ranking and associated suggested actions matrix are shown in Tables A9.1.14 and A9.1.15 below:

Table A9.1. 14 Hazard Ranking and Suggested Actions

Hazard Ranking		Action Suggested in the Scottish Executive Guidance
17-25	High	Avoid project development at these locations.
11-16	Medium	Project should not proceed unless hazard can be avoided or mitigated at these locations, without significant environmental impact, in order to reduce hazard ranking to low or less
5-10	Low	Project may proceed pending further investigation to refine assessment. Mitigation of hazards maybe required through micro-siting or re-design at these locations.
1-4	Negligible	Project should proceed with monitoring and mitigation of peat landslide hazards at these locations as appropriate.

Table A9.1. 15. Hazard Ranking Matrix

Hazard Rating	5	Low	Low	Medium	High	High
	4	Negligible	Low	Medium	Medium	High
	3	Negligible	Low	Low	Medium	Medium
	2	Negligible	Negligible	Low	Low	Low
	1	Negligible	Negligible	Negligible	Negligible	Low
		1	2	3	4	5
		Exposure Rating				

Receptor exposure was assessed for each of the hazard zones using the approach in Section 5. A summary of the Hazard Ranking result for each identified area is summarised in Table A9.1.16 and is presented in **Figure A9.1.6 - Hazard Ranking Zonation Plan**. The zonation is based on a combination of considerations including calculated hazard result, peat depth, topography, receptors and land uses.

7 SLIDE RISK AND MITIGATION

7.1 General

During investigations into the July 2022 peat slide at the PSA, it was noted that the absence of notable surface drainage features at the peat slide location indicated the presence of significant sub-surface pipe systems in the form of natural pipes. The landslide may have been triggered by a pipe burst.

There are areas where there are no recorded surface drainage systems in the centre of the PSA. As is the case at the recent peat slide location, it is assumed that an extensive network of underground drainage pipes is present at these locations. Therefore, a greater unmitigated hazard rank has been attributed to these locations than may have been determined using the calculation for hazard rank coefficient outlined in Section 5 of this PSRA.

The PSRA has shown most of the PSA to be of 'negligible' and 'low' hazard ranking, however there are some areas of 'medium' and 'high' hazard ranking, primarily in the centre of the PSA, out with areas of proposed infrastructure. Therefore, it is considered that there is a significant risk of peat slide at the PSA without mitigation based on the Hazard Ranking assessment, the calculations for which are included in Appendix E. It should be noted that infrastructure has been sited out with medium and high hazard areas, however, mitigation measures outlined in Table A9.1.16 as well as Section 7.4 of this PSRA should be applied in order to reduce the risk of peat slide in these areas.

Further to the hazard rank areas, a 'Factor of Safety' (FoS) assessment has been undertaken, which provides a sense check of the ranking based system as outlined in Section 5.5 of this PSRA. The 'Factor of Safety Plan' is shown on **Figure A9.1.5** and demonstrates that the vast majority of probe points at the PSA have a 'low' risk FoS rating. Of the 2,404 probes across the PSA, only 41 are assessed to pose a 'medium' FoS risk and two points have been determined by the assessment as having a 'high' FoS risk. However, these points are located sporadically across the PSA,surrounded by 'low' FoS risk points and are situated in 'low' hazard ranking zones, indicating that, on the whole, these areas have a low risk of peat slide. The Factor of Safety calculations are presented in Appendix D.

Where the hazard ranking has been lowered through mitigation measures, the original ranking will remain in the overall hazard zoning plan. It should be acknowledged that the hazard zonation plan is based on the pre-mitigation status.

While specific recommended mitigation is proposed for areas which are ranked above 'negligible' risk, other mitigation is embedded within the design. It is also necessary for detailed design and construction of the Development to be undertaken in a competent and controlled manner.

The embedded mitigation and good practice measures are set out in Section 7.3 of this PSRA. It should be noted that the mitigation measures defined are not exhaustive and other forms of mitigation, included in Section 7.4, may be required and shall be implemented where necessary during construction of the Development.

Table A9.1. 16 Hazard Ranking and Risk Assessment

Hazard Area and Infrastructure		**Unmitigated Hazard**		**Mitigated Hazard**	
Hazard Area	**Infrastructure Affected**	**Ranking**	**Key Aspects**	**Specific Actions**	**Ranking**
H1	None	Negligible	Location and topography: Zone covering western area of the PSA, largely consisting of	The design has avoided siting infrastructure in this area.	Negligible

			pastoral farmland. Hydrology: Multiple unnamed watercourses run from east to west in this hazard zone. Peat Depth: 0.0 m – 1.2 m; average depth is 0.35 m. Slope Gradient: <5° to <15° Exposure: Major watercourses; minor watercourses		
H2	Turbine T1 and associated infrastructure; temporary construction compound; access tracks.	Negligible	Location and topography: Western PSA area, north of hazard zone is adjacent to the PSA boundary. Largely located upon pastoral farmland. Hydrology: Northern part of this zone is intersected by an unnamed watercourse running from east to west. Peat Depth: 0.0 m – 2.3 m; generally < 1.0 m. Average depth is 0.66 m. Slope Gradient: <5° to <15°	Micrositing into areas of thinner peat is recommended, where required. A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP, Technical Appendix A8.5: Outline Drainage Strategy,** as well	Negligible

			Exposure: Proposed infrastructure; minor watercourses	as the excavation and management of peat as outlined in **Technical Appendix A A3.3: oPMP.**	
H3	Turbine T2 and associated infrastructure; turbine T5 and associated infrastructure; access tracks	Low	Location and topography: Zone is located in the south-western PSA area on steep sloping land from east to west. Most of the vegetation in the area is consistent with heathland. Hydrology: Surface drainage features are present within this hazard zone. Peat Depth: 0.0 m – 3.1 m; average depth is 1.20 m. Slope Gradient: <5° to >15° Exposure: Proposed infrastructure and sensitive habitat.	Micrositing into areas of thinner peat is recommended, where required. A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP Technical Appendix A8.5: Outline Drainage Strategy,** as well as the excavation and management of peat as outlined in **Technical Appendix A3.3: oPMP.** During construction, visual inspections and monitoring should take place in areas with the potential for peat slide.	Negligible
H4	None	Medium	Location and topography: Zone is located in the south-west of the PSA on steep sloping land from east to west, the July 2022 peat slide	Design has avoided siting infrastructure in this area. Provision of a Geotechnical Risk Register to be maintained through pre-construction, construction and operational stages of the Development.	Low

			occurred in this area. Hydrology: There are a number of artificial drainage features in the south of this area, no notable hydrological features in the north of the hazard zone. Peat Depth: 0.4 m – 1.7 m. Average depth is 0.75 m. Slope Gradient: <10° to >15° Exposure: Sensitive habitat	Appointment of a Geotechnical Clerk of Works (GCOW) and Environmental Clerk of Works (ECoW). A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. No unnecessary tracking of heavy plant permitted within medium peat slide risk areas and no access within 'No-Access' zones, to be defined prior to construction. During construction, a specialist geotechnical engineer shall be appointed to conduct visual inspections and monitoring in areas with potential for peat slide. Works at the site should be postposed during and for a period after heavy rainfall events. This is defined by the Met Office as 4mm per hour or greater; however, the parameters for the Development should be agreed prior to construction based on weather averages for the area. A scheme of ground investigation will be developed at a preconstruction stage. The scope of the Site Investigation will include	

				any additional requirements to inform peat risk mitigation measures.	
H5	None	Low	Location and topography: Large area in the north of the PSA, adjacent to the PSA boundary. Generally consists of heather and heathland vegetation. Hydrology: unnamed watercourse runs from south to north, surface drainage features are also present. Peat Depth: 0.0 m – 3.3 m. Average depth is 0.95 m. Slope Gradient: 0° to <10° Exposure: Proposed infrastructure; minor watercourses	There is no proposed infrastructure in this area. During construction, visual inspections and monitoring should take place in areas with the potential for peat slide.	Negligible
H6	Access tracks	Negligible	Location and topography: Area immediately north of the centre of the PSA, generally consisting of heathery vegetation Hydrology: No watercourses are present although a large	Micrositing into areas of thinner peat is recommended, where required. A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be	Negligible

			number of artificial drains and cuttings are present in this zone Peat depth: 0.0 m – 1.9 m. Average depth is 0.7 m Slope gradient: <5^{O} to <15^{O} Exposure: Proposed infrastructure; sensitive habitat.	used to define location-specific mitigation measures from those outlined in this PSRA. Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP , Technical Appendix A8.5: Outline Drainage Strategy,** as well as the excavation and management of peat as outlined in **Technical Appendix A3.3: oPMP.**	
H7	Turbine T3 and associated infrastructure; turbine T4 and associated infrastructure; access tracks	Low	Location and topography: Zone is located on land sloping from south to north in the centre of the PSA, an existing access track intersects the proposed turbine T3. Hydrology: surface drainage features are present throughout this area. Peat depth: 0.0 m – 3.0 m, average depth is 1.02 m. Slope gradient: <5^{O} - <15^{O} Exposure: Proposed infrastructure; sensitive habitat	Micrositing into areas of thinner peat is recommended, where required. A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP, TA A8.5: Outline Drainage Strategy,** as well as the excavation and management of peat as outlined in **Technical Appendix A3.3: oPMP.**	Negligible

				During construction, visual inspections and monitoring should take place in areas with the potential for peat slide.	
H8	None	High	Location and topography: Zone is located in the centre of the PSA on the eastern flank of Owenreagh Hill, heather vegetation is present as well as other grassland vegetation. Hydrology: There is a ditch running from west to east, however there is a large area without any drainage features. Extensive peat pipes were identified in the area during the geomorphology walkover. Peat depth: 0.0 m – 2.4 m. Average depth is 1.45 m Slope gradient: <5^{O} to <15^{O} Exposure: Sensitive habitat	Design has avoided siting infrastructure in this area Due to the 'high' classification of the hazard in this area, no infrastructure works should take place in this hazard zone. Provision of a Geotechnical Risk Register to be maintained through pre-construction, construction and operational stages of the Development. During construction, a specialist geotechnical engineer should be appointed to conduct visual inspections and monitoring in areas with potential for peat slide. Appointment of a GCOW and ECoW. A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. Areas of high peat slide risk will be clearly demarcated. No unnecessary tracking of vehicles through areas of high peat slide risk and no access within 'No-Access'	Low

				zones, to be identified prior to construction. Stockpiling and side casting will be prohibited in a ‘no stockpile zones’ within the high risk area. Areas of stockpiling will be agreed with the GCoW and ECoW in addition to a location specific PSRA undertaken by the Contractor’s design team. Works at the site should be postposed during and for a period after heavy rainfall events. This is defined by the Met Office as 4mm per hour or greater; however, the parameters for the Development should be agreed prior to construction based on weather averages for the area. A preconstruction geophysical survey should take place in the high risk area where there is potential for basal layer flows (limited / no watercourses and ditches) and the peat is thin and slopes are steep, as informed by the detailed analysis and triggering factor of the peat slide in July 2022. A scheme of ground investigation will be developed at a preconstruction stage. The scope of the Site Investigation will include any additional requirements to inform peat risk mitigation measures.	
H9	Turbine T10, turbine T11 and turbine T12 and their associated infrastructure; access tracks	Low	Location and topography: large area in the south of the PSA on land sloping from west to east.	Micrositing into areas of thinner peat is recommended, where required.	Negligible

			The land generally consists of heather and heathland vegetation Hydrology: artificial drainage is present throughout this zone Peat depth: 0.0 m – 3.0 m. Average depth is 1.41 m. Slope gradient: <5^{O} to 15^{O} Exposure: Proposed infrastructure; sensitive habitat	A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP, Technical Appendix A8.5: Outline Drainage Strategy,** as well as the excavation and management of peat as outlined in **Technical Appendix A3.3: oPMP.** During construction, visual inspections and monitoring should take place in areas with the potential for peat slide.	
H10	None	Low	Location and topography: large area in the south of the PSA, adjacent to the PSA boundary. The land generally slopes from west to east. Hydrology: A large artificial drainage network exists in the east of this zone. Peat depth: 0.4 m – 2.8 m.	Design has avoided siting infrastructure in this area. During construction, visual inspections and monitoring should take place in areas with the potential for peat slide.	Negligible

			Average depth is 1.73 m. Slope gradient: <5^{O} to <15^{O} Exposure: Sensitive habitat		
H11	Turbine T7 and its associated infrastructure; proposed onsite substation and control building; temporary works area and access tracks	Low	Location and topography: located in the north of the PSA, the land is generally flatter than elsewhere on the PSA, the north of this zone is situated in an area of pastoral farmland. Hydrology: there are surface drainage features located throughout this hazard zone. Peat depth: 0.0 m – 3.5 m. Average depth is 0.83 m. Slope gradient: 0^{O} to 10^{O} Exposure: Proposed infrastructure	Micrositing into areas of thinner peat is recommended, where required. A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP, Technical Appendix A8.5: Outline Drainage Strategy,** as well as the excavation and management of peat as outlined in **Technical Appendix A3.3: oPMP.** During construction, visual inspections and monitoring should take place in areas with the potential for peat slide.	Negligible
H12	Turbines T6, T8 and T9, and their associated infrastructure; access tracks	Low	Location and topography: Zone is located immediately east of the centre of the PSA. The east	Micrositing into areas of thinner peat is recommended, where required.	Negligible

			of this zone slopes from west to east, whereas the west of this zone is relatively flat. Hydrology: There is a tributary of Dunnyboe Burn, which runs from south to north which intersects this hazard zone. Peat depth: 0.0 m – 3.1 m. Average depth is 1.1 m. Slope gradient: <5^{O} to <15^{O} Exposure: Proposed infrastructure; major watercourses; minor watercourses	A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP, Technical Appendix A8.5: Outline Drainage Strategy,** as well as the excavation and management of peat as outlined in **Technical Appendix A3.3: oPMP.** During construction, visual inspections and monitoring should take place in areas with the potential for peat slide.	
H13	None	Medium	Location and topography: Zone is located in the centre of the PSA and slopes from south to north. The 2016 peat slide occurred in this hazard zone. Hydrology: A large ditch running from west to east intersects the area. Peat pipes were identified in the area during the	Design has avoided the siting of infrastructure in this area. Provision of a Geotechnical Risk Register to be maintained through pre-construction, construction and operational stages of the Development. Appointment of a GCOW and ECoW. A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed	Low

			geomorphology walkover. Peat depth: 0.5 m – 2.0 m. Average depth is 1.26 m. Slope gradient: 5^{o} to 10^{o} Exposure: Proposed infrastructure; sensitive habitat, minor watercourses	infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. No unnecessary tracking of heavy plant permitted within medium peat slide risk areas and no access within 'No-Access' zones, to be defined prior to construction. During construction, a specialist geotechnical engineer should be appointed to conduct visual inspections and monitoring in areas with potential for peat slide. Works at the site should be postposed during and for a period after heavy rainfall events. This is defined by the Met Office as 4mm per hour or greater; however, the parameters for the Development should be agreed prior to construction based on weather averages for the area. A scheme of ground investigation will be developed at a preconstruction stage. The scope of the Site Investigation will include any additional requirements to inform peat risk mitigation measures.	
H14	Turbine T13 and its associated infrastructure; access tracks	Negligible	Location and topography: Zone is located in the north-east of the PSA, adjacent to the PSA boundary. Much of the land	Micrositing into areas of thinner peat is recommended, where required. A scheme of ground investigation will be developed at a	Negligible

			is pastoral farmland, there is an existing road which intersects this hazard zone. Hydrology: There is a tributary of Dunnyboe Burn which runs from south-west to north-east through the hazard zone. Peat depths: 0.0 m – 4.3 m. Average depth is: 1.03 m. Slope gradient: 0^{O} to $>10^{O}$ Exposure: Proposed infrastructure; residential dwelling; major watercourse; minor watercourse	preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA. Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP, Technical Appendix A8.5: Outline Drainage Strategy,** as well as the excavation and management of peat as outlined in **Technical Appendix A3.3: oPMP.**	
H15	Turbine T14 and its associated infrastructure; access tracks	Low	Location and topography: Zone is located in the east of the PSA. The area generally consists of heather and heathland vegetation. Hydrology: extensive surface drainage features are present in this hazard zone.	Micrositing into areas of thinner peat is recommended, where required. A scheme of ground investigation will be developed at a preconstruction stage. The investigations will take place at proposed infrastructure locations which have already been subject to peat probing and assessment. This will be used to define location-specific mitigation measures from those outlined in this PSRA.	Negligible

			Peat depth: 0.0 m – 1.4 m. Average depth is 0.75 m. Slope gradient: <5^{O} to <10^{O} Exposure: Proposed infrastructure; minor watercourses	Best practice measures in relation to drainage prior to and during construction will be implemented as outlined in **Technical Appendix A3.1: oDCEMP, TA A8.5: Outline Drainage Strategy,** as well as the excavation and management of peat as outlined in **Technical Appendix A3.3: oPMP.** During construction, visual inspections and monitoring should take place in areas with the potential for peat slide.	

7.2 Peatland Restoration

The proposed peatland restoration programme, as discussed in the **Technical Appendix A3.2: Draft Habitat Management and Enhancement Plan (DHMEP)**, has identified six restoration areas (Areas 1A-F and 3A) where peat excavated during construction will be spread to an average depth of 0.3 m. It is anticipated that the restoration methods adopted will raise the water table in the restoration areas. The effect of raising the water table is a likely increase in pore water pressure due to the inundation of peat pipes in the soil, this is considered to be a potential contributing factor in the 2022 peat slide on the western aspect of Owenreagh Hill.

The restoration areas are all sited within areas of the PSA deemed to be of 'low' or 'negligible' hazard ranking. Two areas are located on the eastern aspect of Owenreagh Hill, two are located at the foot of Owenreagh Hill, adjacent to Glenmornan Road and one is located in the area surrounding turbine T14, adjacent to Napple Road. It is unlikely that using peat to raise the ground level by an average of 0.3 m within the restoration areas will result in a rapid increase of pore water pressure. As a result, no significant effects are anticipated as a result of peatland restoration activities. The restoration methods adopted are discussed in the **Technical Appendix A3.2: DHMEP**.

7.3 Embedded Mitigation

Embedded mitigation includes measures taken during design of the Development to reduce the potential for peat slide risk. In summary the principal measures that have been taken are:

- Locating infrastructure on shallower slopes, where possible;
- Re-using existing access tracks where possible; and,
- Locating infrastructure on areas of shallow peat (or no peat) where possible.

7.4 Peat Slide Mitigation Recommendations

The following mitigation measures should be adopted post consent stage to validate the PSRA and influence the detailed design of the Development, including:

- Ground investigations prior to detailed design;
- Identification of areas sensitive to changes in drainage regime prior to detailed design;
- Review the PSRA as necessary following detailed ground investigations;
- Development of the final drainage strategy, which will not create areas of concentrated flow and will not affect the current peatland hydrology, thus reducing the likelihood of bog bursts;

- Ensure that the final design of drainage systems for tracks and hardstanding areas will require only minimal ongoing maintenance during the operational phase;
- Inspection and maintenance of the drainage systems during construction and operation;
- Identification of suitable areas for stockpiling material during construction prior to commencement of works;
- Consideration of specific construction methods appropriate for infrastructure in peat land (i.e. geogrids) as part of design Development;
- Client's Geotechnical Engineer to provide a Geotechnical Induction to all contractor supervisory staff;
- Client to appoint a Site Geotechnical Supervisor to carry out inspection and supervision of site works as required to ensure that the works are carried out in accordance with the requirements of the PSRA, identifying new risks and ensuring all method statements for works are in place and certified;
- Retain a Site geotechnical folder which contains all the information relevant to the geotechnical aspects of the Site including, but not limited to, Geotechnical Risk Register, Peat Stability Risk Register, site investigation information, method statements etc;
- Contractor to develop a method statement for the works to be carried out in each of the PSRA areas cognisant of the required mitigating measures;
- Mitigation measures to be implemented at construction stage may include but are not limited to:
  - Measures to maintain hydrology of area as far as possible;
  - Limiting stockpiling of materials as much as possible;
  - Stepping or battering back of excavations to a safe angle (as determined through a detailed slope stability assessment by a competent temporary works designer) or construction of a temporary retaining structure to support the peat during construction, where required;
  - Implantation of monitoring regime for peat movement; and
  - Frequent monitoring and inspection during construction and operation of floating access tracks.
- Client's Geotechnical Engineer/Geotechnical Supervisor to approve the method statement prior to construction works;
- Contractor to provide tool-box talks and onsite supervision prior to and during construction works; and,
- Daily sign-off by supervising staff upon completion of works.

8 CONCLUSIONS

This PSRA has been undertaken for the Development in accordance with best practice, as detailed in Section 4.2 of the PSRA. The early stages of the assessment included a desk study, historic peat probing across the PSA, followed by completion of phase 1 peat probing and a further intensive probing exercise based on the finalised layout. The information gathered during this investigation was used to develop a Hazard Ranking across the PSA.

The findings of the peat probing survey indicate that the majority of the PSA is underlain by peat less than 1 m in thickness, although some infrastructure is sited in areas of deeper peat, such as Turbine T5 where depths of 3 m were recorded. Although deep peat was recorded at the PSA, the Development was designed to largely avoid these areas.

Based on the scope of the study, the PSRA has indicated that the majority of the PSA is of ‘negligible’ or ‘low’ hazard ranking, with two zones highlighted as ‘medium’ and one as ‘high’ hazard ranking. There is no proposed infrastructure located within any of the ‘medium’ or ‘high’ ranked zones and the mitigation measures proposed have reduced the overall risk in these areas to ‘low’.

Notwithstanding the findings of the PSRA, the final design of infrastructure should be carefully sited and micrositing adopted if required in order to maintain the design objective of avoiding any potential peat slide risk.

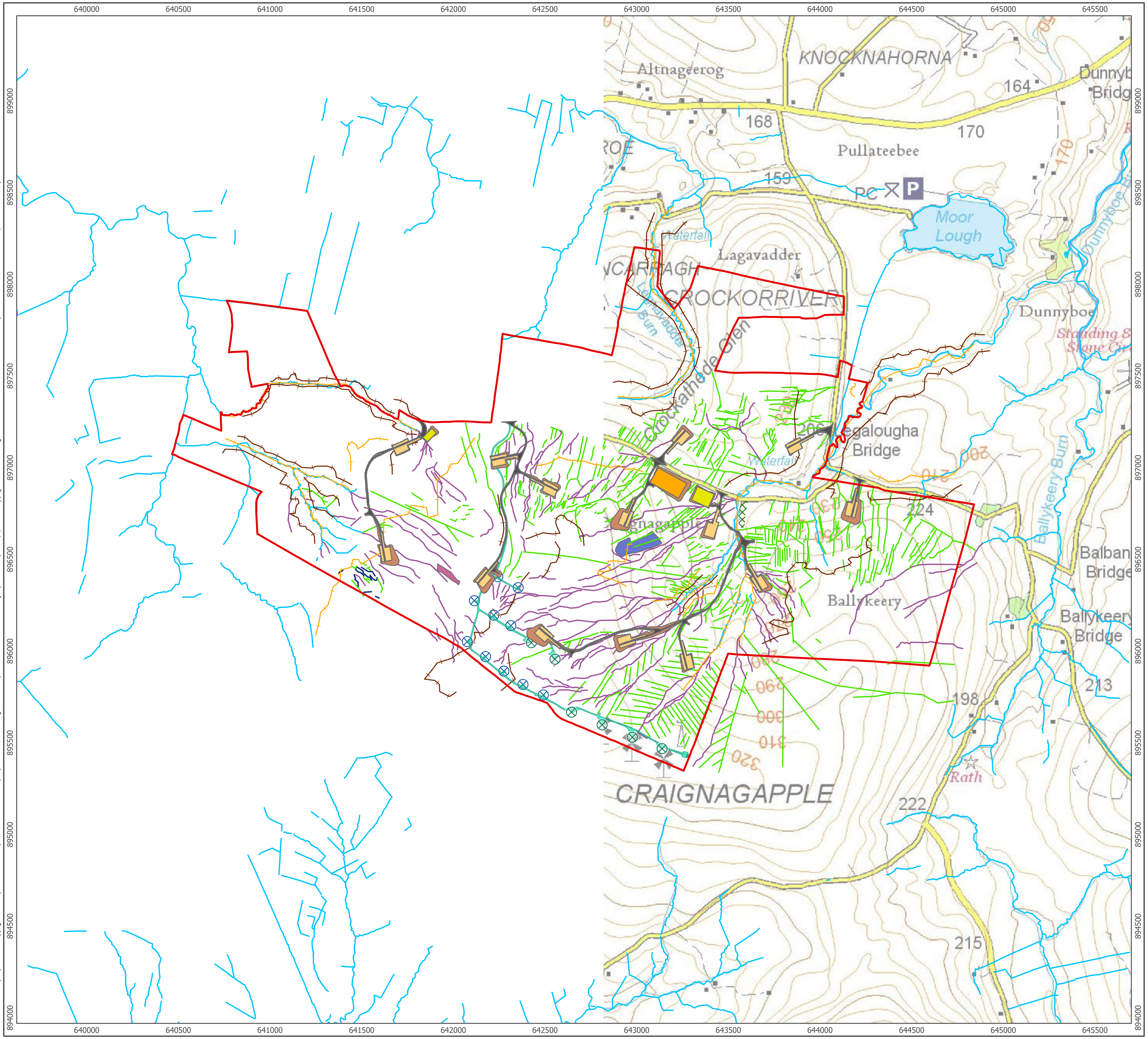
9 SOURCES OF INFORMATION

The following sources of information were used as part of the desk study investigations:

- Irish Wind Energy Association, 2012 – 'Best Practice Guidance for the Irish Wind Energy Industry' March 2012;
- Scottish Government (SG) - 'Peat Landslide Hazard and Risk Assessments' December 2017;
- The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017;
- NI Planning Service, 2009. Planning Policy Statement 18: Renewable Energy;
- Geological Survey of Northern Ireland - Online GeoIndex;
- Ordnance Survey (OS) topographical information;
- Assessments by other EIA specialists (specifically hydrology and ecology for data on sensitive receptors); and,
- Aerial and Satellite photography.

APPENDIX A – FIGURES

06 September 2023



Peat Survey Area

Site Infrastructure

- Access Tracks
- Construction Compound
- Crane Hardstanding
- Earthworks
- Substation

Existing Wind Farm Infrastructure

- Operational Owenreagh I
- Operational Owenreagh II
- As Built Site Roads & Hardstands

Geomorphology

- Cutting (dry)
- Ditch
- Drain
- Bottom of Slope
- Top of Slope
- Watercourses
- 2016 Peat Slide
- 2022 Peat Slide
- Forestry plantation

1:20,000 Scale @ A3

0 0.35 0.7 km

NORTH

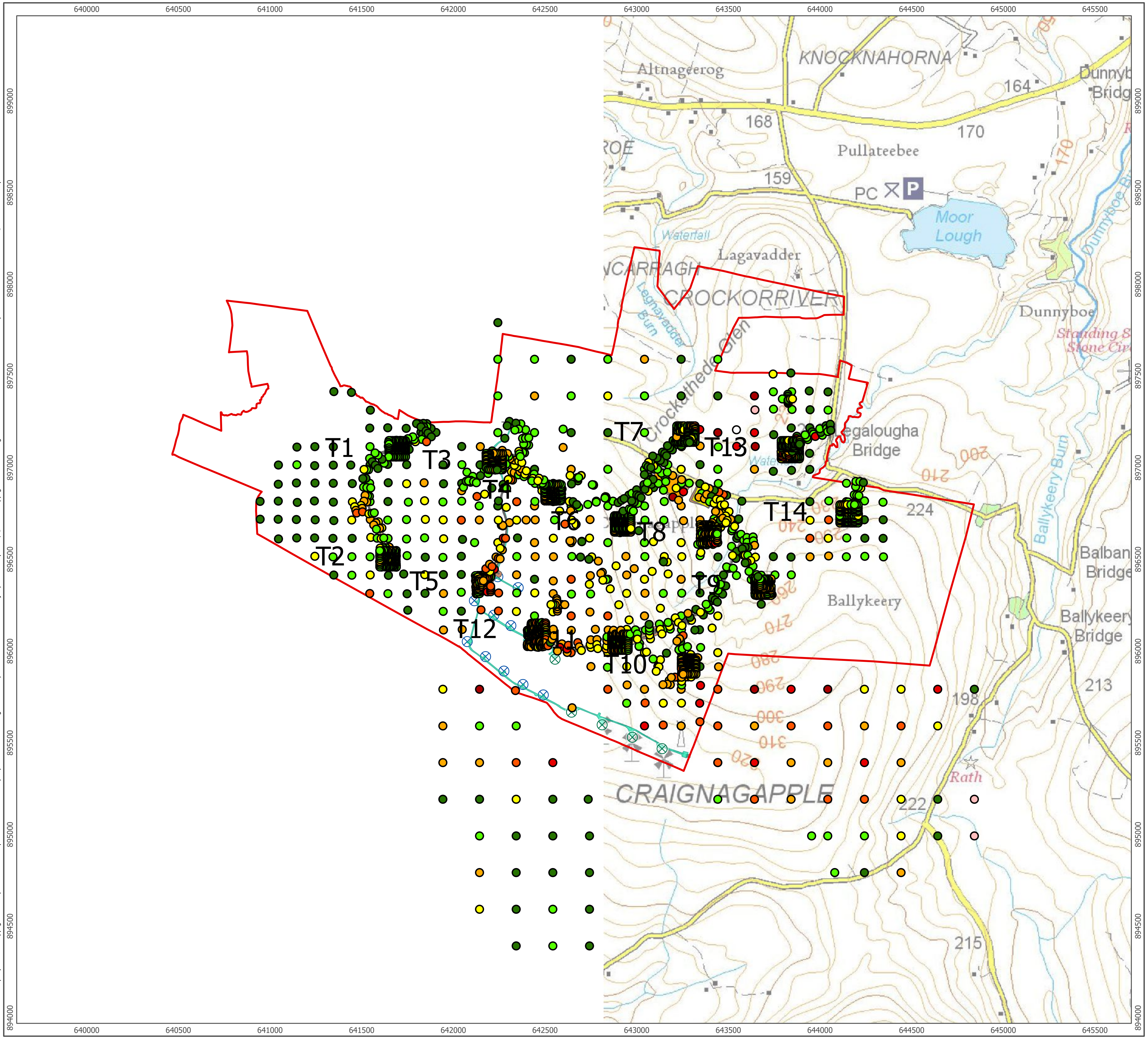
Produced By: CS	Ref: 4172-REP-020
Checked By: GH	Date: 13/04/2023

Geomorphology Map

Figure A9.1.1

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-020 Fig9.1.1 Geomorphology Map



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ARCUS

Peat Survey Area

Proposed Turbine Locations

Site Infrastructure

Infrastructure Type

Access Tracks

Construction Compound

Crane Hardstanding

Earthworks

Substation

Existing Wind Farm Infrastructure

Operational Owenreagh I

Operational Owenreagh II

As Built Site Roads & Hardstands

Peat Probe Locations

Peat Depth (m)

0.00 - 0.50

0.51 - 1.00

1.01 - 1.50

1.51 - 2.00

2.01 - 2.50

2.51 - 3.00

3.01 - 3.50

3.51 - 4.00

4.01 +

1:20,000 Scale @ A3

0 0.35 0.7 km

NORTH

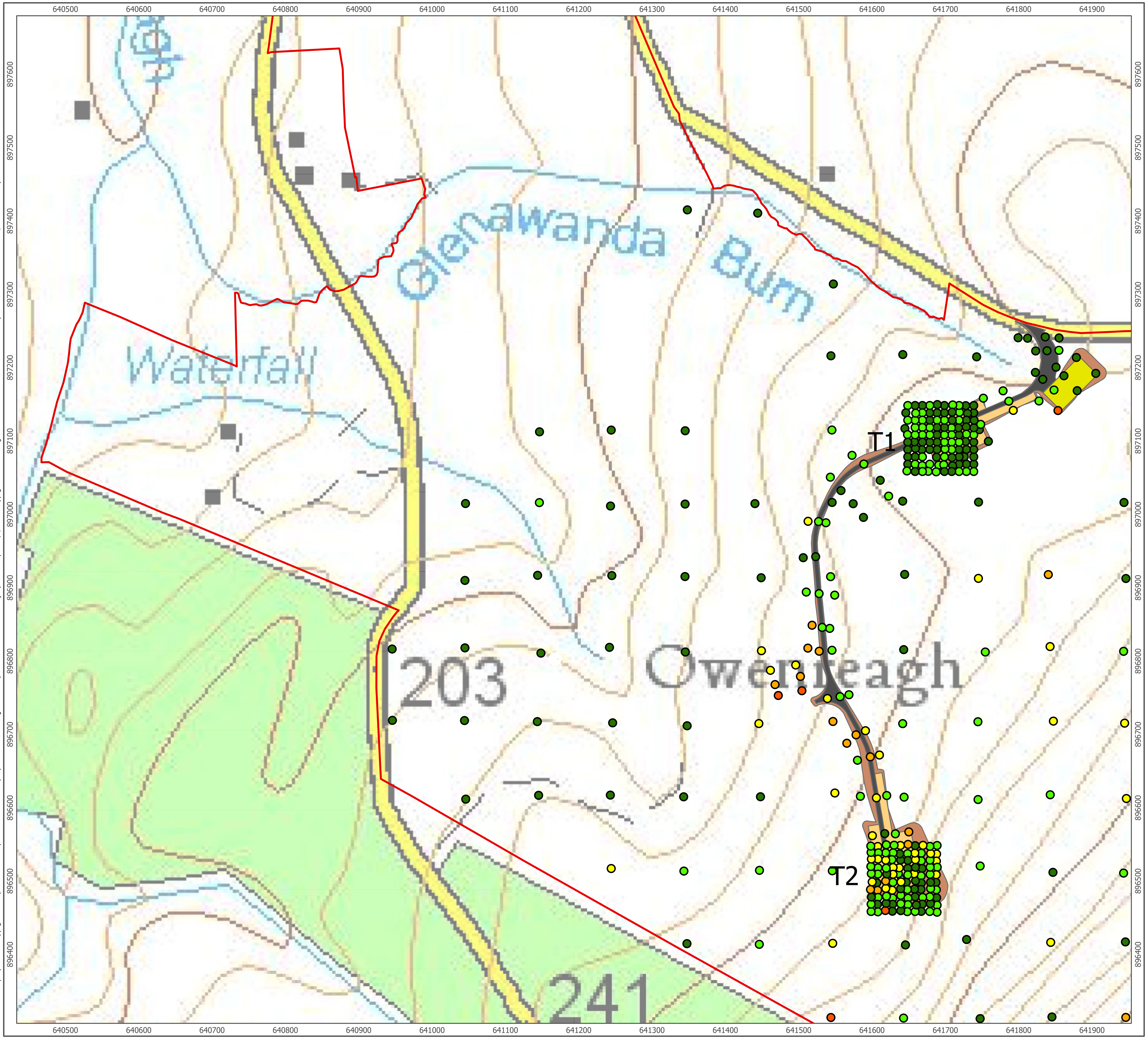
Produced By: CS	Ref: 4172-REP-021
Checked By: GH	Date: 17/03/2023

Recorded Peat Depths

Figure A9.1.2

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-021 Fig9.1.2 Recorded Peat Depths



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ARCUS

- Peat Survey Area
- Proposed Turbine Locations

Site Infrastructure

Infrastructure Type

- Access Tracks
- Construction Compound
- Crane Hardstanding
- Earthworks

Peat Probe Locations

Peat Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.01 +

1:5,000 Scale @ A3

0 0.1 0.2 km

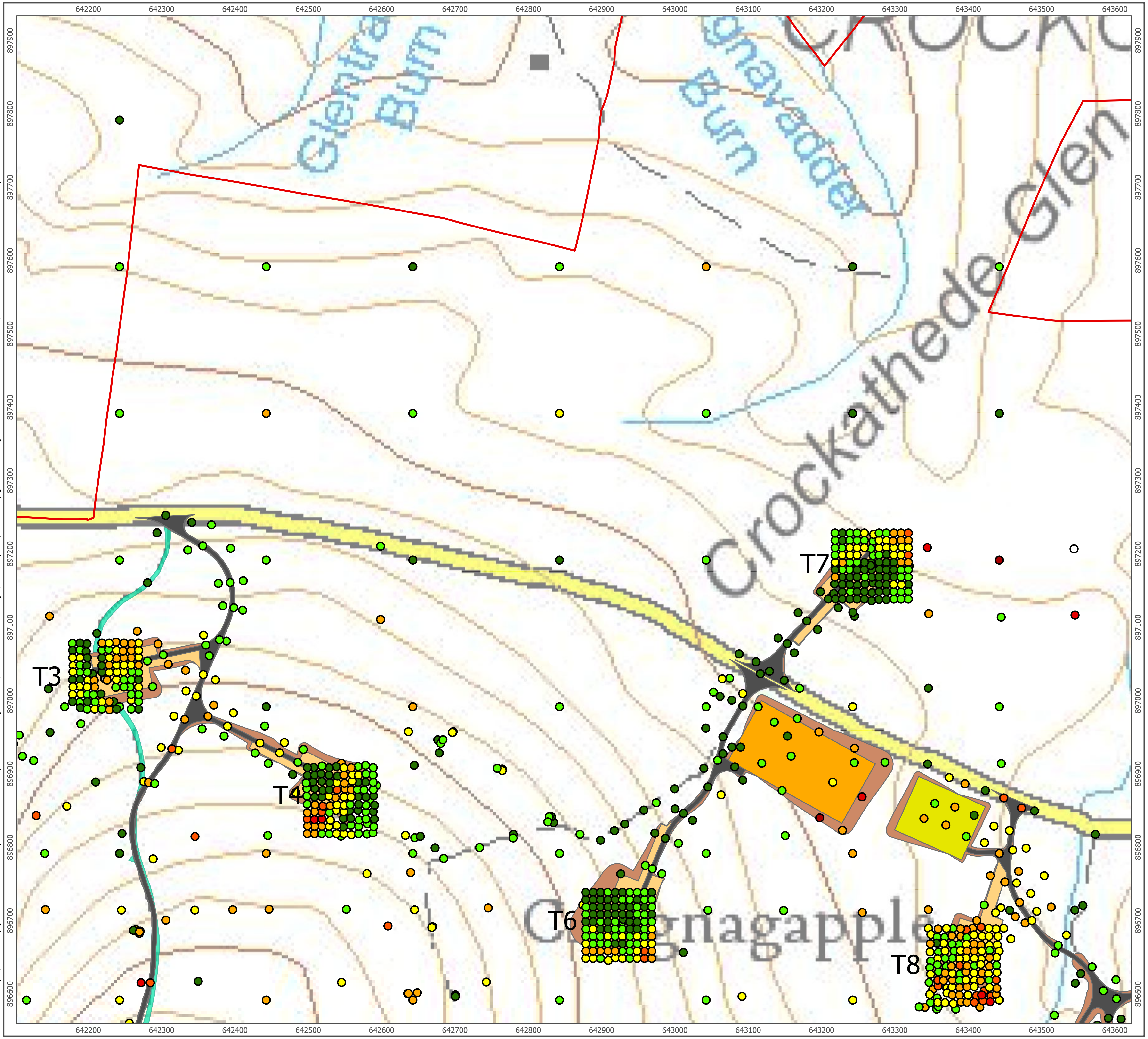
NORTH

Produced By: CS	Ref: 4172-REP-021
Checked By: GH	Date: 17/03/2023

Recorded Peat Depths
Figure A9.1.2

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-021 Fig9.1.2 Recorded Peat Depths



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ARCUS

Peat Survey Area
Proposed Turbine Locations
Site Infrastructure
Infrastructure Type
Access Tracks
Construction Compound
Crane Hardstanding
Earthworks
Substation
As Built Site Roads & Hardstands
Peat Probe Locations
Peat Depth (m)
0.00 - 0.50
0.51 - 1.00
1.01 - 1.50
1.51 - 2.00
2.01 - 2.50
2.51 - 3.00
3.01 - 3.50
3.51 - 4.00
4.01 +

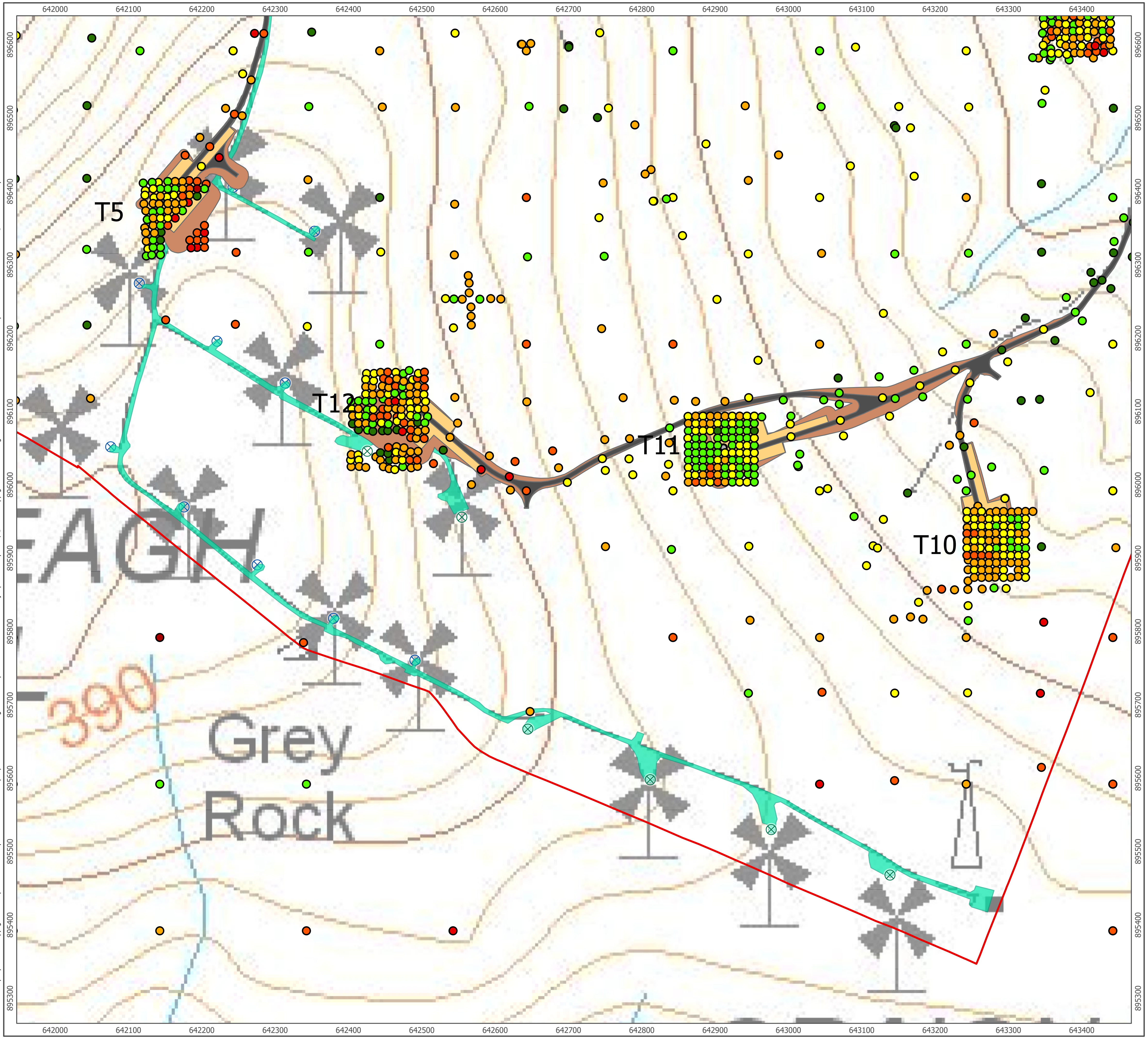
1:5,000 Scale @ A3
0 0.1 0.2 km
NORTH

Produced By: CS	Ref: 4172-REP-021
Checked By: GH	Date: 17/03/2023

Recorded Peat Depths
Figure A9.1.2

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-021 Fig9.1.2 Recorded Peat Depths



Ørsted

ARCUS

- Peat Survey Area
- Proposed Turbine Locations

Site Infrastructure

Infrastructure Type

- Access Tracks
- Crane Hardstanding
- Earthworks

Existing Wind Farm Infrastructure

- Operational Owenreagh I
- Operational Owenreagh II
- As Built Site Roads & Hardstands

Peat Probe Locations

Peat Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.01 +

1:5,000 Scale @ A3

0 0.1 0.2 km

NORTH

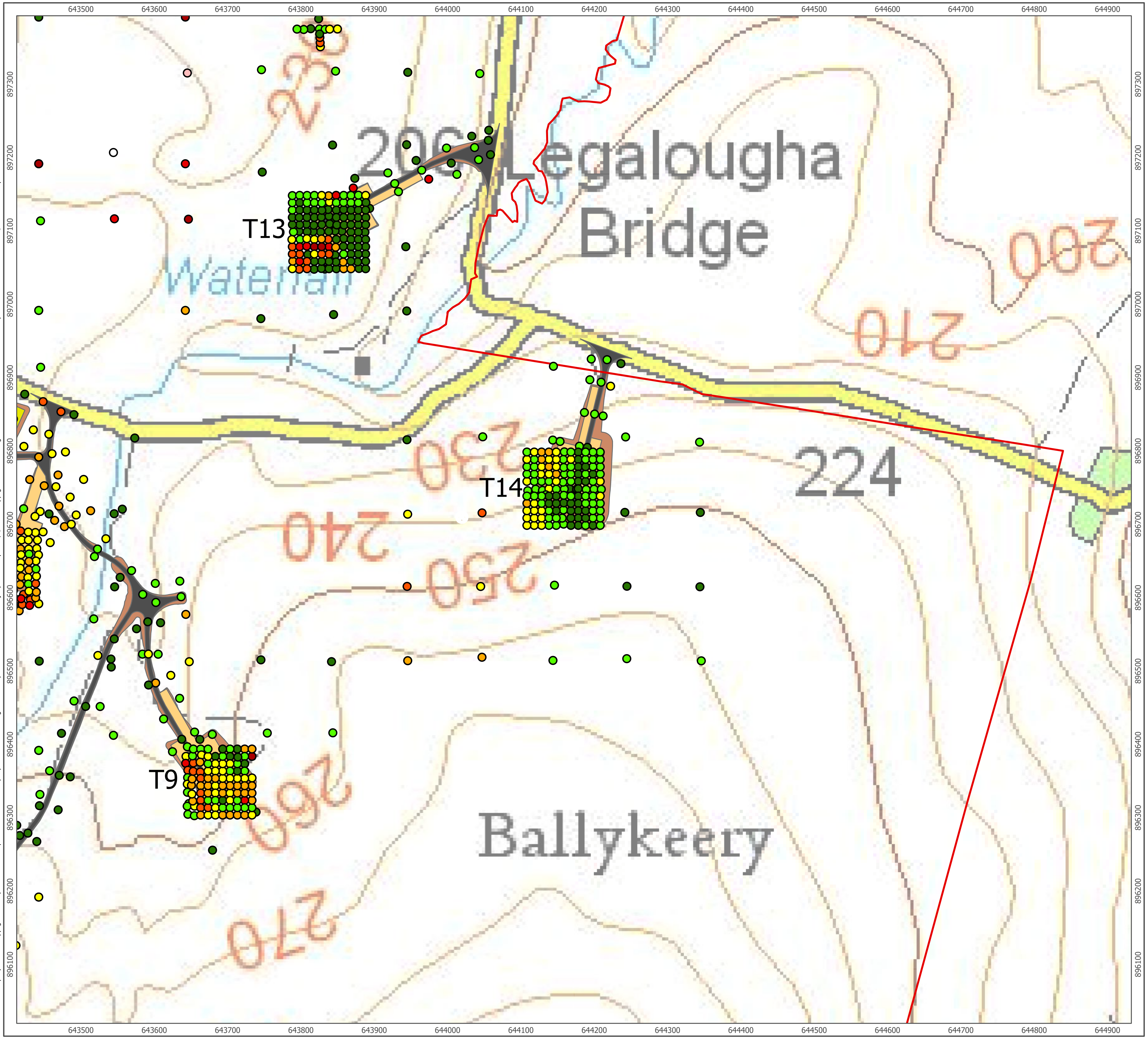
Produced By: CS	Ref: 4172-REP-021
Checked By: GH	Date: 17/03/2023

Recorded Peat Depths

Figure A9.1.2

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-021 Fig9.1.2 Recorded Peat Depths



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ARCUS

Peat Survey Area

Proposed Turbine Locations

Site Infrastructure

Infrastructure Type

Access Tracks

Construction Compound

Crane Hardstanding

Earthworks

Peat Probe Locations

Peat Depth (m)

0.00 - 0.50

0.51 - 1.00

1.01 - 1.50

1.51 - 2.00

2.01 - 2.50

2.51 - 3.00

3.01 - 3.50

3.51 - 4.00

4.01 +

1:5,000 Scale @ A3

0 0.1 0.2 km

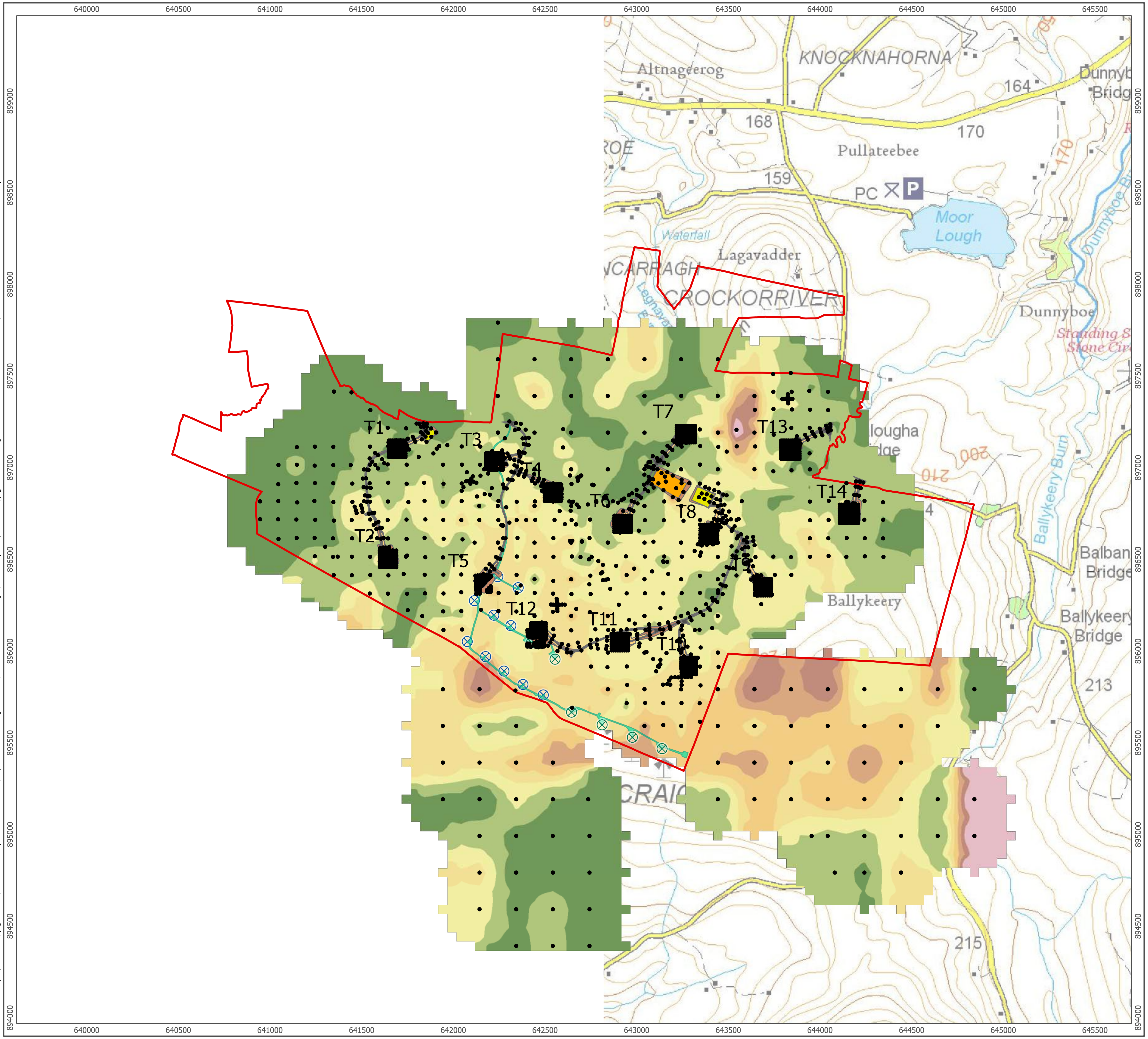
NORTH

Produced By: CS	Ref: 4172-REP-021
Checked By: GH	Date: 17/03/2023

Recorded Peat Depths

Figure A9.1.2

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment



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ARCUS

- Peat Survey Area
- Proposed Turbine Locations

Site Infrastructure
- Access Tracks
- Construction Compound
- Crane Hardstanding
- Earthworks
- Substation

Existing Wind Farm Infrastructure
- Operational Owenreagh I
- Operational Owenreagh II
- As Built Site Roads & Hardstands
- Peat Probe Locations

Peat Depths (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00

1:20,000 Scale @ A3

0 0.35 0.7 km

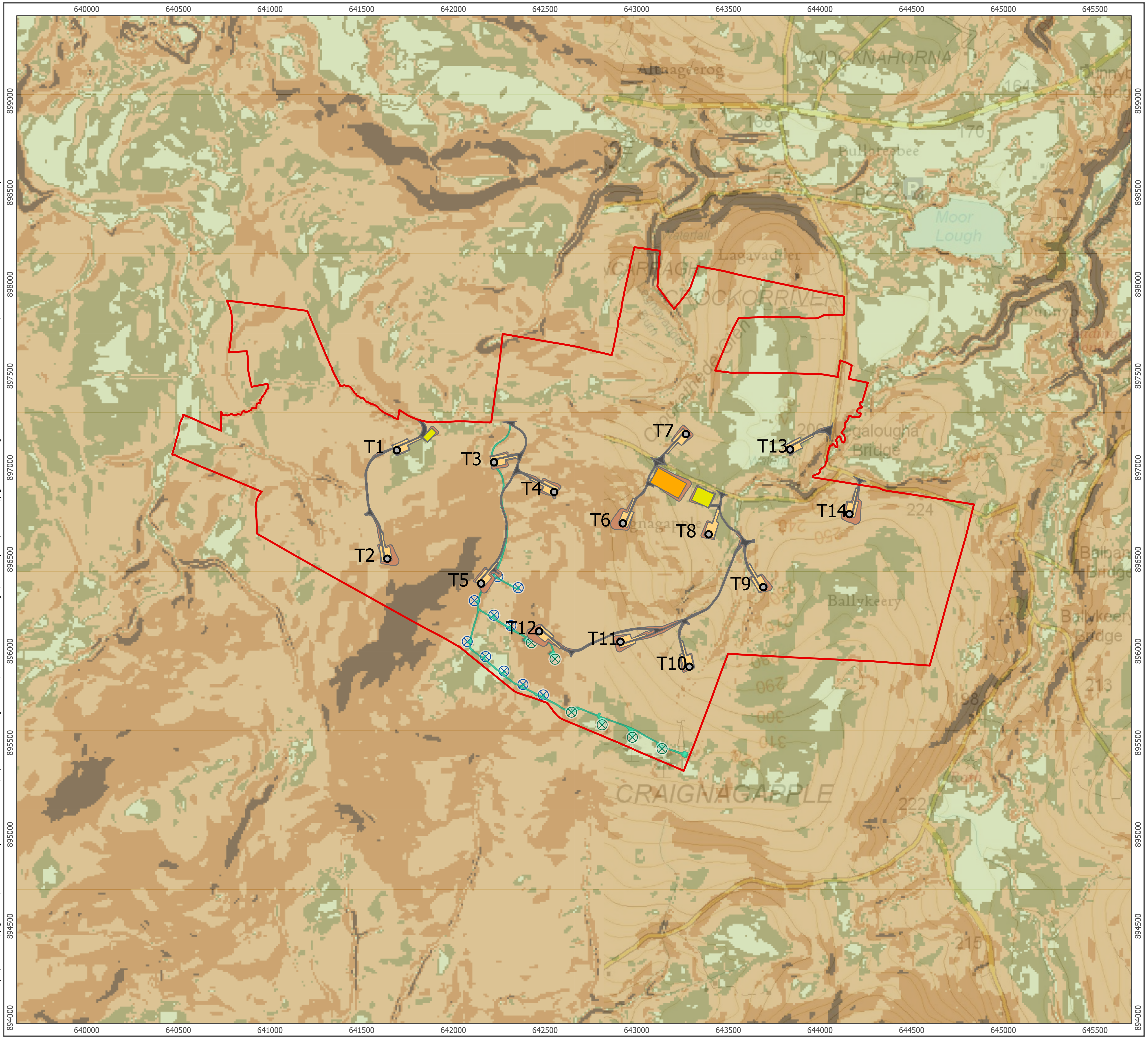
NORTH

Produced By: CS	Ref: 4172-REP-022
Checked By: GH	Date: 08/02/2023

Interpolated Peat Depths
Figure A9.1.3

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-022 Fig9.1.3 Interpolated Peat Depths



Ørsted

ARCUS

Peat Survey Area
Proposed Turbine Locations
Site Infrastructure
Access Tracks
Construction Compound
Crane Hardstanding
Earthworks
Substation
Existing Wind Farm Infrastructure
Operational Owenreagh I
Operational Owenreagh II
As Built Site Roads & Hardstands
Slope (degrees)
0 - 2
2 - 4
4 - 8
8 - 15
>15

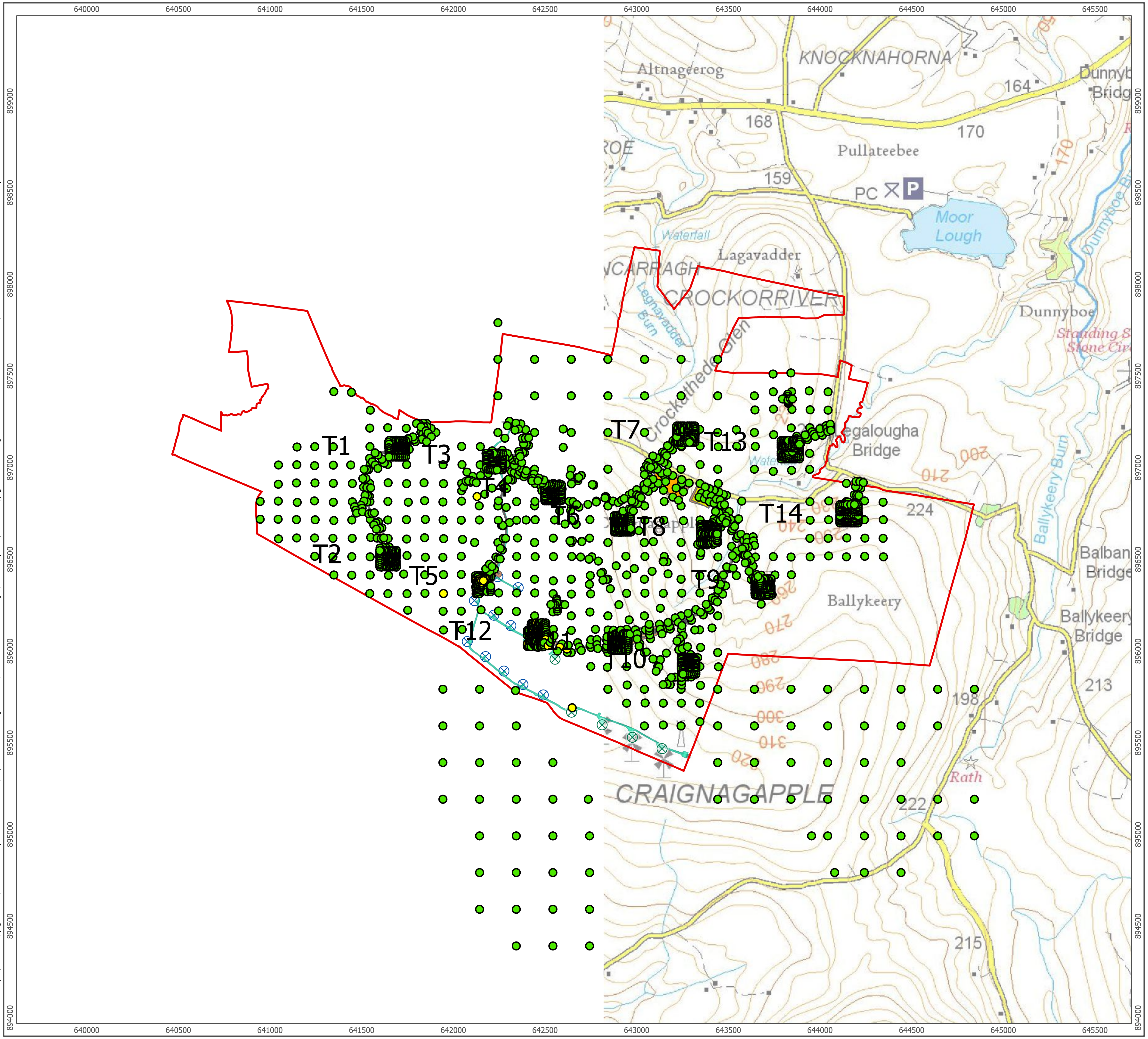
1:20,000 Scale @ A3
0 0.35 0.7 km
NORTH

Produced By: CS	Ref: 4172-REP-023
Checked By: GH	Date: 06/01/2023

Slope Map
Figure A9.1.4

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-023 Fig9.1.4 Slope Map



Ørsted

ARCUS

- Peat Survey Area
- Proposed Turbine Locations

Site Infrastructure

- Access Tracks
- Construction Compound
- Crane Hardstanding
- Earthworks
- Substation

Existing Wind Farm Infrastructure

- Operational Owenreagh I
- Operational Owenreagh II
- As Built Site Roads & Hardstands

Factor of Safety

- High Risk
- Medium Risk
- Low Risk

1:20,000 Scale @ A3

0 0.35 0.7 km

NORTH

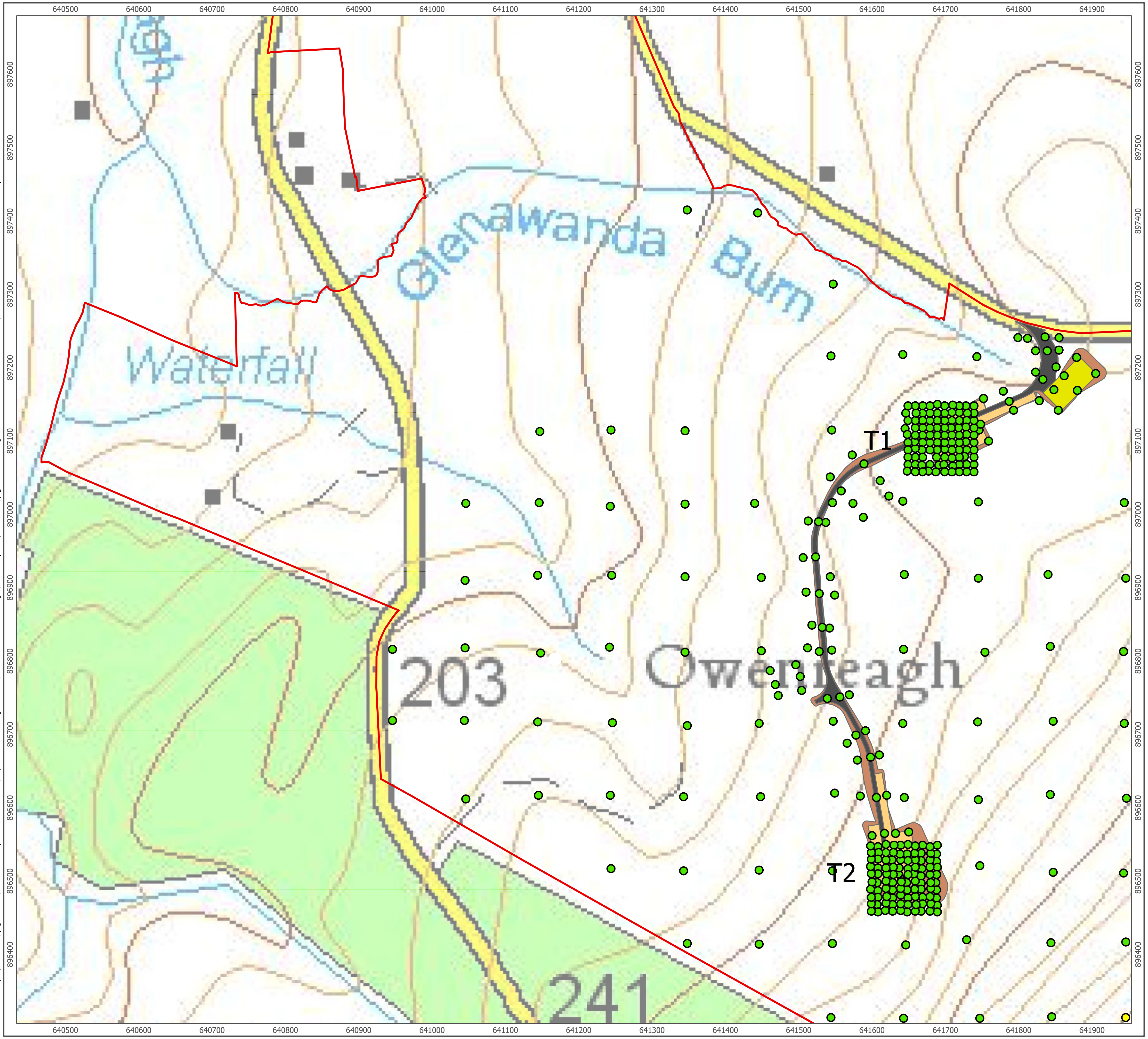
Produced By: CS	Ref: 4172-REP-024
Checked By: GH	Date: 17/03/2023

Factor of Safety Plan

Figure A9.1.5

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-024 Fig9.1.5 Factor of Safety Plan



Ørsted

ARCUS

Peat Survey Area

Proposed Turbine Locations

Site Infrastructure

Access Tracks

Construction Compound

Crane Hardstanding

Earthworks

Factor of Safety

High Risk

Medium Risk

Low Risk

1:5,000 Scale @ A3

0 0.1 0.2 km

NORTH

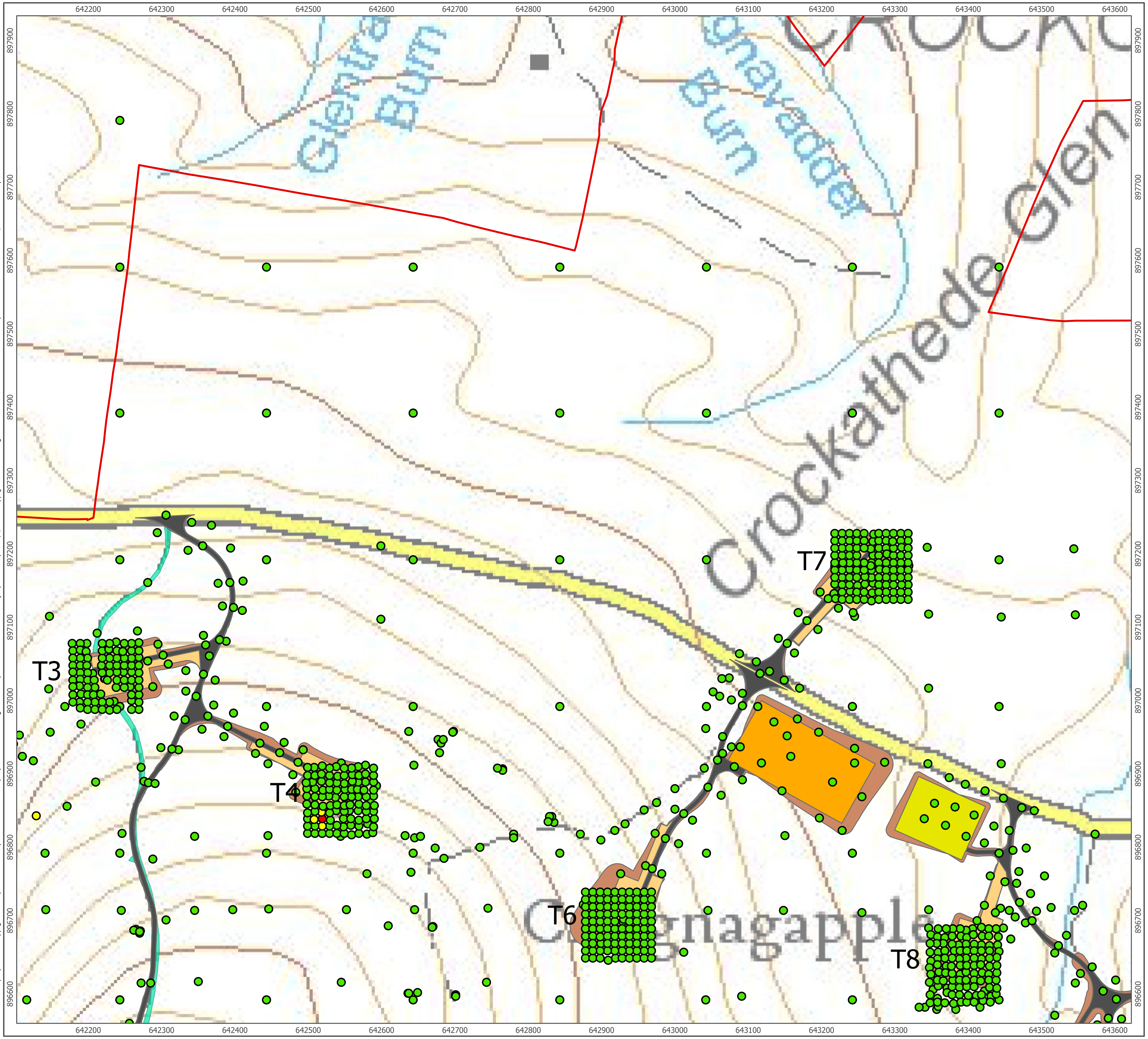
Produced By: CS	Ref: 4172-REP-024
Checked By: GH	Date: 17/03/2023

Factor of Safety Plan

Figure A9.1.5

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-024 Fig9.1.5 Factor of Safety Plan



Ørsted

ARCUS

Peat Survey Area
Proposed Turbine Locations
Site Infrastructure
Access Tracks
Construction Compound
Crane Hardstanding
Earthworks
Substation
As Built Site Roads & Hardstands
Factor of Safety
High Risk
Medium Risk
Low Risk

1:5,000 Scale @ A3
0 0.1 0.2 km
NORTH

Produced By: CS	Ref: 4172-REP-024
Checked By: GH	Date: 17/03/2023

Factor of Safety Plan
Figure A9.1.5

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

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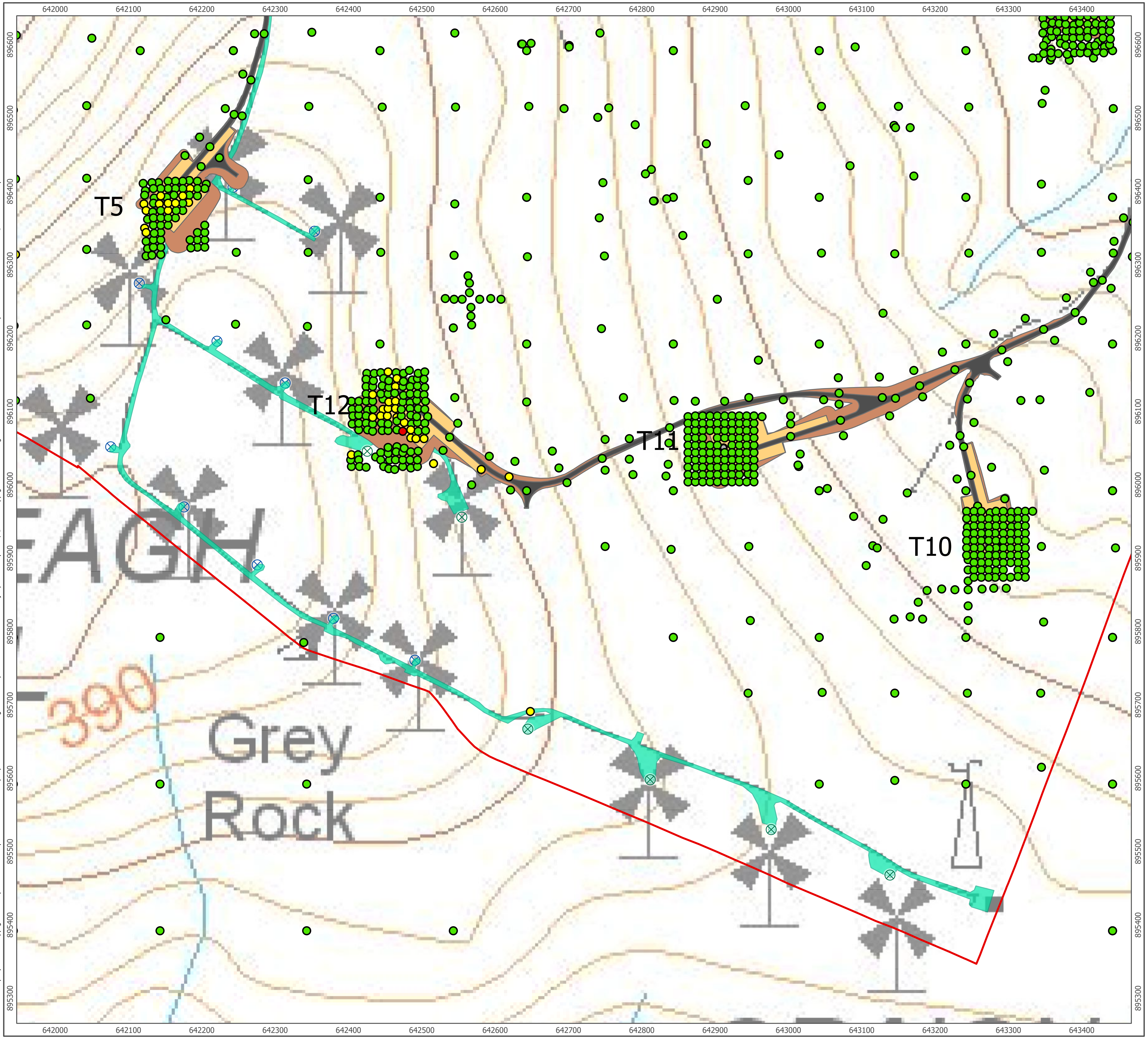


Ørsted
ARCUS

- Peat Survey Area
- Proposed Turbine Locations

Site Infrastructure
- Access Tracks
- Crane Hardstanding
- Earthworks

Existing Wind Farm Infrastructure
- Operational Owenreagh I
- Operational Owenreagh II
- As Built Site Roads & Hardstands

Factor of Safety
- High Risk
- Medium Risk
- Low Risk

1:5,000 Scale @ A3

0 0.1 0.2 km

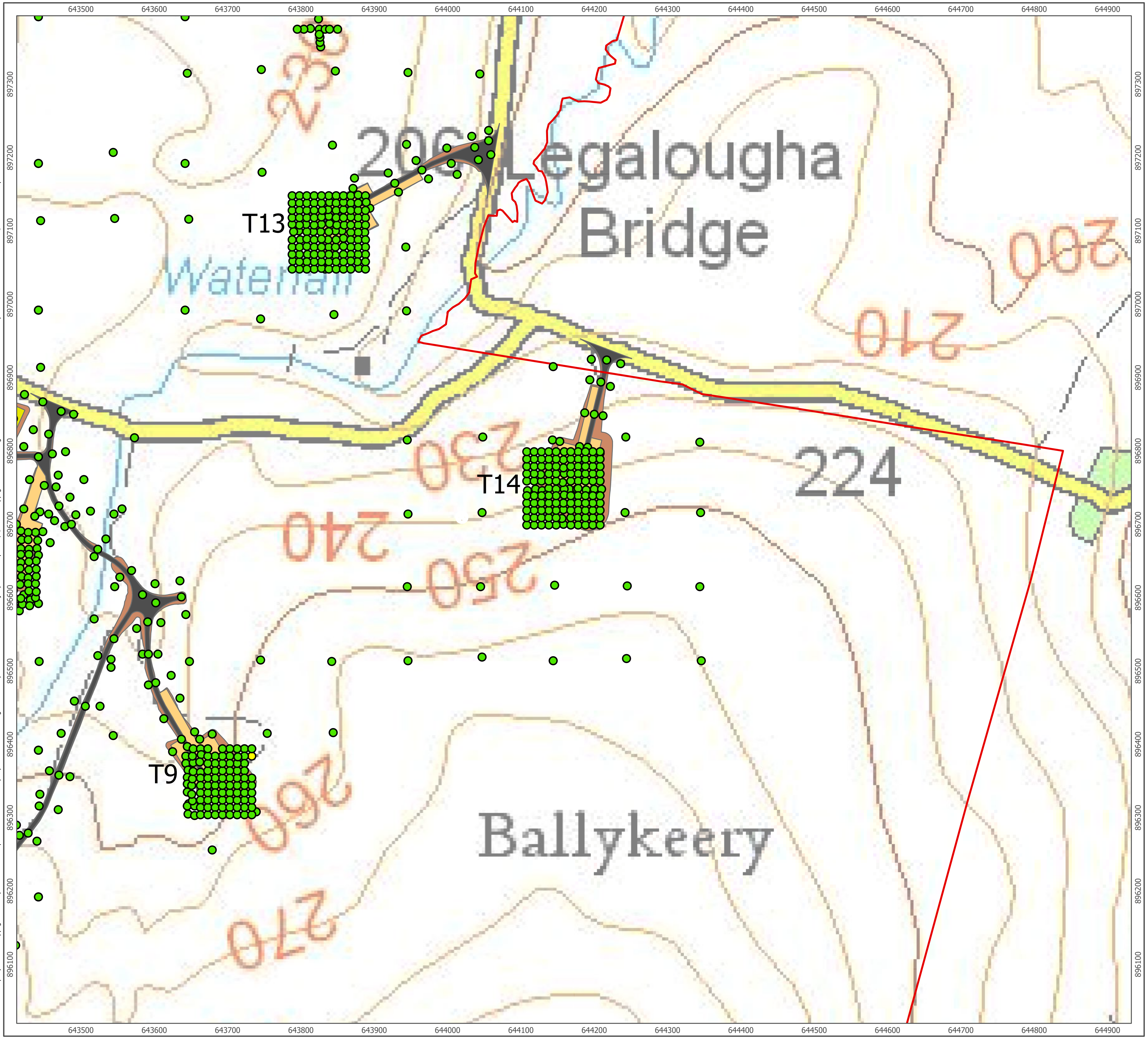
NORTH

Produced By: CS	Ref: 4172-REP-024
Checked By: GH	Date: 17/03/2023

Factor of Safety Plan
Figure A9.1.5

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-024 Fig9.1.5 Factor of Safety Plan



Ørsted

ARCUS

Peat Survey Area

Proposed Turbine Locations

Site Infrastructure

Access Tracks

Construction Compound

Crane Hardstanding

Earthworks

Factor of Safety

High Risk

Medium Risk

Low Risk

1:5,000 Scale @ A3

0 0.1 0.2 km

NORTH

Produced By: CS	Ref: 4172-REP-024
Checked By: GH	Date: 17/03/2023

Factor of Safety Plan
Figure A9.1.5

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

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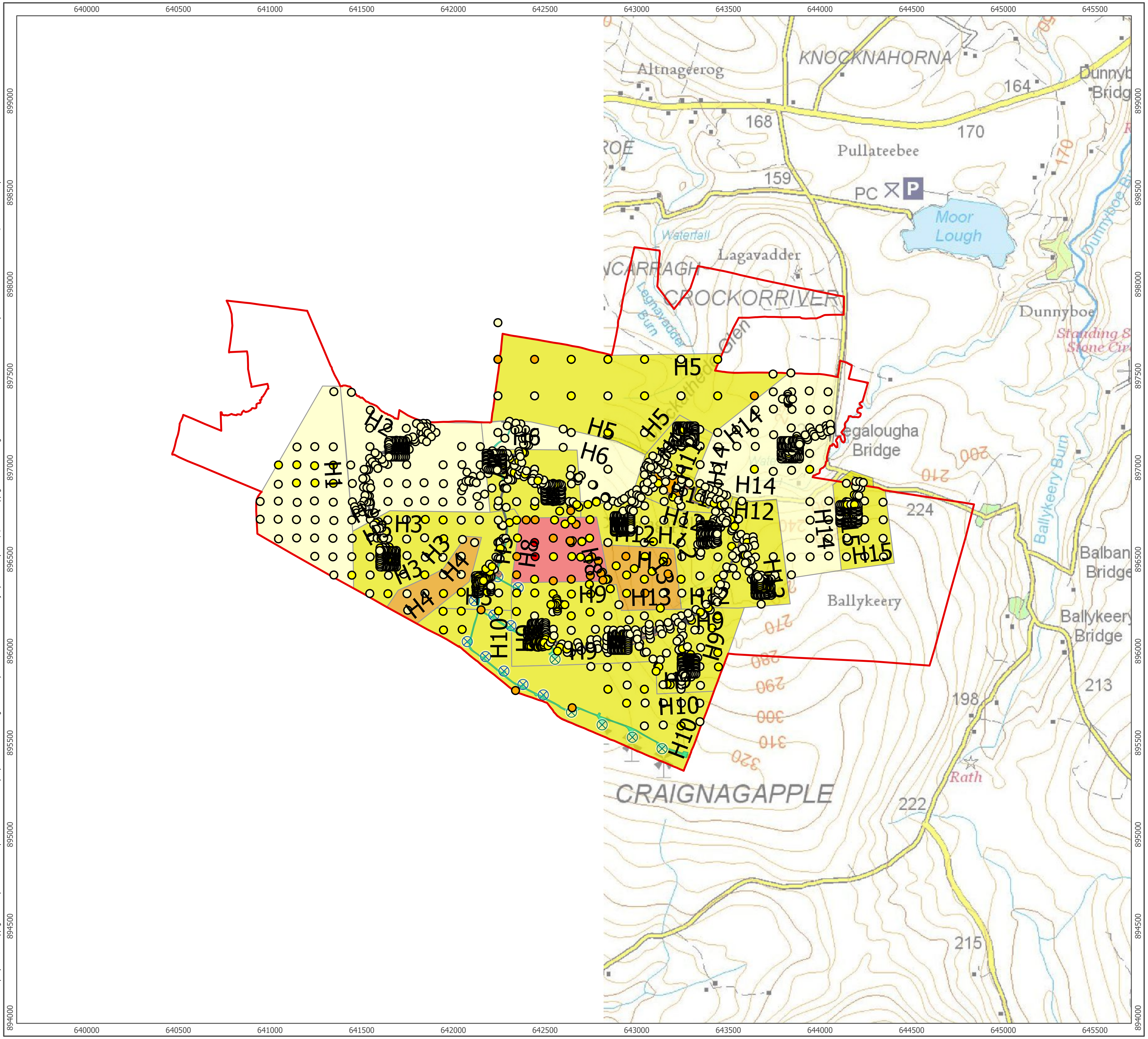
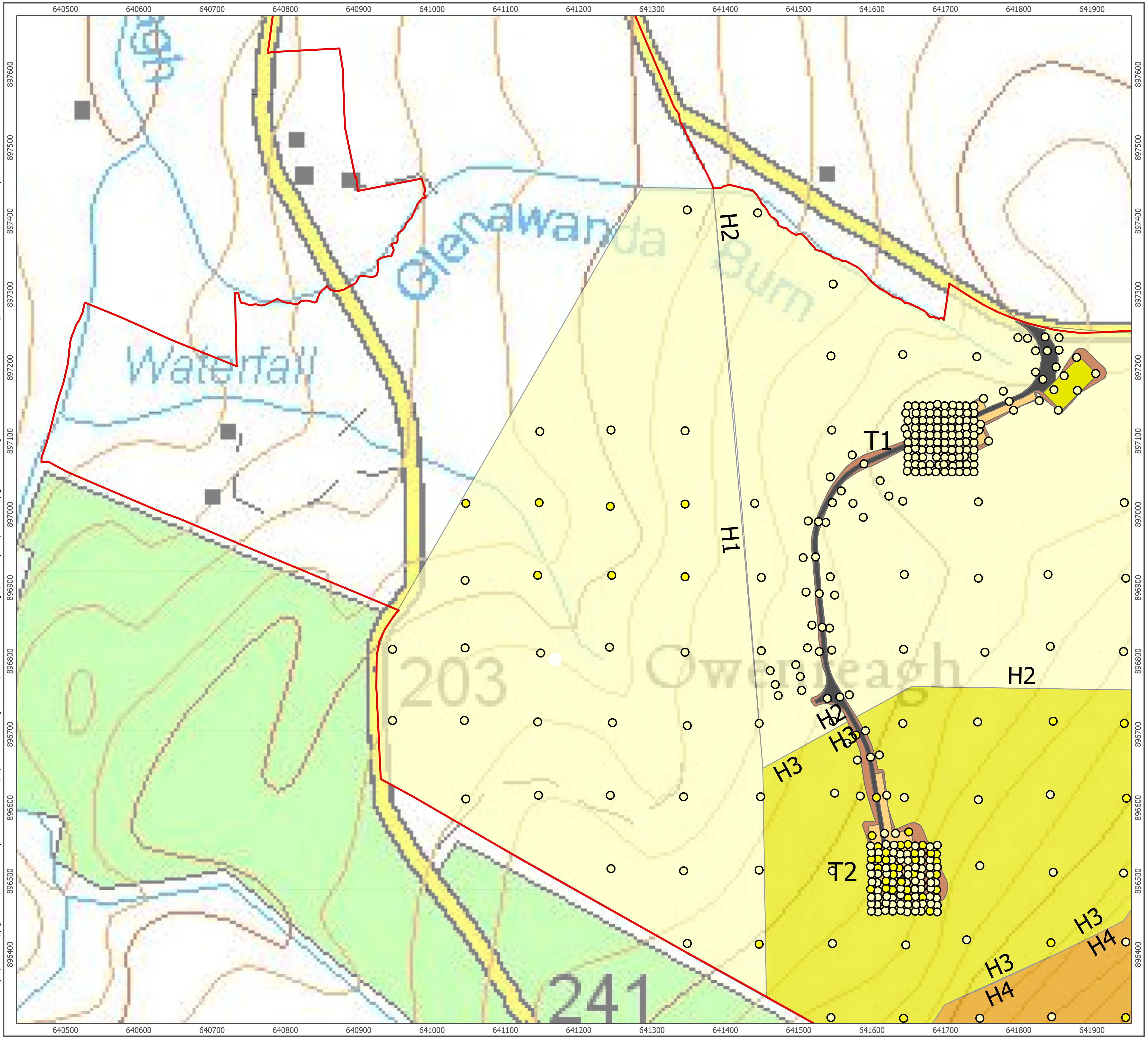


Produced By: CS | Ref: 4172-REP-025
Checked By: GH | Date: 13/04/2023

Hazard Rank Zonation Plan
Figure A9.1.6

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-025 Fig9.1.6 Hazard Ranking Zonation Plan



Ørsted
ARCUS

- Peat Survey Area
- Proposed Turbine Locations

Site Infrastructure
- Access Tracks
- Construction Compound
- Crane Hardstanding
- Earthworks

Hazard Rank Zones
- Negligible
- Low
- Medium
- High

Hazard Ranking
- Negligible
- Low
- Medium
- High

1:5,000 Scale @ A3

0 0.1 0.2 km

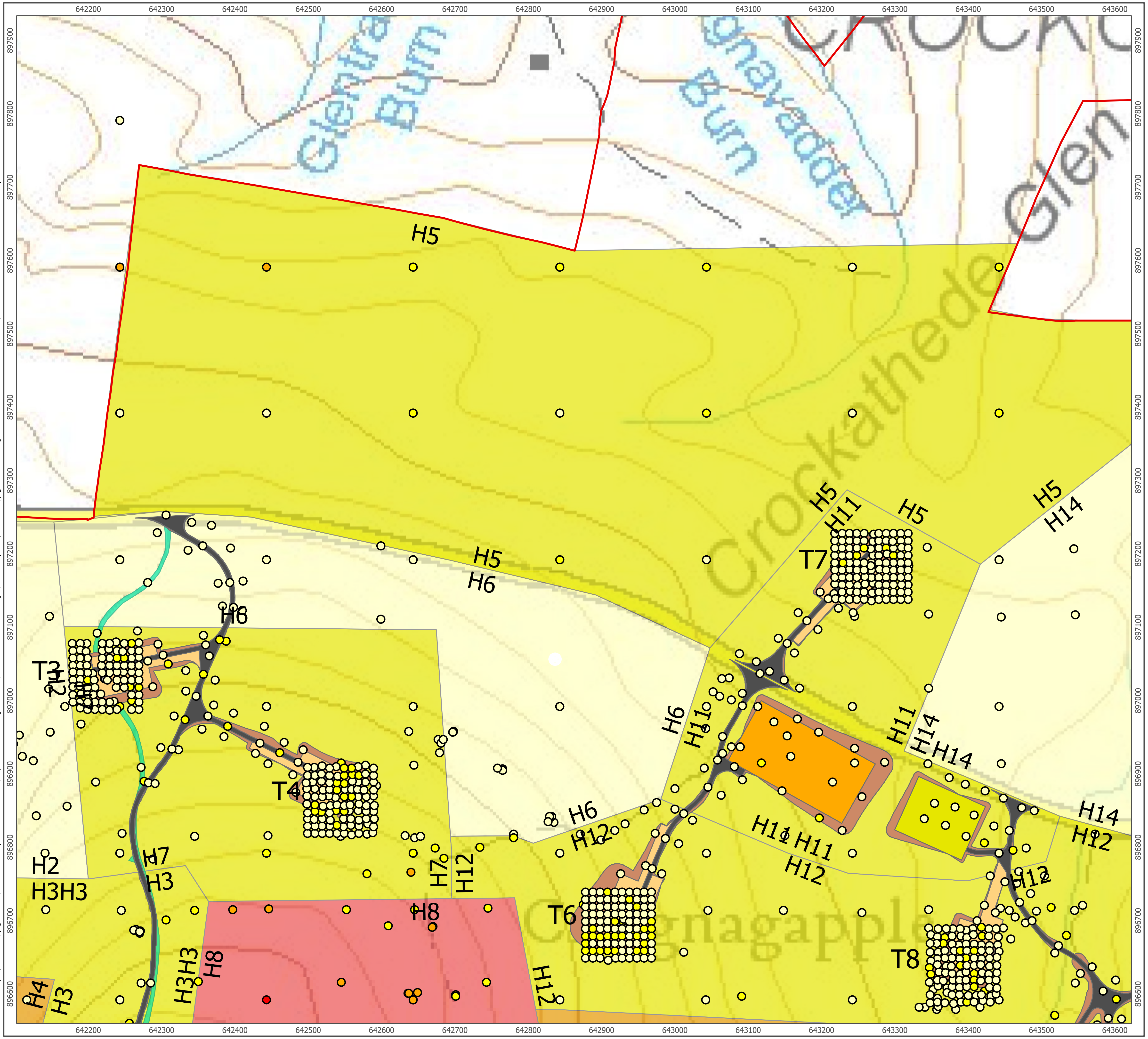
NORTH

Produced By: CS	Ref: 4172-REP-025
Checked By: GH	Date: 13/04/2023

Hazard Rank Zonation Plan
Figure A9.1.6

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-025 Fig9.1.6 Hazard Ranking Zonation Plan



Ørsted

ARCUS

Peat Survey Area

Proposed Turbine Locations

Site Infrastructure

- Access Tracks
- Construction Compound
- Crane Hardstanding
- Earthworks
- Substation
- As Built Site Roads & Hardstands

Hazard Rank Zones

- Negligible
- Low
- Medium
- High

Hazard Ranking

- Negligible
- Low
- Medium
- High

1:5,000 Scale @ A3

0 0.1 0.2 km

NORTH

Produced By: CS	Ref: 4172-REP-025
Checked By: GH	Date: 13/04/2023

Hazard Rank Zonation Plan

Figure A9.1.6

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

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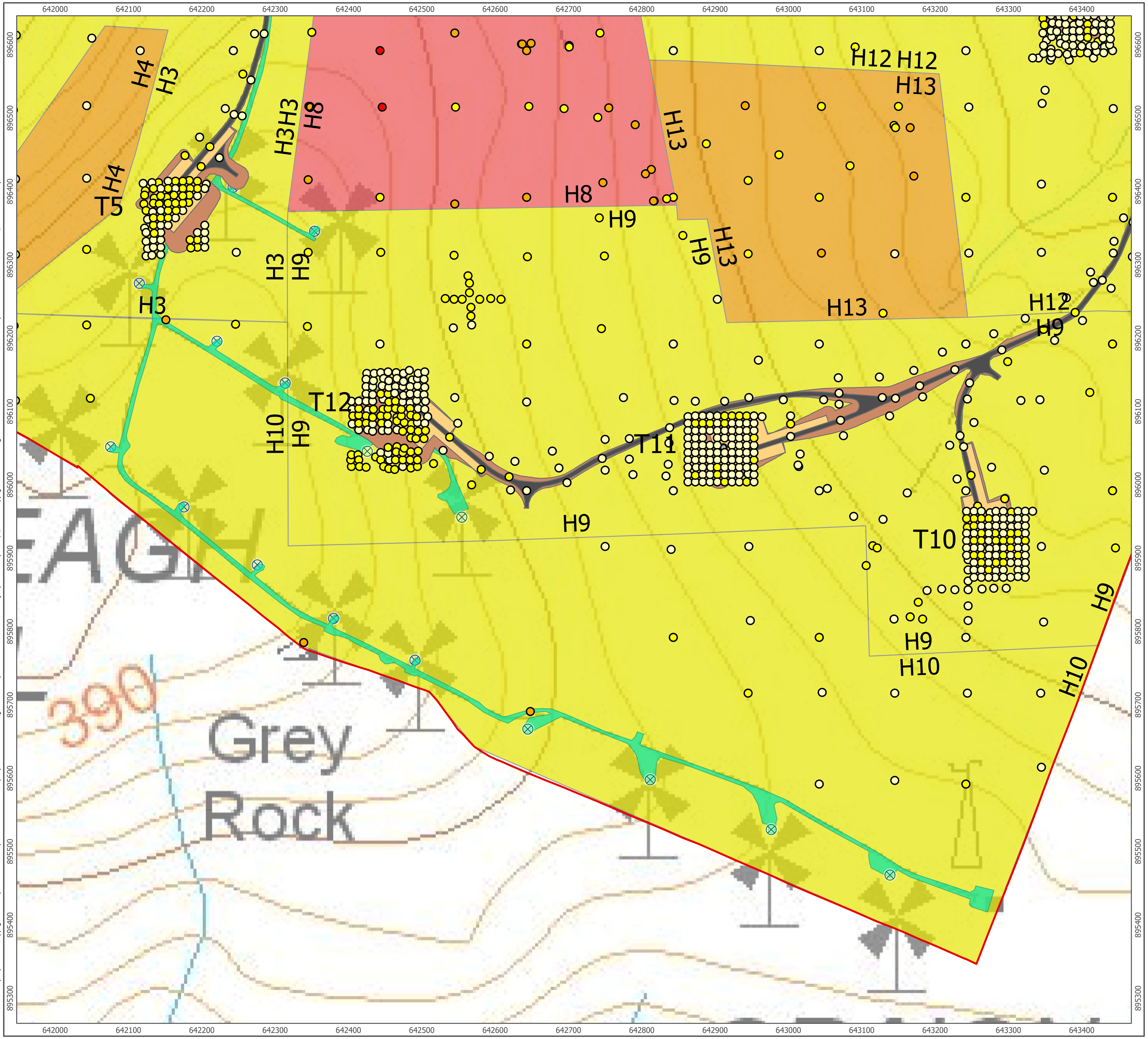


Ørsted

ARCUS

Peat Survey Area

Proposed Turbine Locations

Site Infrastructure

Access Tracks

Crane Hardstanding

Earthworks

Existing Wind Farm Infrastructure

Operational Owenreagh I

Operational Owenreagh II

As Built Site Roads & Hardstands

Hazard Rank Zones

Negligible

Low

Medium

High

Hazard Ranking

Negligible

Low

Medium

High

1:5,000 Scale @ A3

0 0.1 0.2 km

NORTH

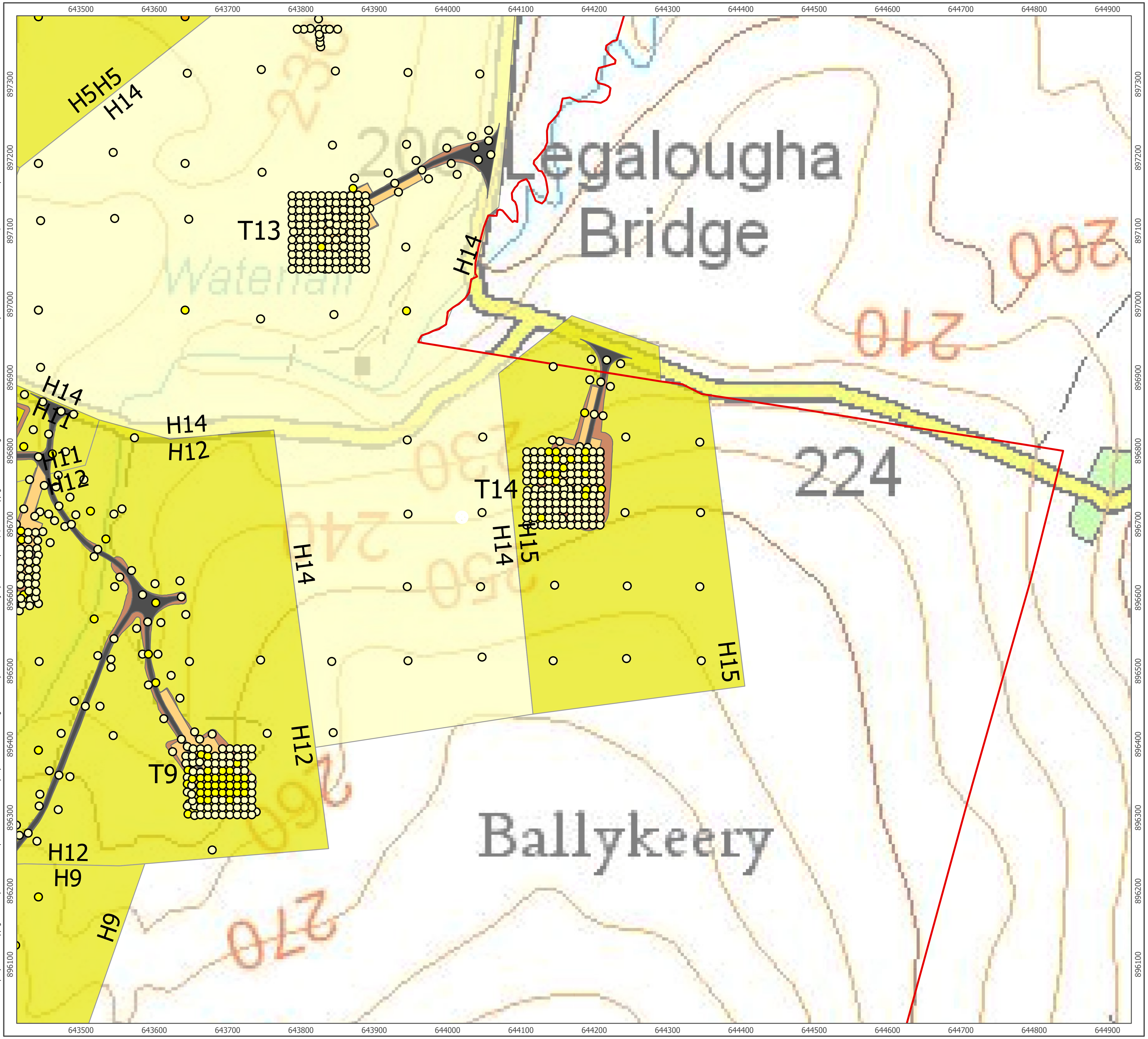
Produced By: CS	Ref: 4172-REP-025
Checked By: GH	Date: 13/04/2023

Hazard Rank Zonation Plan

Figure A9.1.6

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-025 Fig9.1.6 Hazard Ranking Zonation Plan



Peat Survey Area

Proposed Turbine Locations

Site Infrastructure

- Access Tracks
- Construction Compound
- Crane Hardstanding
- Earthworks

Hazard Rank Zones

- Negligible
- Low
- Medium
- High

Hazard Ranking

- Negligible
- Low
- Medium
- High

1:5,000 Scale @ A3

0 0.1 0.2 km

NORTH

Produced By: CS	Ref: 4172-REP-025
Checked By: GH	Date: 13/04/2023

Hazard Rank Zonation Plan

Figure A9.1.6

Owenreagh/Craignagapple Wind Farm
Technical Appendix A9.1:
Peat Slide Risk Assessment

Y:\GIS\Engineering\Projects\4172 Owenreagh Repowering\4172 Owenreagh Repowering.aprx\4172-REP-025 Fig9.1.6 Hazard Ranking Zonation Plan

APPENDIX B – PHOTOGRAPHS

06 September 2023

Photo 1: Taken from the west of the PSA facing east, showing the existing Owenreagh Wind farm and the 2022 peat slide.

Photo 2: Taken from the west of the PSA facing south.

Photo 3: Taken from the centre of the PSA facing north

Photo 4: Taken from the south of the PSA facing east, showing the existing Owenreagh Wind farm.

Photo 5: Taken from the south of the PSA facing north-east

Photo 6: Taken from the east of the PSA facing north

Photo 7: Taken from the east of the PSA facing south

Photo 8: Taken from the east of the PSA facing west

Photo 9: Taken from the north-east of the PSA facing south-west, showing the existing Owenreagh Wind farm

Photo 10: Taken from the north of the PSA facing south, showing the existing Owenreagh Wind farm.

APPENDIX C – PEAT CORING RECORDS

06 September 2023

Background

Peat cores were obtained from several locations at Owenreagh Wind farm during a survey in September 2022. The survey involved the collection of peat samples at a depth of 0.5 – 0.6 m below the surface level at each core location for laboratory assessment. During the data collection process, the peat located immediately below the sample was assessed in-situ using the methodology outlined in 'Peatland Survey. Guidance on Developments on Peatland' (2017)[18] in order to ascertain the characteristics of the peat present at the PSA.

The parameters used to determine the characteristics of the peat materials are outlined below.

i. Surface firmness estimation

An average man standing on one foot applies a pressure to the ground of between 5 and 6 lbs / p.s.i. and this fact is used to estimate the bearing capacity. The following symbols are used to denote the pressure the ground will stand.

Firmness of surface (P)

PO = Surface too soft to walk on

P1 = Surface just passable

P2 = Surface fairly firm

P3 = Surface firm

ii. Observations on the vegetation

The PSA is located within a rural landscape, mainly comprising blanket bog with occasional improved and semi-improved pastures along with areas of acid grasslands. The PSA has been extensively modified in the past as a result of various land management practices. Past land uses include drainage to facilitate agricultural grazing by both sheep and cattle, as well as peat cutting.

iii. Observations on the peat

a. Botanical observations

Botanical observations of peat samples identified that Carex species are likely to make up a significant proportion of the organic material in the lower horizons where catotelmic peat is typically found.

Further information on botanical observations is presented in **Chapter 10: Ecology** of the ES.

b. Degree of humification - von Post scale

The degree of humification of peat samples is estimated in the field according to the method devised by the Swedish botanist L. von Post by squeezing a small amount of peat in the hand and the water and / or peat exuded indicates, by its colour and consistency, the degree to which the peat has undergone humification or, more correctly, a type of decomposition which includes breakdown under anaerobic conditions. The von Post scale ranges from 1 to 10, the higher the number the higher the degree of humification. The full scale is as follows:

Von Post Scale (H)

[18] NatureScot and SEPA: Guidance on Developments on Peatland (2017) [online] available at: Guidance+on+developments+on+peatland+-+peatland+survey+-+2017.pdf (www.gov.scot) (accessed 13/12/2022)

H1	Completely undecomposed peat free of amorphous material. On squeezing, clear colourless water is pressed out.
H2	Nearly undecomposed peat, free of amorphous material, yielding only yellowish brown water on pressing.
H3	Very slightly decomposed peat, containing a little amorphous material. On squeezing, muddy brown water but no peat passes between the fingers. Residue is not pasty.
H4	Slightly decomposed peat containing some amorphous material. Strongly muddy brown water but no peat passes between the fingers. Residue is somewhat pasty.
H5	Moderately decomposed peat containing a fair amount of amorphous material. Plant structure recognisable though somewhat vague. On squeezing, some peat but mainly muddy water issues. Residue is strongly pasty.
H6	Moderately decomposed peat with a fair amount of amorphous material and indistinct plant structure. On pressing, about one third of the peat passes between the fingers. Residue is strongly pasty, but shows the plant structure more distinctly than in unsqueezed peat.
H7	Strongly decomposed peat with much amorphous material and faintly recognisable plant structure. On squeezing, about one half of the peat is extruded. The water is very dark in colour.
H8	Strongly decomposed peat with much amorphous material and very indistinct plant structure. On squeezing, two thirds of the peat and some water passes between the fingers. Residue consists of plant tissues capable of resisting decomposition (roots, fibres, wood, etc.).
H9	Practically fully decomposed peat with almost no recognisable plant structure. Nearly all the peat squeezed between the fingers as a uniform paste.
H10	Completely decomposed peat with no discernible plant structure. On squeezing, all the peat, without water, passes between the fingers.

iv. Fibre

The fibre content of each peat sample is estimated visually and the amounts of the two types (classified 'fine' or 'coarse') are noted on a scale ranging from 0 to 3 as shown below.

Fine fibres, mainly derived from *Eriophorum spp*. (F)

F0 = Nil

Fl = Low content

F2 = Moderate content

F3 = High content

Coarse fibres, mainly rootlets (R)

R0 = Nil

Rl = Low content

R2 = Moderate content

R3 = High content

v. Wood

Wood remains, especially if they are large and resistant, may conceivably cause a certain amount of difficulty during the exploitation of a bog. An attempt is therefore made when sampling to assess the extent of wood. It is estimated on a scale ranging from 0 to 3 as detailed below.

Wood remains (W)

W0= Nil

Wl = Low content

W2 = Moderate content

W3 = High content

vi. Other observations

When peat is freshly sampled and before it darkens by oxidation, note is taken of its colour, stratification, the presence of visible mineral matter and any other features of interest.

Photographs of the peat cores obtained from the PSA along with information relating to the parameters outlined above are presented below with a summary of the information gathered during the peat coring process presented Section 3.3 of the PSRA.

P1A

Surrounding Environment

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P1A GR: H 42887 95814	-	-	0.4	-	-	-	-	-	-

P1B

Core Samples	Surrounding Environment	
		

Location	Depth of peat (m)	Depth of core sample (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P1B GR: H 42892 95811	2	0.5	-	2	5/6	1	2	0	Dark Brown & Decomposing at 1m

P1C

Core Samples

Location	Depth of peat (m)	Depth of core sample (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P1C GR: H 42900 95806	1.8	0.5	-	3	2	3	3	2	Brown

P1D

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core sample (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P1D GR: H 42910 95806	1.8	0.5	-	3	3/4	1	3	1	Brown

P1E

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core sample (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P1E GR: H 42922 95805	2.1	0.5	-	2	5	2	2	0	Brown

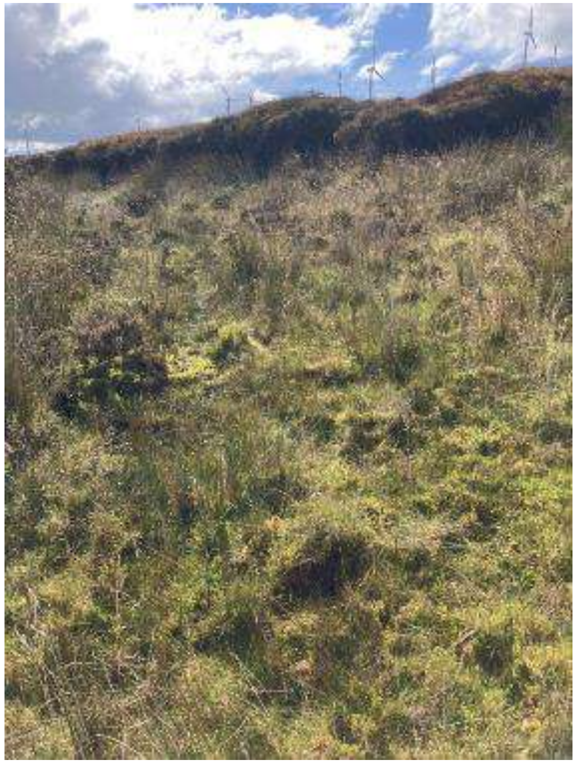
P1F

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P1F GR: H 42922 95805	2.1	0.5	-	2	5	2	2	1	Brown

P2A

Surrounding Environment



Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P2A GR: H 42728 96676	-	-	0.5	-	-	-	-	-	Agricultural track 3m wide

P2B

Core Samples	Surrounding Environment	
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P2B GR: H 42737 96677	2.6	0.5	-	2	4	2	0	1	Dark brown

P2C

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P2C GR: H 42744 96677	1.2	0.5	-	3	2	1	2	1	Dark brown

P2D

Core Samples	Detail
	

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P2D GR: H 42758 96678	1.4	0.5	-	3	3	3	1	1	Brown

P2E

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P2E GR: H 42768 96680	1.8	0.5	-	2	3	2	3	0	Brown

P2F

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P2F GR: H 42789 96683	1.1	-	0.4	3	3	2	3	0	Brown

P3A

Surrounding Environment

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P3A GR: H 43241 96925	-	-	0.5	-	-	-	-	-	-

P3B		
Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P3B GR: H 43238 96925	1	0.5	-	2	6	1	1	1	Brown

P3C

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P3C	1.1	0.5	-	2	7	2	3	1	Brown

GR: H 43231 96928									

P3D		
Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)

P3D GR: H 43225 96936	1	0.5	-	1	4	2	3	1	Dark brown

P3E

Core Samples	Surrounding Environment	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)

P3E GR: H 43217 96942	0.8	0.5	-	2	4	1	3	0	Dark brown

P3F

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P3F GR: H 43197 96963	0.7	0.5	-	2	5	3	3	1	Brown

P4A

Surrounding Environment

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P4A GR: H 42401 96472	-	-	1	-	-	-	-	-	-

P4B

Core Samples	Surrounding Environment
	

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P4B GR: H 42408 96470	1.5	0.5	-	2	5	2	3	0	Brown

P4C		
Core Samples	Detail	Surrounding Environment

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P4C GR: H 42417 96466	2	0.5	-	2	5	2	3	0	Brown

P4D

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P4D GR: H 42428 96461	2.2	0.5	-	2	5	3	2	0	Brown

P4E

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P4E GR: H 42440 96455	2.5	0.5	-	2	5	3	3	1	Brown

P4F

Core Samples	Detail	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P4F GR: H 42453 96447	2.3	0.5	-	2	6	2	2	0	Dark brown

B

Core Samples

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P5B GR: H 42624 95704	2.4	0.5		2	2	2	3	0	Brown

P5C – Core was not taken forP5C due to the presence of an underground cable at the sample location

P5D		
Core Samples	Surrounding Environment	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P5D GR: H 42632 95727	2.8	0.5	-	2	2/3	3	2	0	Dark brown

P5E		
Core Samples	Surrounding Environment	Surrounding Environment
		

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P5E GR: H 42637 95736	2.2	0.5	-	3	5	2	0	0	Dark brown

P5F

Core Samples

Surrounding Environment

Surrounding Environment

Location	Depth of peat (m)	Depth of core (m)	Depth of cutting/ditch/drain (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
P5F GR: H 42633 95753	2	0.5	-	3	5	2	2	0	Dark brown & position moved to avoid flush

APPENDIX D FACTOR OF SAFETY CALCULATIONS

06 September 2023

ID	X	Y	SLOPE	PEAT DEPTH	FoS	C'	GAMMA, γ	m, GW depth	Water unit weight, γw	z, peat depth	β, slope angle	cos2β	ϕ	tan ϕ	sin,β	cos,β	top line	bottom line
1	641943	895792	1.468866	1.5	14.693	5	10	0.90	9.98	1.50	1.4689	0.999342911380427	23	0.424475	0.025634	0.999671	5.647747	0.38438
2	641943	895592	10.58043	2	1.616	5	10	0.90	9.98	2.00	10.5804	0.966285308655786	23	0.424475	0.183616	0.982998	5.835093	3.609876
3	641943	895392	6.66178	2	2.540	5	10	0.90	9.98	2.00	6.6618	0.986542097075660	23	0.424475	0.116008	0.993248	5.8526	2.304499
4	641943	895192	6.0358	0.4	12.363	5	10	0.90	9.98	0.40	6.0358	0.988943509502905	23	0.424475	0.10515	0.994456	5.170935	0.418268
5	642243	897791	6.021505	0.01	479.691	5	10	0.90	9.98	0.01	6.0215	0.988995626447572	23	0.424475	0.104902	0.994483	5.004274	0.010432
6	642143	895792	1.938245	3.2	5.899	5	10	0.90	9.98	3.20	1.9382	0.998856051674771	23	0.424475	0.033822	0.999428	6.381187	1.081695
7	642143	895592	12.06006	0.9	2.921	5	10	0.90	9.98	0.90	12.0601	0.956345365764440	23	0.424475	0.208937	0.977929	5.371926	1.838929
8	642143	895392	7.3015	1.6	2.816	5	10	0.90	9.98	1.60	7.3015	0.983847985417364	23	0.424475	0.127091	0.991891	5.680217	2.01696
9	642143	895192	5.619205	0.01	513.544	5	10	0.90	9.98	0.01	5.6192	0.990412361960585	23	0.424475	0.097916	0.995195	5.00428	0.009745
10	642143	894992	10.1931	0.8	3.829	5	10	0.90	9.98	0.80	10.1931	0.968682958888646	23	0.424475	0.176966	0.984217	5.334866	1.393385
11	642143	894792	6.702015	1.6	3.064	5	10	0.90	9.98	1.60	6.7020	0.986379787702201	23	0.424475	0.116706	0.993167	5.681968	1.854531
12	642143	894592	6.595573	1.2	4.025	5	10	0.90	9.98	1.20	6.5956	0.986807089320010	23	0.424475	0.11486	0.993382	5.511697	1.369203
13	642243	897591	7.048215	0.6	7.193	5	10	0.90	9.98	0.60	7.0482	0.984943596314083	23	0.424475	0.122705	0.992443	5.255366	0.730664
14	642243	897392	2.992048	0.7	14.530	5	10	0.90	9.98	0.70	2.9920	0.997275435884409	23	0.424475	0.052197	0.998637	5.301657	0.364883
15	642243	897192	10.13187	0.7	4.367	5	10	0.90	9.98	0.70	10.1319	0.969054153612253	23	0.424475	0.175914	0.984405	5.29312	1.212197
16	642243	896992	7.188188	0.01	403.097	5	10	0.90	9.98	0.01	7.1882	0.984342808879065	23	0.424475	0.125129	0.992141	5.004253	0.012415
17	642243	896792	8.806339	1.1	3.283	5	10	0.90	9.98	1.10	8.8063	0.976561869106678	23	0.424475	0.153095	0.988211	5.464186	1.664194
18	642243	896592	9.746704	2	1.750	5	10	0.90	9.98	2.00	9.7467	0.971339945017404	23	0.424475	0.169293	0.985566	5.839462	3.336984
19	642339	895785	9.615618	2.2	1.635	5	10	0.90	9.98	2.20	9.6156	0.972098470666552	23	0.424475	0.167038	0.985951	5.924129	3.623196
20	642343	895592	9.858289	0.8	3.954	5	10	0.90	9.98	0.80	9.8583	0.970686485015964	23	0.424475	0.171212	0.985234	5.335559	1.349471
21	642343	895392	5.464155	2.1	2.964	5	10	0.90	9.98	2.10	5.4642	0.990932580131358	23	0.424475	0.095223	0.995456	5.899214	1.990596
22	642343	895192	6.013287	1.1	4.773	5	10	0.90	9.98	1.10	6.0133	0.989025532649674	23	0.424475	0.104759	0.994498	5.47011	1.146009
23	642343	894992	6.591835	0.4	11.335	5	10	0.90	9.98	0.40	6.5918	0.986821973064265	23	0.424475	0.114796	0.993389	5.170568	0.456147
24	642343	894792	6.906829	0.2	21.298	5	10	0.90	9.98	0.20	6.9068	0.985538695705978	23	0.424475	0.120255	0.992743	5.085173	0.238765
25	642343	894592	7.226383	0.4	10.358	5	10	0.90	9.98	0.40	7.2264	0.984176860922900	23	0.424475	0.12579	0.992057	5.170111	0.499164
26	642343	894392	5.554377	0.4	13.420	5	10	0.90	9.98	0.40	5.5544	0.990631618927052	23	0.424475	0.09679	0.995305	5.171227	0.385344
27	643442	897591	8.143805	1	3.868	5	10	0.90	9.98	1.00	8.1438	0.979932981334515	23	0.424475	0.141658	0.989916	5.423444	1.402296
28	642443	897392	3.234829	1.9	5.436	5	10	0.90	9.98	1.90	3.2348	0.996815832565587	23	0.424475	0.056428	0.998407	5.818405	1.070432
29	642443	897192	7.700577	1	4.085	5	10	0.90	9.98	1.00	7.7006	0.982045027723179	23	0.424475	0.133996	0.990982	5.424357	1.327878
30	642443	896992	10.98938	0.5	5.566	5	10	0.90	9.98	0.50	10.9894	0.963661330245379	23	0.424475	0.190627	0.981663	5.208206	0.935657
31	642443	896792	8.734171	1.8	2.132	5	10	0.90	9.98	1.80	8.7342	0.976941478018425	23	0.424475	0.15185	0.988403	5.759873	2.701609
32	642443	896592	4.039472	1.6	5.059	5	10	0.90	9.98	1.60	4.0395	0.995037685787822	23	0.424475	0.070444	0.997516	5.687954	1.124299
33	642443	896392	10.00435	0.5	6.090	5	10	0.90	9.98	0.50	10.0044	0.969820338183950	23	0.424475	0.173723	0.984795	5.209537	0.855407
34	642443	896192	14.8102	0.8	2.693	5	10	0.90	9.98	0.80	14.8102	0.934659503896859	23	0.424475	0.255618	0.966778	5.323105	1.977006
35	642643	895992	5.621185	2.1	2.882	5	10	0.90	9.98	2.10	5.6212	0.990405625807961	23	0.424475	0.097951	0.995191	5.898736	2.047077
36	642543	895392	3.521754	2.6	3.839	5	10	0.90	9.98	2.60	3.5218	0.996226661522193	23	0.424475	0.061428	0.998112	6.119261	1.594099
37	642543	895192	9.639692	0.5	6.312	5	10	0.90	9.98	0.50	9.6397	0.971959907603858	23	0.424475	0.167452	0.98588	5.209999	0.825437
38	642543	894992	9.084085	0.1	32.341	5	10	0.90	9.98	0.10	9.0841	0.975072709467079	23	0.424475	0.157884	0.987458	5.042134	0.155904
39	642543	894792	7.168806	0.2	20.535	5	10	0.90	9.98	0.20	7.1688	0.984426689663693	23	0.424475	0.124793	0.992183	5.085077	0.247635
40	642543	894592	4.408835	0.8	8.715	5	10	0.90	9.98	0.80	4.4088	0.994090576834573	23	0.424475	0.076873	0.997041	5.343649	0.613162
41	642543	894392	5.580917	0.7	7.822	5	10	0.90	9.98	0.70	5.5809	0.990542160775144	23	0.424475	0.097251	0.99526	5.29962	0.677533
42	642643	897591	8.311022	0.4	9.035	5	10	0.90	9.98	0.40	8.3110	0.979106293844397	23	0.424475	0.144547	0.989498	5.169235	0.572114
43	642643	897392	3.731026	0.3	26.329	5	10	0.90	9.98	0.30	3.7310	0.995765546849391	23	0.424475	0.065073	0.997881	5.129086	0.194804
44	642643	897192	7.213224	0.01	401.727	5	10	0.90	9.98	0.01	7.2132	0.984234130762238	23	0.424475	0.125562	0.992086	5.004253	0.012457
45	642643	896992	11.41519	1.5	1.932	5	10	0.90	9.98	1.50	11.4152	0.960828774611131	23	0.424475	0.197917	0.980219	5.622783	2.910032
46	642643	896792	12.39431	0.6	4.172	5	10	0.90	9.98	0.60	12.3943	0.953930385778576	23	0.424475	0.214638	0.976694	5.247325	1.257815
47	642643	896592	5.731616	2.1	2.827	5	10	0.90	9.98	2.10	5.7316	0.990026220881361	23	0.424475	0.099869	0.995001	5.898392	2.08676
48	642643	896392	5.760217	2.4	2.515	5	10	0.90	9.98	2.40	5.7602	0.989926769803582	23	0.424475	0.100365	0.994951	6.02663	2.396609
49	642643	896192	6.130432	2.3	2.450	5	10	0.90	9.98	2.30	6.1304	0.988595428671030	23	0.424475	0.106792	0.994281	5.982531	2.442174
50	642843	895992	6.858306	1.3	3.603	5	10	0.90	9.98	1.30	6.8583	0.985740205854956	23	0.424475	0.119414	0.992845	5.55374	1.541279
51	642843	895792	4.898921	2.3	3.059	5	10	0.90	9.98	2.30	4.8989	0.992707154295028	23	0.424475	0.085398	0.996347	5.986617	1.956982
52	647708	895392	12.18707	1	2.623	5	10	0.90	9.98	1.00	12.1871	0.955435009740786	23	0.424475	0.211104	0.977464	5.412858	2.063467
53	642736	895192	8.883017	0.4	8.470	5	10	0.90	9.98	0.40	8.8830	0.976155223634377	23	0.424475	0.154418	0.988006	5.168725	0.610262
54	642743	894992	9.933337	0.1	29.673	5	10	0.90	9.98	0.10	9.9333	0.970242974586161	23	0.424475	0.172502	0.985009	5.041926	0.169916
55	642743	894792	6.499018	0.01	444.986	5	10	0.90	9.98	0.01	6.4990	0.987188887572492	23	0.424475	0.113186	0.993574	5.004266	0.011246
56	642743	894592	6.502338	0.01	444.763	5	10	0.90	9.98	0.01	6.5023	0.987175851462928	23	0.424475	0.113244	0.993567	5.004266	0.011252
57	642743	894392	15.75454	0.01	191.492	5	10	0.90	9.98	0.01	15.7545	0.926278675109666	23	0.424475	0.271517	0.962434	5.004003	0.026132
58	642843	897591	7.034045	0.9	4.921	5	10	0.90	9.98	0.90	7.0340	0.985003771241311	23	0.424475	0.122459	0.992474	5.383072	1.093887
59	642843	897392	3.921019	0.9	8.774	5	10	0.90	9.98	0.90	3.9210	0.995323999545591	23	0.424475	0.068381	0.997659	5.387085	0.613991
60	642843	897192	6.046936	0.1	48.137	5	10	0.90	9.98	0.10	6.0469	0.988902825331509	23	0.424475	0.105343	0.994436	5.042732	0.104757
61	642843	896992	7.570044	0.8	5.111	5	10	0.90	9.98	0.80	7.5700	0.982645064008012	23	0.424475	0.131738	0.991285	5.339693	1.04472
62	642843	896792	11.19379	0.5	5.469	5	10	0.90	9.98	0.50	11.1938	0.962314308237289	23	0.424475	0.194128	0.980976	5.207915	0.952175
63	642843	896592	9.566292	1	3.307	5	10	0.90	9.98	1.00	9.5663	0.972381335584513	23	0.424475	0.166189	0.986094	5.420181	1.638776
64	642843	896392	7.950406	1.1	3.628	5	10	0.90	9.98	1.10	7.9504	0.980868713441220	23	0.424475	0.138316	0.990388	5.466233	1.506851
65	642843	896192	6.282969	2.3	2.391	5	10	0.90	9.98	2.30	6.2830	0.988023137167165	23	0.424475	0.109439	0.993994	5.981962	2.501975
66	643042	895992	6.07843	1.5	3.572	5	10	0.90	9.98	1.50	6.0784	0.988787365530503	23	0.424475	0.10589	0.994378	5.640905	1.579416
67	643042	895792	6.502746	1.9	2.718	5	10	0.90	9.98	1.90	6.5027	0.987174248983555	23	0.424475	0.113251	0.993566	5.810489	2.137922
68	643042	895592	2.99329	2.7	4.378	5	10	0.90	9.98	2.70	2.9933	0.997273175538860	23	0.424475	0.052219	0.998636	6.16353	1.40799
69	643043	897591	5.396282	2	3.128	5	10	0.90	9.98	2.00	5.3963	0.991155780652903	23	0.424475	0.094044	0.995568	5.856587	1.872538
70	643043	897392	6.218982	0.4	12.004	5	10	0.90	9.98	0.40	6.2190	0.988264890504067	23	0.424475	0.108329	0.994115	5.170818	0.430765
71	643043	897192	6.60426	0.6	7.667	5	10	0.90	9.98	0.60	6.6043	0.986772467933114	23	0.424475	0.115011	0.993364	5.25584	0.685487
72	643043	896992	4.408712	0.6	11.433	5	10	0.90	9.98	0.60	4.4087	0.994090905907375	23	0.424475	0.076871	0.997041	5.257737	0.459859
73	643043	896792	8.31736	0.3	11.940	5	10	0.90	9.98	0.30	8.3174	0.979074638783594	23	0.424475	0.144656	0.989482	5.126922	0.429404
74	643042	896592	7.737256	1.6	2.661	5	10	0.90	9.98	1.60	7.7373	0.981874619360509	23	0.424475	0.134631	0.990896	5.678853	2.134477
75	643042	896392	5.767446	1.6	3.553	5	10	0.90	9.98	1.60	5.7674	0.989901555890668	23	0.424475	0.100491	0.994938	5.684403	1.599717
76	643042	896192	8.276393	1.6	2.491	5	10	0.90	9.98	1.60	8.2764	0.979278833819912	23	0.424475	0.143948	0.989585	5.677058	2.279189
77	643242	895992	4.449146	0.8	8.637	5	10	0.90	9.98	0.80	4.4491	0.993982238640813	23	0.424475	0.077574	0.996987	5.343612	0.618724
78	643242	895792	9.693633	1.8	1.927	5	10	0.90	9.98	1.80	9.6936	0.971648228769310	23	0.424475	0.16838	0.985722	5.755755	2.987563
79	643242	895592	5.957199	1.8	3.105	5	10	0.90	9.98	1.80	5.9572	0.989228568320242	23	0.424475	0.103786	0.9946	5.76943	1.858051
80	643242	897392	5.658572	0.01	510.017	5	10	0.90	9.98	0.01	5.6586	0.990277991895745	23	0.424475	0.0986	0.995127	5.004279	0.009812
81	643242	897192	4.174606	1.1	6.853	5	10	0.90	9.98	1.10	4.1746	0.994700717446065	23	0.424475	0.072796	0.997347	5.472808	0.798633
82	643242	896992	2.807713	1	11.101	5	10	0.90	9.98	1.00	2.8077	0.997600545614615	23	0.424475	0.048984	0.9988	5.431079	0.489254
83	643242	896792	4.470191	1.8	4.128	5	10	0.90	9.98	1.80	4.4702	0.993925290347230	23	0.424475	0.07794	0.996958	5.773083	1.39866
84	643242	896592	6.445235	1	4.865	5	10	0.90	9.98	1.00	6.4452	0.987399156935928	23	0.424475	0.112253	0.99368	5.42667	1.11544
85	643242	896392	5.878856	1.4	3.925	5	10	0.90	9.98	1.40	5.8789	0.989509026739302	23	0.424475	0.102425	0.994741	5.598615	1.426415
86	643242	896192	7.839496	1	4.014	5	10	0.90	9.98	1.00	7.8395	0.981395449869624	23	0.424475	0.136398	0.990654	5.424076	1.351237
87	643442	895992	9.194921	1.7	2.132	5	10	0.90	9.98	1.70	9.1949	0.974465979160809	23	0.424475	0.159794	0.98715	5.715839	2.681587
88	643442	895792	4.86035	2	3.469	5	10	0.90	9.98	2.00	4.8604	0.992821266192895	23	0.424475	0.084727	0.996404	5.858027	1.688455
89	643442	895592	4.859072	2.3	3.084	5	10	0.90	9.98	2.30	4.8591	0.992825031853067	23	0.424475	0.084705	0.996406	5.986734	1.941217
90	643442	895392	3.895663	2.5	3.585	5	10	0.90	9.98	2.50	3.8957	0.995384187539682	23	0.424475	0.06794	0.997689	6.075302	1.69457
91	643442	895192	7.964808	0.6	6.381	5	10	0.90	9.98	0.60	7.9648	0.980799786228136	23	0.424475	0.138565	0.990353	5.254291	0.823369
92	643242	897591	6.300332	0.01	458.782	5	10	0.90	9.98	0.01	6.3003	0.987957116907096	23	0.424475	0.10974	0.99396	5.004269	0.010908
93	643442	897392	4.500755	0.01	639.688	5	10	0.90	9.98	0.01	4.5008	0.993842108752226	23	0.424475	0.078472	0.996916	5.004295	0.007823
94	643442	897192	3.346682	2.9	3.697	5	10	0.90	9.98	2.90	3.3467	0.996592077843813	23	0.424475	0.058377	0.998295	6.248864	1.690058
95	643442	896992	3.28877	0.01	873.750	5	10	0.90	9.98	0.01	3.2888	0.996708872374120	23	0.424475	0.057368	0.998353	5.004307	0.005727
96	643442	896792	4.693013	1.7	4.133	5	10	0.90	9.98	1.70	4.6930	0.993305983105187	23	0.424475	0.081817	0.996647	5.729679	1.386225
97	643442	896592	4.285366	2	3.932	5	10	0.90	9.98	2.00	4.2854	0.994416319064086	23	0.424475	0.074724	0.997204	5.859405	1.490302
98	643442	896392	7.622627	0.7	5.756	5	10	0.90	9.98	0.70	7.6226	0.982404554134663	23	0.424475	0.132648	0.991163	5.297158	0.92033
99	643442	896192	5.904524	1.1	4.860	5	10	0.90	9.98	1.10	5.9045	0.989417541536725	23	0.424475	0.102871	0.994695	5.470297	1.125578
100	643642	895792	3.07156	3.5	3.475	5	10	0.90	9.98	3.50	3.0716	0.997128844850913	23	0.424475	0.053583	0.998563	6.508061	1.872716
101	643642	895592	3.046542	1.9	5.770	5	10	0.90	9.98	1.90	3.0465	0.997175381851760	23	0.424475	0.053147	0.998587	5.8187	1.008368
102	643642	895392	4.277333	2.6	3.163	5	10	0.90	9.98	2.60	4.2773	0.994437194009511	23	0.424475	0.074584	0.997215	6.11725	1.933789
103	643642	895192	4.230575	2.2	3.673	5	10	0.90	9.98	2.20	4.2306	0.994557929853456	23	0.424475	0.07377	0.997275	5.94548	1.618526
104	643642	897392	0.603963	3.3	18.474	5	10	0.90	9.98	3.30	0.6040	0.999888888421651	23	0.424475	0.010541	0.999944	6.425822	0.347832
105	643642	897192	0.873367	3	13.770	5	10	0.90	9.98	3.00	0.8734	0.999767664991502	23	0.424475	0.015243	0.999884	6.296045	0.457223
106	643642	896992	2.885609	1.8	6.382	5	10	0.90	9.98	1.80	2.8856	0.997465673993531	23	0.424475	0.050342	0.998732	5.775836	0.905009
107	634644	895992	0.1	1.3	245.127	5	10	0.90	9.98	1.30	0.1000	0.999996953828895	23	0.424475	0.001745	0.999998	5.561748	0.022689
108	643842	895792	4.656185	2.9	2.662	5	10	0.90	9.98	2.90	4.6562	0.993410401795262	23	0.424475	0.081176	0.9967	6.244877	2.346345
109	643842	895592	2.662803	2.5	5.239	5	10	0.90	9.98	2.50	2.6628	0.997841658750723	23	0.424475	0.046458	0.99892	6.077957	1.160195
110	643842	895392	2.526789	2	6.655	5	10	0.90	9.98	2.00	2.5268	0.998056381062316	23	0.424475	0.044086	0.999028	5.862551	0.880873
111	643842	895192	2.876998	1.9	6.109	5	10	0.90	9.98	1.90	2.8770	0.997480764189674	23	0.424475	0.050192	0.99874	5.818951	0.952446
112	643954	894992	4.731545	1	6.604	5	10	0.90	9.98	1.00	4.7315	0.993195860357645	23	0.424475	0.082487	0.996592	5.429175	0.822061
113	644042	895792	1.453633	3.3	7.677	5	10	0.90	9.98	3.30	1.4536	0.999356466589081	23	0.424475	0.025368	0.999678	6.425063	0.836873
114	644042	895592	1.525955	2.1	10.566	5	10	0.90	9.98	2.10	1.5260	0.999290854253558	23	0.424475	0.02663	0.999645	5.906799	0.559027
115	644042	895392	5.229259	1.9	3.372	5	10	0.90	9.98	1.90	5.2293	0.991693293958100	23	0.424475	0.091141	0.995838	5.814199	1.724474
116	644042	895192	5.672179	2.4	2.553	5	10	0.90	9.98	2.40	5.6722	0.990231332260624	23	0.424475	0.098837	0.995104	6.026946	2.360463
117	644042	894992	4.635272	0.9	7.430	5	10	0.90	9.98	0.90	4.6353	0.993469333594643	23	0.424475	0.080813	0.996729	5.386364	0.724934
118	644080	894792	4.182528	0.8	9.183	5	10	0.90	9.98	0.80	4.1825	0.994680621617895	23	0.424475	0.072934	0.997337	5.343853	0.581919
119	644242	895792	7.842488	1.1	3.676	5	10	0.90	9.98	1.10	7.8425	0.981381334854514	23	0.424475	0.13645	0.990647	5.466477	1.486914
120	644242	895592	5.608401	2	3.010	5	10	0.90	9.98	2.00	5.6084	0.990449076952322	23	0.424475	0.097729	0.995213	5.855977	1.94522
121	644242	895392	5.972925	3	2.023	5	10	0.90	9.98	3.00	5.9729	0.989171830162291	23	0.424475	0.104058	0.994571	6.282309	3.104807
122	644242	895192	6.577172	2.2	2.372	5	10	0.90	9.98	2.20	6.5772	0.986880277292235	23	0.424475	0.114541	0.993418	5.938181	2.503325
123	644242	894992	7.917672	0.9	4.383	5	10	0.90	9.98	0.90	7.9177	0.981024924587240	23	0.424475	0.13775	0.990467	5.381524	1.227932
124	644242	894792	7.074618	0.4	10.575	5	10	0.90	9.98	0.40	7.0746	0.984831155723252	23	0.424475	0.123162	0.992387	5.170224	0.488897
125	644442	895792	8.424455	1.2	3.167	5	10	0.90	9.98	1.20	8.4245	0.978536209751630	23	0.424475	0.146505	0.98921	5.507409	1.739093
126	644442	895592	6.676641	2.3	2.252	5	10	0.90	9.98	2.30	6.6766	0.986482259048017	23	0.424475	0.116266	0.993218	5.980431	2.655978
127	644442	895392	9.736019	2	1.752	5	10	0.90	9.98	2.00	9.7360	0.971402143123176	23	0.424475	0.169109	0.985597	5.839516	3.333468
128	644442	895192	11.21325	1.5	1.965	5	10	0.90	9.98	1.50	11.2133	0.962184842506210	23	0.424475	0.194461	0.98091	5.623662	2.861253
129	644442	894992	5.654438	1.4	4.079	5	10	0.90	9.98	1.40	5.6544	0.990292145849928	23	0.424475	0.098528	0.995134	5.599089	1.372686
130	644442	894792	10.36872	1.7	1.897	5	10	0.90	9.98	1.70	10.3687	0.967606426271707	23	0.424475	0.179982	0.98367	5.7108	3.009731
131	644642	895792	4.352722	2.7	3.015	5	10	0.90	9.98	2.70	4.3527	0.994239755095114	23	0.424475	0.075896	0.997116	6.159991	2.043289
132	644642	895592	9.064553	1.2	2.949	5	10	0.90	9.98	1.20	9.0646	0.975178893375805	23	0.424475	0.157547	0.987511	5.505668	1.866955
133	644642	895192	3.218405	0.5	18.609	5	10	0.90	9.98	0.50	3.2184	0.996848050113202	23	0.424475	0.056142	0.998423	5.215377	0.280268
134	644642	894992	3.120039	0.5	19.193	5	10	0.90	9.98	0.50	3.1200	0.997037587982307	23	0.424475	0.054428	0.998518	5.215418	0.271737
135	644842	895792	12.1972	0.1	24.412	5	10	0.90	9.98	0.10	12.1972	0.955362016319035	23	0.424475	0.211277	0.977426	5.041283	0.206508
136	644842	895192	0.853421	4	11.294	5	10	0.90	9.98	4.00	0.8534	0.999778155192646	23	0.424475	0.014894	0.999889	6.728078	0.595712
137	644842	894992	0.748118	4	12.884	5	10	0.90	9.98	4.00	0.7481	0.999829521245964	23	0.424475	0.013057	0.999915	6.728167	0.522226
138	642168	896992	8.097275	0.61	6.182	5	10	0.90	9.98	0.61	8.0973	0.980160109545263	23	0.424475	0.140854	0.99003	5.258361	0.850644

139	642141	896792	10.80046	0.75	3.848	5	10	0.90	9.98	0.75	10.8005	0.964885287390864	23	0.424475	0.187389	0.982286	5.312706	1.380523
140	642116	896592	16.69573	0.7	2.740	5	10	0.90	9.98	0.70	16.6957	0.917464951879664	23	0.424475	0.287289	0.957844	5.277515	1.926247
141	642243	897591	7.048215	0.66	6.570	5	10	0.90	9.98	0.66	7.0482	0.984943596314083	23	0.424475	0.122705	0.992443	5.280902	0.80373
142	642243	897392	2.992048	0.92	11.253	5	10	0.90	9.98	0.92	2.9920	0.997275435884409	23	0.424475	0.052197	0.998637	5.396463	0.479561
143	642243	897192	10.13187	0.97	3.218	5	10	0.90	9.98	0.97	10.1319	0.969054153612253	23	0.424475	0.175914	0.984405	5.406181	1.679759
144	642243	896992	7.188188	0.97	4.495	5	10	0.90	9.98	0.97	7.1882	0.984342808879065	23	0.424475	0.125129	0.992141	5.412589	1.204209
145	642243	896792	8.806339	0.29	11.675	5	10	0.90	9.98	0.29	8.8063	0.976561869106678	23	0.424475	0.153095	0.988211	5.122376	0.438742
146	642243	896592	9.746704	1.17	2.813	5	10	0.90	9.98	1.17	9.7467	0.971339945017404	23	0.424475	0.169293	0.985566	5.491085	1.952136
147	642443	897591	8.414474	0.74	4.960	5	10	0.90	9.98	0.74	8.4145	0.978586672765742	23	0.424475	0.146333	0.989235	5.312918	1.071207
148	642443	897392	3.234829	1.8	5.695	5	10	0.90	9.98	1.80	3.2348	0.996815832565587	23	0.424475	0.056428	0.998407	5.775331	1.014093
149	642443	897192	7.700577	0.91	4.457	5	10	0.90	9.98	0.91	7.7006	0.982045027723179	23	0.424475	0.133996	0.990982	5.386165	1.208369
150	642443	896992	10.98938	0.27	10.119	5	10	0.90	9.98	0.27	10.9894	0.963661330245379	23	0.424475	0.190627	0.981663	5.112431	0.505255
151	642443	896792	8.734171	1.95	1.990	5	10	0.90	9.98	1.95	8.7342	0.976941478018425	23	0.424475	0.15185	0.988403	5.823195	2.926743
152	642443	896592	4.039472	1.74	4.701	5	10	0.90	9.98	1.74	4.0395	0.995037685787822	23	0.424475	0.070444	0.997516	5.74815	1.222675
153	642643	897591	8.311022	0.42	8.619	5	10	0.90	9.98	0.42	8.3110	0.979106293844397	23	0.424475	0.144547	0.989498	5.177696	0.60072
154	642643	897392	3.731026	0.74	11.068	5	10	0.90	9.98	0.74	3.7310	0.995765546849391	23	0.424475	0.065073	0.997881	5.318411	0.480517
155	642643	897192	7.213224	0.38	10.904	5	10	0.90	9.98	0.38	7.2132	0.984234130762238	23	0.424475	0.125562	0.992086	5.161615	0.47336
156	642643	896992	11.41519	1.74	1.695	5	10	0.90	9.98	1.74	11.4152	0.960828774611131	23	0.424475	0.197917	0.980219	5.722429	3.375638
157	642643	896792	12.39431	0.66	3.810	5	10	0.90	9.98	0.66	12.3943	0.953930385778576	23	0.424475	0.214638	0.976694	5.272057	1.383597
158	642643	896592	5.731616	1.86	3.136	5	10	0.90	9.98	1.86	5.7316	0.990026220881361	23	0.424475	0.099869	0.995001	5.795718	1.848273
159	642643	896392	5.760217	2.27	2.634	5	10	0.90	9.98	2.27	5.7602	0.989926769803582	23	0.424475	0.100365	0.994951	5.971021	2.266793
160	642643	896192	6.130432	2.21	2.533	5	10	0.90	9.98	2.21	6.1304	0.988595428671030	23	0.424475	0.106792	0.994281	5.944084	2.346611
161	642843	897591	7.034045	0.9	4.921	5	10	0.90	9.98	0.90	7.0340	0.985003771241311	23	0.424475	0.122459	0.992474	5.383072	1.093837
162	642843	897392	3.921019	1.39	5.903	5	10	0.90	9.98	1.39	3.9210	0.995323999545591	23	0.424475	0.068381	0.997659	5.597832	0.948275
163	642843	897192	6.046936	0.44	11.256	5	10	0.90	9.98	0.44	6.0469	0.988902825331509	23	0.424475	0.105343	0.994436	5.188021	0.460931
164	642843	896992	7.570044	0.85	4.830	5	10	0.90	9.98	0.85	7.5700	0.982645064008012	23	0.424475	0.131738	0.991285	5.360924	1.110015
165	642843	896792	11.19379	0.7	3.969	5	10	0.90	9.98	0.70	11.1938	0.962314308237289	23	0.424475	0.194128	0.980976	5.291082	1.333045
166	642843	896592	9.566292	0.83	3.932	5	10	0.90	9.98	0.83	9.5663	0.972381335584513	23	0.424475	0.166189	0.986094	5.34875	1.360184
167	642843	896392	7.950406	1.02	3.888	5	10	0.90	9.98	1.02	7.9504	0.980868713441220	23	0.424475	0.138316	0.990388	5.432325	1.397262
168	642843	896192	6.282969	2.3	2.391	5	10	0.90	9.98	2.30	6.2830	0.988023137167165	23	0.424475	0.109439	0.993994	5.981962	2.501975
169	642843	895992	6.858306	1.24	3.760	5	10	0.90	9.98	1.24	6.8583	0.985740205854956	23	0.424475	0.119414	0.992845	5.528182	1.470143
170	642843	895792	4.898921	2.02	3.413	5	10	0.90	9.98	2.02	4.8989	0.992707154295028	23	0.424475	0.085398	0.996347	5.866507	1.718741
171	643043	897392	6.218982	0.55	8.838	5	10	0.90	9.98	0.55	6.2190	0.988264890504067	23	0.424475	0.108329	0.994115	5.234874	0.592302
172	643043	897192	6.60426	0.91	5.183	5	10	0.90	9.98	0.91	6.6043	0.986772467933114	23	0.424475	0.115011	0.993364	5.388024	1.039655
173	643043	896992	4.408712	0.64	10.754	5	10	0.90	9.98	0.64	4.4087	0.994090905907375	23	0.424475	0.076871	0.997041	5.27492	0.490516
174	643043	896792	8.31736	0.61	6.022	5	10	0.90	9.98	0.61	8.3174	0.979074638783594	23	0.424475	0.144656	0.989482	5.258075	0.873121
175	643042	896592	7.737256	0.97	4.182	5	10	0.90	9.98	0.97	7.7373	0.981874619360509	23	0.424475	0.134631	0.990896	5.411555	1.294027
176	643042	896392	5.767446	1.37	4.078	5	10	0.90	9.98	1.37	5.7674	0.989901555890668	23	0.424475	0.100491	0.994938	5.58602	1.369758
177	643042	896192	8.276393	1.59	2.505	5	10	0.90	9.98	1.59	8.2764	0.979278833819912	23	0.424475	0.143948	0.989585	5.672827	2.264944
178	643042	895992	6.07843	1.45	3.681	5	10	0.90	9.98	1.45	6.0784	0.988787365530503	23	0.424475	0.10589	0.994378	5.619542	1.526769
179	643042	895792	6.502746	1.6	3.156	5	10	0.90	9.98	1.60	6.5027	0.987174248983555	23	0.424475	0.113251	0.993566	5.682517	1.800356
180	643242	897392	5.658572	0.05	102.352	5	10	0.90	9.98	0.05	5.6586	0.990277991895745	23	0.424475	0.0986	0.995127	5.021396	0.04906
181	643242	897192	4.174606	1.15	6.581	5	10	0.90	9.98	1.15	4.1746	0.994700717446065	23	0.424475	0.072796	0.997347	5.494299	0.834935
182	643242	896992	2.807713	1.19	9.469	5	10	0.90	9.98	1.19	2.8077	0.997600545614615	23	0.424475	0.048984	0.9988	5.512983	0.582213
183	643242	896792	4.470191	1.77	4.188	5	10	0.90	9.98	1.77	4.4702	0.993925290347230	23	0.424475	0.07794	0.996958	5.760198	1.375349
184	643242	896592	6.445235	1.24	3.997	5	10	0.90	9.98	1.24	6.4452	0.987399156935928	23	0.424475	0.112253	0.99368	5.529071	1.383145
185	643242	896392	5.878856	1.51	3.670	5	10	0.90	9.98	1.51	5.8789	0.989509026739302	23	0.424475	0.102425	0.994741	5.645649	1.53849
186	643242	896192	7.839496	0.79	4.998	5	10	0.90	9.98	0.79	7.8395	0.981395449869624	23	0.424475	0.136398	0.990654	5.33502	1.067477
187	643242	895992	4.449146	0.87	7.986	5	10	0.90	9.98	0.87	4.4491	0.993982238640813	23	0.424475	0.077574	0.996987	5.373678	0.672862
188	643242	895792	9.693633	1.96	1.790	5	10	0.90	9.98	1.96	9.6936	0.971648228769310	23	0.424475	0.16838	0.985722	5.822934	3.253125
189	643242	895592	5.957199	1.82	3.076	5	10	0.90	9.98	1.82	5.9572	0.989228568320242	23	0.424475	0.103786	0.9946	5.777979	1.878696
190	643442	897392	4.500755	0.47	14.148	5	10	0.90	9.98	0.47	4.5008	0.993842108752226	23	0.424475	0.078472	0.996916	5.201844	0.367682
191	643442	897192	3.346682	3.05	3.552	5	10	0.90	9.98	3.05	3.3467	0.996592077843813	23	0.424475	0.058377	0.998295	6.31346	1.777475
192	643442	896992	3.28877	0.84	11.145	5	10	0.90	9.98	0.84	3.2888	0.996708872374120	23	0.424475	0.057368	0.998353	5.361782	0.481101
193	643442	896792	4.693013	1.51	4.587	5	10	0.90	9.98	1.51	4.6930	0.993305983105187	23	0.424475	0.081817	0.996647	5.648126	1.231294
194	643442	896592	4.285366	1.13	6.515	5	10	0.90	9.98	1.13	4.2854	0.994416319064086	23	0.424475	0.074724	0.997204	5.485564	0.842021
195	643442	896392	7.622627	0.98	4.203	5	10	0.90	9.98	0.98	7.6226	0.982404554134663	23	0.424475	0.132648	0.991163	5.416022	1.288461
196	643442	896192	5.904524	1.27	4.265	5	10	0.90	9.98	1.27	5.9045	0.989417541536725	23	0.424475	0.102871	0.994695	5.542979	1.299531
197	643442	895992	9.194921	1.25	2.803	5	10	0.90	9.98	1.25	9.1949	0.974465979160809	23	0.424475	0.159794	0.98715	5.526352	1.971755
198	643442	895792	4.86035	2.31	3.072	5	10	0.90	9.98	2.31	4.8604	0.992821266192895	23	0.424475	0.084727	0.996404	5.991021	1.950165
199	643442	895592	4.859072	2.39	2.987	5	10	0.90	9.98	2.39	4.8591	0.992825031853067	23	0.424475	0.084705	0.996406	6.025346	2.017178
200	642257	897020	7.127142	1.15	3.877	5	10	0.90	9.98	1.15	7.1271	0.984606251069568	23	0.424475	0.124072	0.992273	5.489283	1.415798
201	642679	896946	9.068772	1.45	2.486	5	10	0.90	9.98	1.45	9.0688	0.975155975874440	23	0.424475	0.15762	0.9875	5.611001	2.256919
202	642929	896699	10.42439	0.75	3.981	5	10	0.90	9.98	0.75	10.4244	0.967261504825012	23	0.424475	0.180938	0.983495	5.313476	1.334635
203	643166	896487	7.750378	1.1	3.719	5	10	0.90	9.98	1.10	7.7504	0.981813463498720	23	0.424475	0.134857	0.990865	5.466682	1.469881
204	642265	896688	9.679115	1.3	2.574	5	10	0.90	9.98	1.30	9.6791	0.971732280361270	23	0.424475	0.16813	0.985765	5.545871	2.154577
205	642636	896601	5.668219	1.8	3.262	5	10	0.90	9.98	1.80	5.6682	0.990244922869346	23	0.424475	0.098768	0.995111	5.77022	1.769128
206	642817	896387	8.158318	1.1	3.537	5	10	0.90	9.98	1.10	8.1583	0.979861879552236	23	0.424475	0.141909	0.98988	5.465755	1.5452
207	643014	896025	6.673503	0.55	8.245	5	10	0.90	9.98	0.55	6.6735	0.986494905153079	23	0.424475	0.116211	0.993224	5.234454	0.634832
208	643166	895820	6.02975	1.6	3.401	5	10	0.90	9.98	1.60	6.0298	0.988965581551546	23	0.424475	0.105045	0.994467	5.683756	1.671419
209	643116	897037	2.160915	0.05	266.543	5	10	0.90	9.98	0.05	2.1609	0.998578246924793	23	0.424475	0.037706	0.999289	5.021575	0.01884
210	643092	896993	3.470076	0.06	138.645	5	10	0.90	9.98	0.06	3.4701	0.996336454059275	23	0.424475	0.060527	0.998167	5.025832	0.03625
211	643040	896908	8.323383	0.08	43.930	5	10	0.90	9.98	0.08	8.3234	0.979044535256548	23	0.424475	0.14476	0.989467	5.033845	0.114588
212	642958	896851	10.13299	0.05	57.982	5	10	0.90	9.98	0.05	10.1330	0.969047383067918	23	0.424475	0.175934	0.984402	5.020937	0.086595
213	642975	896861	7.132376	0.9	4.855	5	10	0.90	9.98	0.90	7.1324	0.984583750127116	23	0.424475	0.124162	0.992262	5.382908	1.108813
214	642871	896818	9.389057	0.9	3.713	5	10	0.90	9.98	0.90	9.3891	0.973386145494631	23	0.424475	0.163138	0.986603	5.378554	1.448568
215	642780	896818	8.289439	0.07	50.363	5	10	0.90	9.98	0.07	8.2894	0.979213913958106	23	0.424475	0.144174	0.989552	5.029619	0.099867
216	642780	896813	8.289439	0.8	4.677	5	10	0.90	9.98	0.80	8.2894	0.979213913958106	23	0.424475	0.144174	0.989552	5.338507	1.14134
217	642685	896785	10.36587	0.95	3.210	5	10	0.90	9.98	0.95	10.3659	0.967624036864107	23	0.424475	0.179933	0.983679	5.397219	1.681467
218	642670	896692	12.57205	0.05	47.264	5	10	0.90	9.98	0.05	12.5721	0.952621014332454	23	0.424475	0.217667	0.976023	5.020582	0.106224
219	642669	896691	9.729271	1.3	2.561	5	10	0.90	9.98	1.30	9.7293	0.971441389901952	23	0.424475	0.168993	0.985617	5.545707	2.165311
220	642701	896599	7.271604	1.5	2.994	5	10	0.90	9.98	1.50	7.2716	0.983979274034087	23	0.424475	0.126573	0.991957	5.637789	1.883325
221	642701	896597	7.271604	0.04	99.897	5	10	0.90	9.98	0.04	7.2716	0.983979274034087	23	0.424475	0.126573	0.991957	5.017008	0.050222
222	642755	896514	9.08072	1.5	2.409	5	10	0.90	9.98	1.50	9.0807	0.975091018724854	23	0.424475	0.157826	0.987467	5.632028	2.337716
223	642813	896430	7.468745	1.8	2.485	5	10	0.90	9.98	1.80	7.4687	0.983103812159933	23	0.424475	0.129985	0.991516	5.764666	2.319886
224	642856	896340	7.09338	1.45	3.161	5	10	0.90	9.98	1.45	7.0934	0.984751005016284	23	0.424475	0.123487	0.992346	5.617013	1.776854
225	642903	896253	10.33407	1.1	2.813	5	10	0.90	9.98	1.10	10.3341	0.967820220045478	23	0.424475	0.179387	0.983779	5.460031	1.94125
226	642959	896170	7.246715	1.4	3.194	5	10	0.90	9.98	1.40	7.2467	0.984088172310192	23	0.424475	0.126142	0.992012	5.595335	1.751883
227	643003	896083	6.258759	1.1	4.588	5	10	0.90	9.98	1.10	6.2588	0.988114892886842	23	0.424475	0.109019	0.99404	5.469678	1.19206
228	643053	895995	6.06081	1.2	4.375	5	10	0.90	9.98	1.20	6.0608	0.988852034821098	23	0.424475	0.105584	0.99441	5.512758	1.259925
229	643115	895917	6.487531	1.5	3.349	5	10	0.90	9.98	1.50	6.4875	0.987233941240931	23	0.424475	0.112987	0.993596	5.639898	1.683952
230	643177	895840	6.003796	1.4	3.844	5	10	0.90	9.98	1.40	6.0038	0.989060021362896	23	0.424475	0.104594	0.994515	5.598343	1.456289
231	642937	896723	9.552979	0.3	10.441	5	10	0.90	9.98	0.30	9.5530	0.972457440366805	23	0.424475	0.16596	0.986133	5.126064	0.490974
232	643012	896657	8.401258	0.3	11.824	5	10	0.90	9.98	0.30	8.4013	0.978653402252458	23	0.424475	0.146105	0.989269	5.126867	0.433611
233	643091	896597	7.474034	1.5	2.914	5	10	0.90	9.98	1.50	7.4740	0.983080009514373	23	0.424475	0.130077	0.991504	5.637206	1.934576
234	643150	896516	8.006869	1.5	2.724	5	10	0.90	9.98	1.50	8.0069	0.980597788909740	23	0.424475	0.139292	0.990251	5.635597	2.069009
235	642835	896834	11.72469	0.02	125.856	5	10	0.90	9.98	0.02	11.7247	0.958706002761188	23	0.424475	0.203209	0.979135	5.008285	0.039794
236	642832	896842	11.79105	0.5	5.206	5	10	0.90	9.98	0.50	11.7911	0.958243879728826	23	0.424475	0.204343	0.978899	5.207036	1.000157
237	642829	896842	11.79105	0.6	4.373	5	10	0.90	9.98	0.60	11.7911	0.958243879728826	23	0.424475	0.204343	0.978899	5.248443	1.200188
238	642765	896907	9.44335	0.08	38.876	5	10	0.90	9.98	0.08	9.4434	0.973080261948029	23	0.424475	0.164072	0.986448	5.033639	0.129479
239	642765	896905	9.44335	1.1	3.068	5	10	0.90	9.98	1.10	9.4434	0.973080261948029	23	0.424475	0.164072	0.986448	5.462531	1.780338
240	642758	896908	9.040819	0.6	5.641	5	10	0.90	9.98	0.60	9.0408	0.975307623787749	23	0.424475	0.157138	0.987577	5.252867	0.931115
241	642697	896957	9.404938	0.09	34.722	5	10	0.90	9.98	0.09	9.4049	0.973296848764319	23	0.424475	0.163411	0.986558	5.037852	0.145093
242	642698	896958	9.404938	1.3	2.647	5	10	0.90	9.98	1.30	9.4049	0.973296848764319	23	0.424475	0.163411	0.986558	5.546749	2.095788
243	642697	896957	9.404938	1.3	2.647	5	10	0.90	9.98	1.30	9.4049	0.973296848764319	23	0.424475	0.163411	0.986558	5.546749	2.095788
244	642306	897253	8.884035	0.01	327.968	5	10	0.90	9.98	0.01	8.8840	0.976149801936772	23	0.424475	0.154435	0.988003	5.004218	0.015258
245	642281	897161	7.863544	0.01	369.241	5	10	0.90	9.98	0.01	7.8635	0.981281852887162	23	0.424475	0.136814	0.990597	5.00424	0.013553
246	642212	897092	6.153192	0.01	469.578	5	10	0.90	9.98	0.01	6.1532	0.988510916068576	23	0.424475	0.107187	0.994239	5.004272	0.010657
247	642235	896999	7.308222	0.01	396.617	5	10	0.90	9.98	0.01	7.3082	0.983818393116211	23	0.424475	0.127207	0.991876	5.004251	0.012617
248	642272	896909	7.750805	0.01	374.477	5	10	0.90	9.98	0.01	7.7508	0.981811471741504	23	0.424475	0.134865	0.990864	5.004243	0.013363
249	642262	896687	9.974143	0.01	293.353	5	10	0.90	9.98	0.01	9.9741	0.970000469188731	23	0.424475	0.173204	0.984886	5.004192	0.017059
250	642679	896929	7.851629	0.01	369.787	5	10	0.90	9.98	0.01	7.8516	0.981338178881879	23	0.424475	0.136608	0.990625	5.004241	0.013533
251	642599	897211	8.323091	0.85	4.402	5	10	0.90	9.98	0.85	8.3231	0.979045995188739	23	0.424475	0.144755	0.989468	5.359602	1.217458
252	642599	897111	6.134583	1.6	3.343	5	10	0.90	9.98	1.60	6.1346	0.988580038138931	23	0.424475	0.106864	0.994274	5.683489	1.700036
253	642637	896958	9.936892	1.5	2.208	5	10	0.90	9.98	1.50	9.9369	0.970221885558992	23	0.424475	0.172563	0.984998	5.628872	2.54962
254	643116	897037	2.160915	0.01	1328.133	5	10	0.90	9.98	0.01	2.1609	0.998578246924793	23	0.424475	0.037706	0.999289	5.004315	0.003768
255	643065	896951	3.834108	0.01	750.065	5	10	0.90	9.98	0.01	3.8341	0.995528687059742	23	0.424475	0.066868	0.997762	5.004302	0.006672
256	643000	896880	9.677137	0.01	301.996	5	10	0.90	9.98	0.01	9.6771	0.971743722565010	23	0.424475	0.168096	0.985771	5.004199	0.01657
257	642827	896835	12.70989	0.6	4.074	5	10	0.90	9.98	0.60	12.7099	0.951593579710788	23	0.424475	0.220015	0.975497	5.246719	1.287741
258	642734	896800	9.010835	0.7	4.890	5	10	0.90	9.98	0.70	9.0108	0.975469787039109	23	0.424475	0.156621	0.987659	5.295061	1.082818
259	642640	896766	8.518079	1.8	2.185	5	10	0.90	9.98	1.80	8.5181	0.978060028368823	23	0.424475	0.148121	0.988969	5.760743	2.636776
260	642609	896693	3.306852	2.1	4.882	5	10	0.90	9.98	2.10	3.3069	0.996672623264082	23	0.424475	0.057683	0.998335	5.904423	1.209335
261	642649	896602	5.977038	1.95	2.889	5	10	0.90	9.98	1.95	5.9770	0.989156966466715	23	0.424475	0.10413	0.994564	5.833488	2.019494
262	642694	896513	7.070749	0.25	16.721	5	10	0.90	9.98	0.25	7.0707	0.984847658114584	23	0.424475	0.123095	0.992395	5.106392	0.305397
263	642791	896491	9.920181	1.65	2.033	5	10	0.90	9.98	1.65	9.9202	0.970320955830234	23	0.424475	0.172276	0.985049	5.691829	2.800055
264	642888	896465	7.076519	1.4	3.269	5	10	0.90	9.98	1.40	7.0765	0.984823044174734	23	0.424475	0.123195	0.992383	5.59578	1.711589
265	642987	896450	7.148474	1.75	2.659	5	10	0.90	9.98	1.75	7.1485	0.984514443519684	23	0.424475	0.124441	0.992227	5.744492	2.16079
266	643084	896435	5.847676	1.4	3.946	5	10	0.90	9.98	1.40	5.8477	0.989619629046935	23	0.424475	0.101884	0.994796	5.598682	1.418955
267	643171	896421	9.842	1.35	2.448	5	10	0.90	9.98	1.35	9.8420	0.970782321428173	23	0.424475	0.170932	0.985283	5.566311	2.273618
268	642940	896723	9.552979	0.65	4.957	5	10	0.90	9.98	0.65	9.5530	0.972457440366805	23	0.424475	0.16596	0.986133	5.273139	1.063778
269	642942	896688	9.91567	0.55	5.607	5	10	0.90	9.98	0.55	9.9157	0.970347671623499	23	0.424475	0.172199	0.985062	5.230616	0.932944
270	642740	896501	9.492493	0.1	30.997	5	10	0.90	9.98	0.10	9.4925	0.972801928115124	23	0.424475	0.164918	0.986307	5.042036	0.16266
271	642805	896424	7.511386	2	2.257	5	10	0.90	9.98	2.00	7.5114	0.982911441654681	23	0.424475	0.130723	0.991419	5.849462	2.592029
272	642834	896390	8.147458	0.9	4.262	5	10	0.90	9.98	0.90	8.1475	0.979915096233201	23	0.424475	0.141721	0.989907	5.381093	1.262617
273	643129	895953	6.497841	1.2	4.085	5	10	0.90	9.98	1.20	6.4978	0.987193507537915	23	0.424475	0.113166	0.993576	5.511898	1.349266
274	643089	895957	6.673768	0.8	5.784	5	10	0.90	9.98	0.80	6.6738	0.986493837431682	23	0.424475	0.116216	0.993224	5.341023	0.923428
275	643016	896042	6.592965	1	4.758	5	10	0.90	9.98	1.00	6.5930	0.986817474572072	23	0.424475	0.114815	0.993387	5.426419	1.140559
276	643121	895914	6.487531	1.4	3.561	5	10	0.90	9.98	1.40	6.4875	0.987233941240931	23	0.424475	0.112987	0.993596	5.597239	1.571689
277	643183	895817	5.991025	1.65	3.331	5	10	0.90	9.98	1.65	5.9910	0.989106344338876	23	0.424475	0.104373	0.994538	5.705223	1.712743

278	643092	896892	5.791359	0.3	17.028	5	10	0.90	9.98	0.30	5.7914	0.989817927864563	23	0.424475	0.100906	0.994896	5.128315	0.301174
279	643081	896910	4.828267	0.5	12.435	5	10	0.90	9.98	0.50	4.8283	0.992915502829361	23	0.424475	0.084169	0.996451	5.214527	0.419354
280	643065	896928	4.345395	0.2	33.659	5	10	0.90	9.98	0.20	4.3454	0.994259094215864	23	0.424475	0.075769	0.997125	5.085927	0.151102
281	643077	896937	3.526829	0.4	21.060	5	10	0.90	9.98	0.40	3.5268	0.996215792346748	23	0.424475	0.061516	0.998106	5.172192	0.245598
282	643089	896937	4.659138	0.6	10.823	5	10	0.90	9.98	0.60	4.6591	0.993402059201256	23	0.424475	0.081228	0.996696	5.257559	0.485756
283	643118	896915	4.762586	0.55	11.506	5	10	0.90	9.98	0.55	4.7626	0.993106497642414	23	0.424475	0.083027	0.996547	5.236025	0.455072
284	643153	896952	3.001734	0.5	19.947	5	10	0.90	9.98	0.50	3.0017	0.997257783322869	23	0.424475	0.052366	0.998628	5.215465	0.261472
285	643135	896971	3.167917	0.75	12.863	5	10	0.90	9.98	0.75	3.1679	0.996946065445551	23	0.424475	0.055262	0.998472	5.323097	0.413835
286	643113	896992	3.487379	1	8.944	5	10	0.90	9.98	1.00	3.4874	0.996299872794896	23	0.424475	0.060829	0.998148	5.430516	0.60716
287	643089	896937	4.659138	0.08	77.730	5	10	0.90	9.98	0.08	4.6591	0.993402059201256	23	0.424475	0.081228	0.996696	5.034341	0.064767
288	643092	897010	2.938602	1.1	9.720	5	10	0.90	9.98	1.10	2.9386	0.997371817982986	23	0.424475	0.051266	0.998685	5.474078	0.563182
289	643074	897031	2.718315	0.85	13.327	5	10	0.90	9.98	0.85	2.7183	0.997750798190391	23	0.424475	0.047426	0.998875	5.366472	0.402665
290	643064	897030	3.077119	1.05	9.688	5	10	0.90	9.98	1.05	3.0771	0.997118452846535	23	0.424475	0.05368	0.998558	5.452414	0.562828
291	643052	897012	3.160506	0.6	15.920	5	10	0.90	9.98	0.60	3.1605	0.996960322954450	23	0.424475	0.055133	0.998479	5.258481	0.330296
292	643061	897006	3.659881	0.4	20.298	5	10	0.90	9.98	0.40	3.6599	0.995925278743421	23	0.424475	0.063834	0.997961	5.172142	0.254813
293	643077	897001	3.229262	0.4	22.991	5	10	0.90	9.98	0.40	3.2293	0.996826771165118	23	0.424475	0.056331	0.998412	5.172298	0.224968
294	642257	897019	7.127142	1	4.407	5	10	0.90	9.98	1.00	7.1271	0.984606251069568	23	0.424475	0.124072	0.992273	5.425463	1.231129
295	642677	896947	9.068772	0.5	6.695	5	10	0.90	9.98	0.50	9.0688	0.975155975874440	23	0.424475	0.15762	0.9875	5.21069	0.778248
296	642681	896942	9.068772	0.65	5.213	5	10	0.90	9.98	0.65	9.0688	0.975155975874440	23	0.424475	0.15762	0.9875	5.273897	1.011722
297	642684	896947	9.099712	0.7	4.844	5	10	0.90	9.98	0.70	9.0997	0.974987595704861	23	0.424475	0.158153	0.987415	5.294915	1.093139
298	642930	896702	10.20295	0.4	7.410	5	10	0.90	9.98	0.40	10.2030	0.968623045258082	23	0.424475	0.177135	0.984186	5.167423	0.697337
299	643144	896490	7.489462	0.5	8.067	5	10	0.90	9.98	0.50	7.4895	0.983010483191096	23	0.424475	0.130344	0.991469	5.212387	0.646159
300	642271	896686	9.679115	2	1.762	5	10	0.90	9.98	2.00	9.6791	0.971732280361270	23	0.424475	0.16813	0.985765	5.839801	3.314734
301	642270	896683	9.679115	2	1.762	5	10	0.90	9.98	2.00	9.6791	0.971732280361270	23	0.424475	0.16813	0.985765	5.839801	3.314734
302	642637	896601	5.668219	2	2.979	5	10	0.90	9.98	2.00	5.6682	0.990244922869346	23	0.424475	0.098768	0.995111	5.8558	1.965697
303	642816	896387	8.158318	1.4	2.844	5	10	0.90	9.98	1.40	8.1583	0.979861879552236	23	0.424475	0.141909	0.98988	5.592779	1.966618
304	643013	896027	6.673503	0.8	5.784	5	10	0.90	9.98	0.80	6.6735	0.986494905153079	23	0.424475	0.116211	0.993224	5.341024	0.923392
305	643166	895820	6.02975	1.8	3.068	5	10	0.90	9.98	1.80	6.0298	0.988965581551546	23	0.424475	0.105045	0.994467	5.769225	1.880346
306	642267	897095	6.74464	1.72	2.858	5	10	0.90	9.98	1.72	6.7446	0.986206790420574	23	0.424475	0.117444	0.993079	5.732987	2.006065
307	642306	896701	9.371343	1.87	1.926	5	10	0.90	9.98	1.87	9.3713	0.973485577307195	23	0.424475	0.162832	0.986654	5.786631	3.004329
308	642875	896722	9.41207	1.25	2.740	5	10	0.90	9.98	1.25	9.4121	0.973256699158109	23	0.424475	0.163534	0.986538	5.525699	2.016653
309	642775	896119	6.350637	1.52	3.380	5	10	0.90	9.98	1.52	6.3506	0.987764827657796	23	0.424475	0.110613	0.993864	5.648779	1.670996
310	643129	896234	8.6586	1.35	2.772	5	10	0.90	9.98	1.35	8.6586	0.977335742774060	23	0.424475	0.150547	0.988603	5.570134	2.009215
311	643106	895890	6.869263	1.31	3.573	5	10	0.90	9.98	1.31	6.8693	0.985694824546739	23	0.424475	0.119604	0.992822	5.557973	1.555568
312	643411	896126	5.12887	1.13	5.451	5	10	0.90	9.98	1.13	5.1289	0.992008325271860	23	0.424475	0.089396	0.995996	5.484388	1.006132
313	643442	895392	3.895663	2.36	3.760	5	10	0.90	9.98	2.36	3.8957	0.995384187539682	23	0.424475	0.06794	0.997689	6.015085	1.599674
314	643642	895792	3.07156	3.45	3.514	5	10	0.90	9.98	3.45	3.0716	0.997128844850913	23	0.424475	0.053583	0.998563	6.486518	1.845963
315	643642	895592	3.046542	1.85	5.904	5	10	0.90	9.98	1.85	3.0465	0.997175381851760	23	0.424475	0.053147	0.998587	5.797155	0.981832
316	643642	895392	4.277333	2.72	3.049	5	10	0.90	9.98	2.72	4.2773	0.994437194009511	23	0.424475	0.074584	0.997215	6.168816	2.02304
317	643146	896487	7.489462	0.5	8.067	5	10	0.90	9.98	0.50	7.4895	0.983010483191096	23	0.424475	0.130344	0.991469	5.212387	0.646159
318	642270	896685	9.679115	2	1.762	5	10	0.90	9.98	2.00	9.6791	0.971732280361270	23	0.424475	0.16813	0.985765	5.839801	3.314734
319	642276	896890	5.083059	1.37	4.621	5	10	0.90	9.98	1.37	5.0831	0.992150077686987	23	0.424475	0.0886	0.996067	5.587351	1.209044
320	642648	895691	13.78046	1.9	1.314	5	10	0.90	9.98	1.90	13.7805	0.943259687777678	23	0.424475	0.238202	0.971216	5.774434	4.395569
321	642151	896225	10.44711	2.05	1.602	5	10	0.90	9.98	2.05	10.4471	0.967120228653859	23	0.424475	0.181328	0.983423	5.85671	3.655598
351	642048	896118	7.682336	1.8	2.417	5	10	0.90	9.98	1.80	7.6823	0.982129480091041	23	0.424475	0.133681	0.991024	5.763908	2.384655
352	641946	896115	9.420559	1.8	1.981	5	10	0.90	9.98	1.80	9.4206	0.973208872084534	23	0.424475	0.16368	0.986513	5.756969	2.906505
353	641944	896217	10.39629	0.8	3.757	5	10	0.90	9.98	0.80	10.3963	0.967435828063333	23	0.424475	0.180455	0.983583	5.334435	1.419944
354	642043	896218	9.515376	0.4	7.925	5	10	0.90	9.98	0.40	9.5154	0.972671849645084	23	0.424475	0.165312	0.986241	5.168123	0.652151
355	642043	896321	13.71384	0.7	3.278	5	10	0.90	9.98	0.70	13.7138	0.943796477869935	23	0.424475	0.237073	0.971492	5.28548	1.6122
356	641946	896314	15.91336	1.7	1.267	5	10	0.90	9.98	1.70	15.9134	0.924823426850053	23	0.424475	0.274183	0.961677	5.679372	4.482493
357	641845	896315	16.18932	0.3	6.373	5	10	0.90	9.98	0.30	16.1893	0.922263812150535	23	0.424475	0.278812	0.960346	5.119557	0.803268
358	641751	896223	18.3079	0.3	5.719	5	10	0.90	9.98	0.30	18.3079	0.901326514245609	23	0.424475	0.314123	0.949382	5.116843	0.894669
359	641747	896313	17.82825	0.1	17.289	5	10	0.90	9.98	0.10	17.8283	0.906263163962130	23	0.424475	0.306165	0.951979	5.039161	0.291462
360	641643	896313	15.24139	1	2.130	5	10	0.90	9.98	1.00	15.2414	0.930890829997940	23	0.424475	0.262886	0.964827	5.402252	2.536397
361	641544	896314	7.142735	2.1	2.275	5	10	0.90	9.98	2.10	7.1427	0.984539169146325	23	0.424475	0.124342	0.992239	5.893412	2.590909
362	641546	896415	7.304914	1.5	2.980	5	10	0.90	9.98	1.50	7.3049	0.983832959273534	23	0.424475	0.12715	0.991884	5.637694	1.891765
363	641646	896413	8.227983	0.1	35.600	5	10	0.90	9.98	0.10	8.2280	0.979518864174036	23	0.424475	0.143112	0.989706	5.042327	0.141639
364	641729	896420	12.98136	0.2	11.609	5	10	0.90	9.98	0.20	12.9814	0.949539543022019	23	0.424475	0.224634	0.974443	5.082062	0.437786
365	641844	896416	14.52098	1.2	1.883	5	10	0.90	9.98	1.20	14.5210	0.937132213540092	23	0.424475	0.250734	0.968056	5.485939	2.9127
366	641946	896417	15.91375	0.4	4.892	5	10	0.90	9.98	0.40	15.9138	0.924819837238894	23	0.424475	0.27419	0.961676	5.159852	1.054727
367	642043	896418	18.25113	0.5	3.493	5	10	0.90	9.98	0.50	18.2511	0.901916698769752	23	0.424475	0.313183	0.949693	5.194866	1.487136
368	642043	896517	15.11361	0.4	5.126	5	10	0.90	9.98	0.40	15.1136	0.932017865203067	23	0.424475	0.260734	0.965411	5.161096	1.006861
369	641943	896511	10.22885	0.7	4.327	5	10	0.90	9.98	0.70	10.2289	0.968465241529427	23	0.424475	0.17758	0.984106	5.292942	1.223305
370	641847	896512	8.85236	0.5	6.854	5	10	0.90	9.98	0.50	8.8524	0.976318215958567	23	0.424475	0.153889	0.988088	5.210941	0.760279
371	641747	896521	10.6753	0.7	4.153	5	10	0.90	9.98	0.70	10.6753	0.965685031921505	23	0.424475	0.185243	0.982693	5.292101	1.274259
372	641745	896611	9.514648	0.8	4.092	5	10	0.90	9.98	0.80	9.5146	0.972675992607915	23	0.424475	0.1653	0.986243	5.336247	1.304206
373	641843	896618	11.92285	0.9	2.953	5	10	0.90	9.98	0.90	11.9229	0.957318751434600	23	0.424475	0.206594	0.978427	5.372305	1.819237
374	641947	896613	8.965785	1.4	2.594	5	10	0.90	9.98	1.40	8.9658	0.975712452901067	23	0.424475	0.155845	0.987782	5.590268	2.155166
375	642050	896609	10.64492	0.4	7.115	5	10	0.90	9.98	0.40	10.6449	0.965877813312824	23	0.424475	0.184722	0.982791	5.166948	0.726172
376	641847	896718	8.34225	1.3	2.974	5	10	0.90	9.98	1.30	8.3423	0.978950099148673	23	0.424475	0.145086	0.989419	5.549925	1.866159
377	641744	896717	9.555743	0.8	4.075	5	10	0.90	9.98	0.80	9.5557	0.972441648141555	23	0.424475	0.166007	0.986125	5.336166	1.309629
378	641754	896812	9.119725	1	3.464	5	10	0.90	9.98	1.00	9.1197	0.974878386826939	23	0.424475	0.158498	0.987359	5.42126	1.564945
379	641745	896913	5.43615	1.3	4.532	5	10	0.90	9.98	1.30	5.4362	0.991025008650582	23	0.424475	0.094736	0.995502	5.556708	1.226034
380	641840	896918	6.493192	1.8	2.852	5	10	0.90	9.98	1.80	6.4932	0.987211747773216	23	0.424475	0.113085	0.993585	5.767861	2.022475
381	641843	896820	7.468224	1.5	2.916	5	10	0.90	9.98	1.50	7.4682	0.983106155980377	23	0.424475	0.129976	0.991517	5.637223	1.933106
382	641944	896715	9.108192	1.2	2.935	5	10	0.90	9.98	1.20	9.1082	0.974941349517170	23	0.424475	0.158299	0.987391	5.505545	1.875639
383	641943	896813	8.394894	0.8	4.620	5	10	0.90	9.98	0.80	8.3949	0.978685498668590	23	0.424475	0.145995	0.989285	5.338324	1.155445
384	641946	896913	10.84847	0.1	27.275	5	10	0.90	9.98	0.10	10.8485	0.964576158650897	23	0.424475	0.188212	0.982128	5.041681	0.184849
385	642045	896914	12.77791	0.5	4.827	5	10	0.90	9.98	0.50	12.7779	0.951082716870430	23	0.424475	0.221173	0.975235	5.205489	1.078476
386	642045	896818	8.29605	1	3.798	5	10	0.90	9.98	1.00	8.2961	0.979180978178246	23	0.424475	0.144288	0.989536	5.423119	1.427781
387	642043	896714	10.76996	2.1	1.524	5	10	0.90	9.98	2.10	10.7700	0.965080993889554	23	0.424475	0.186866	0.982385	5.875755	3.855069
388	642142	896715	9.849713	1.7	1.994	5	10	0.90	9.98	1.70	9.8497	0.970736960924554	23	0.424475	0.171064	0.98526	5.7131	2.86523
389	642245	896714	9.68961	1.5	2.262	5	10	0.90	9.98	1.50	9.6896	0.971671531958552	23	0.424475	0.168311	0.985734	5.629811	2.488643
390	640946	896719	7.339	0.01	394.989	5	10	0.90	9.98	0.01	7.3390	0.983682558762499	23	0.424475	0.12774	0.991808	5.004251	0.012669
391	641044	896719	5.320501	0.01	542.015	5	10	0.90	9.98	0.01	5.3205	0.991401729113636	23	0.424475	0.092727	0.995692	5.004284	0.009233
392	641046	896612	5.829384	0.01	495.271	5	10	0.90	9.98	0.01	5.8294	0.989684244858439	23	0.424475	0.101567	0.994829	5.004277	0.010104
393	641145	896617	5.1052	0.2	28.690	5	10	0.90	9.98	0.20	5.1052	0.992081724176810	23	0.424475	0.088985	0.996033	5.085739	0.177263
394	641244	896517	4.18267	1.2	6.319	5	10	0.90	9.98	1.20	4.1827	0.994680261059761	23	0.424475	0.072937	0.997337	5.51578	0.872907
395	641343	896514	6.704833	1	4.680	5	10	0.90	9.98	1.00	6.7048	0.986368383839104	23	0.424475	0.116755	0.993161	5.426225	1.15956
396	641348	896415	6.172936	0.5	9.754	5	10	0.90	9.98	0.50	6.1729	0.988437352737399	23	0.424475	0.10753	0.994202	5.213559	0.534531
397	641446	896414	8.23157	0.8	4.709	5	10	0.90	9.98	0.80	8.2316	0.979501125784072	23	0.424475	0.143174	0.989697	5.338606	1.133594
398	641446	896515	7.120564	0.8	5.427	5	10	0.90	9.98	0.80	7.1206	0.984634506922008	23	0.424475	0.123958	0.992288	5.340381	0.984013
399	641546	896514	7.52001	0.6	6.750	5	10	0.90	9.98	0.60	7.5200	0.982872405276508	23	0.424475	0.130872	0.991399	5.254829	0.778481
400	641636	896510	10.57832	0.6	4.849	5	10	0.90	9.98	0.60	10.5783	0.966298601281646	23	0.424475	0.183579	0.983005	5.250531	1.082757
401	641644	896614	9.303923	0.9	3.746	5	10	0.90	9.98	0.90	9.3039	0.973862361651716	23	0.424475	0.161671	0.986845	5.378739	1.435901
402	641642	896715	7.851084	0.9	4.419	5	10	0.90	9.98	0.90	7.8511	0.981340753278939	23	0.424475	0.136599	0.990626	5.381647	1.217866
403	641643	896816	5.964749	0.5	10.089	5	10	0.90	9.98	0.50	5.9647	0.989201346917917	23	0.424475	0.103917	0.994586	5.213725	0.51677
404	641545	896815	5.574458	1	5.614	5	10	0.90	9.98	1.00	5.5745	0.990563970836846	23	0.424475	0.097139	0.995271	5.428038	0.966798
405	641547	896718	4.552654	1.6	4.492	5	10	0.90	9.98	1.60	4.5527	0.993699575210935	23	0.424475	0.079375	0.996845	5.687029	1.265996
406	641549	896620	5.795638	1.5	3.744	5	10	0.90	9.98	1.50	5.7956	0.989802927437917	23	0.424475	0.100981	0.994888	5.641564	1.506966
407	641448	896615	7.033607	0.4	10.636	5	10	0.90	9.98	0.40	7.0336	0.985005629380316	23	0.424475	0.122452	0.992474	5.170254	0.48612
408	641343	896615	7.632006	0.1	38.307	5	10	0.90	9.98	0.10	7.6320	0.982361484619711	23	0.424475	0.13281	0.991142	5.042449	0.131634
409	641243	896617	8.55198	0.01	340.300	5	10	0.90	9.98	0.01	8.5520	0.977886344953562	23	0.424475	0.148707	0.988881	5.004226	0.014705
410	641144	896717	7.044059	0.1	41.432	5	10	0.90	9.98	0.10	7.0441	0.984961257657716	23	0.424475	0.122633	0.992452	5.042562	0.121707
411	641148	896811	6.372156	0.5	9.453	5	10	0.90	9.98	0.50	6.3722	0.987682112645903	23	0.424475	0.110986	0.993822	5.213396	0.551502
412	641242	896819	6.451556	0.2	22.773	5	10	0.90	9.98	0.20	6.4516	0.987374533501161	23	0.424475	0.112363	0.993667	5.085332	0.223303
413	641345	896812	6.065697	0.3	16.268	5	10	0.90	9.98	0.30	6.0657	0.988834116983530	23	0.424475	0.105669	0.994401	5.128187	0.315231
414	641348	896712	5.618611	0.1	51.755	5	10	0.90	9.98	0.10	5.6186	0.990414382349558	23	0.424475	0.097906	0.995196	5.042797	0.097436
415	641246	896716	6.951677	0.1	41.972	5	10	0.90	9.98	0.10	6.9517	0.985351208681714	23	0.424475	0.121032	0.992649	5.042579	0.120142
416	641446	896715	6.11258	1.4	3.777	5	10	0.90	9.98	1.40	6.1126	0.988661501041916	23	0.424475	0.106482	0.994315	5.598102	1.482278
417	641449	896814	4.999172	1.3	4.925	5	10	0.90	9.98	1.30	4.9992	0.992406385746896	23	0.424475	0.087141	0.996196	5.557484	1.128528
418	641449	896914	7.474678	0.2	19.712	5	10	0.90	9.98	0.20	7.4747	0.983077110128597	23	0.424475	0.130088	0.991502	5.084961	0.257965
419	641543	896915	5.910272	0.8	6.520	5	10	0.90	9.98	0.80	5.9103	0.989397000822143	23	0.424475	0.102971	0.994684	5.342027	0.819388
420	641644	896918	4.198903	0.4	17.707	5	10	0.90	9.98	0.40	4.1989	0.994638963062770	23	0.424475	0.073219	0.997316	5.17192	0.29209
421	641642	897018	5.008308	0.1	57.986	5	10	0.90	9.98	0.10	5.0083	0.992378676475201	23	0.424475	0.0873	0.996182	5.042882	0.086967
422	641546	897016	6.381848	0.01	453.017	5	10	0.90	9.98	0.01	6.3818	0.987644768531763	23	0.424475	0.111154	0.993803	5.004268	0.011047
423	641440	897015	7.952383	0.3	12.473	5	10	0.90	9.98	0.30	7.9524	0.980859258819391	23	0.424475	0.13835	0.990383	5.127153	0.411059
424	641345	897114	7.71669	0.3	12.845	5	10	0.90	9.98	0.30	7.7167	0.981970265025690	23	0.424475	0.134275	0.990944	5.127297	0.399177
425	641345	897014	7.530385	0.5	8.024	5	10	0.90	9.98	0.50	7.5304	0.982825385041486	23	0.424475	0.131052	0.991376	5.212347	0.649608
426	641243	897011	9.332794	0.3	10.678	5	10	0.90	9.98	0.30	9.3328	0.973701333961204	23	0.424475	0.162169	0.986763	5.126225	0.480066
427	641244	897115	6.687848	0.3	14.778	5	10	0.90	9.98	0.30	6.6878	0.986437047316189	23	0.424475	0.11646	0.993195	5.127876	0.347003
428	641147	897113	5.188308	0.2	28.236	5	10	0.90	9.98	0.20	5.1883	0.991822531887823	23	0.424475	0.090429	0.995903	5.085716	0.180118
429	641146	897016	8.235928	0.9	4.217	5	10	0.90	9.98	0.90	8.2359	0.979479564539299	23	0.424475	0.14325	0.989687	5.380923	1.27649
430	641245	896917	10.77099	0.2	13.844	5	10	0.90	9.98	0.20	10.7710	0.965074393384236	23	0.424475	0.186884	0.982382	5.083405	0.367183
431	641345	896915	11.95915	0.3	8.426	5	10	0.90	9.98	0.30	11.9592	0.957062254151882	23	0.424475	0.207214	0.978296	5.124068	0.60815
432	641046	897015	11.98782	0.4	6.356	5	10	0.90	9.98	0.40	11.9878	0.956859152059086	23	0.424475	0.207704	0.978192	5.165389	0.812696
433	641144	896917	9.507382	0.4	7.931	5	10	0.90	9.98	0.40	9.5074	0.972717325836819	23	0.424475	0.165175	0.986264	5.16813	0.651624
434	641045	896910	7.811047	0.4	9.599	5	10	0.90	9.98	0.40	7.8110	0.981529398099732	23	0.424475	0.135907	0.990722	5.169654	0.538582
435	641045	896818	6.380637	0.2	23.022	5	10	0.90	9.98	0.20	6.3806	0.987649437670837	23	0.424475	0.111133	0.993806	5.085356	0.220889
436	640946	896816	7.7047	0.1	37.954	5	10	0.90	9.98	0.10	7.7047	0.982025911935341	23	0.424475	0.134067	0.990972	5.042435	0.132857
437	643745	896980	3.380655	0.1	85.669	5	10	0.90	9.98	0.10	3.3807	0.996522618054244	23	0.424475	0.058969	0.99826	5.043061	0.058867
438	643845	896986	4.230306	0.1	68.552	5	10	0.90	9.98	0.10	4.2303	0.994558620638691	23	0.424475	0.073766	0.997276	5.042976	0.073565
439	643944	896991	10.91736	0.1	27.111	5	10	0.90	9.98	0.10	10.9174	0.964130307782235	23	0.424475	0.189393	0.981901	5.041662	0.185965
440	643943	897078	4.644292	0.1	62.487	5	10	0.90	9.98	0.10	4.6443	0.993443947930025	23	0.424475	0.080969	0.996717	5.042928	0.080704
441	643847	897067	2.960193	0.1	97.785	5	10	0.90	9.98	0.10	2.9602	0.997333090140412	23	0.424475	0.051642	0.998666	5.043096	0.051573
442	643804	897056	3.375104	1.6	6.050	5	10	0.90	9.98	1.60	3.3751	0.996534015127075	23	0.424475	0.058873	0.998266	5.688988	0.940328
443	643833	897048	5.922053	0.1	49.138	5	10	0.90	9.98	0.10	5.9221	0.989354839362360	23	0.424475	0.103175	0.994663	5.042752	0.102625
444	643843	897114	1.231593	0.01	2328.811	5	10	0.90	9.98	0.01	1.2316	0.999538020963017	23	0.424475	0.021494	0.999769	5.004319	0.002149
445	643873	897172	4.465877	0.3	22.023	5	10	0.90	9.98	0.30	4.4659	0.993936985858976	23	0.424475	0.077865	0.996964	5.128849	0.232887

446	643747	897180	2.137164	0.2	68.243	5	10	0.90	9.98	0.20	2.1372	0.998609314232495		23	0.424475	0.037292	0.999304		5.086303	0.074532
447	643647	897116	1.739138	3.4	6.271	5	10	0.90	9.98	3.40	1.7391	0.999078936777477		23	0.424475	0.030349	0.999539		6.467839	1.031391
448	643546	897117	0.396723	3	30.312	5	10	0.90	9.98	3.00	0.3967	0.999952057292845		23	0.424475	0.006924	0.999976		6.296284	0.207717
449	643544	896412	5.203827	0.7	8.382	5	10	0.90	9.98	0.70	5.2038	0.991773673467874		23	0.424475	0.090699	0.995878		5.299992	0.632277
450	643345	896410	9.096037	0.4	8.277	5	10	0.90	9.98	0.40	9.0960	0.975007624611167		23	0.424475	0.15809	0.987425		5.168526	0.624407
451	643246	896515	6.992192	1.4	3.308	5	10	0.90	9.98	1.40	6.9922	0.985180813099101		23	0.424475	0.121734	0.992563		5.595996	1.691602
452	643346	896520	5.68213	0.9	6.073	5	10	0.90	9.98	0.90	5.6821	0.990197139364984		23	0.424475	0.099009	0.995086		5.385091	0.886706
453	643443	896513	6.257444	0.5	9.624	5	10	0.90	9.98	0.50	6.2574	0.988119866746081		23	0.424475	0.108996	0.994042		5.213491	0.541733
454	643347	896616	5.676784	0.9	6.079	5	10	0.90	9.98	0.90	5.6768	0.990215516250111		23	0.424475	0.098917	0.995096		5.385099	0.885883
455	643255	896711	4.970642	1.9	3.545	5	10	0.90	9.98	1.90	4.9706	0.992492594174855		23	0.424475	0.086645	0.996239		5.814855	1.640069
456	643346	896715	5.421503	1.6	3.778	5	10	0.90	9.98	1.60	5.4215	0.991073163156539		23	0.424475	0.094482	0.995527		5.685213	1.504949
457	643444	896717	3.162817	1.4	7.265	5	10	0.90	9.98	1.40	3.1628	0.996955880550213		23	0.424475	0.055174	0.998477		5.60312	0.771253
458	643635	896463	7.102483	1	4.422	5	10	0.90	9.98	1.00	7.1025	0.984712042357170		23	0.424475	0.123644	0.992327		5.425509	1.226957
459	643648	896513	6.476609	1.5	3.355	5	10	0.90	9.98	1.50	6.4766	0.987276706246217		23	0.424475	0.112798	0.993618		5.639926	1.681166
460	643745	896515	4.330285	0.5	13.853	5	10	0.90	9.98	0.50	4.3303	0.994298873950518		23	0.424475	0.075506	0.997145		5.214826	0.376451
461	643625	896390	7.067092	1	4.444	5	10	0.90	9.98	1.00	7.0671	0.984863248135513		23	0.424475	0.123032	0.992403		5.425575	1.220968
462	643945	896815	8.252115	0.5	7.338	5	10	0.90	9.98	0.50	8.2521	0.979399382066482		23	0.424475	0.143529	0.989646		5.211607	0.710215
463	643946	896714	7.479199	1.2	3.558	5	10	0.90	9.98	1.20	7.4792	0.983056749027913		23	0.424475	0.130166	0.991492		5.509753	1.548706
464	643945	896615	5.760975	2.3	2.605	5	10	0.90	9.98	2.30	5.7610	0.989924127451589		23	0.424475	0.100379	0.994949		5.983851	2.297048
465	643946	896514	6.915436	1.8	2.680	5	10	0.90	9.98	1.80	6.9154	0.985502806405977		23	0.424475	0.120404	0.992725		5.766532	2.15151
466	644047	896519	5.944227	1.9	2.970	5	10	0.90	9.98	1.90	5.9442	0.989275259308756		23	0.424475	0.10356	0.994623		5.812214	1.957066
467	644144	896514	4.734095	0.9	7.276	5	10	0.90	9.98	0.90	4.7341	0.993188541091330		23	0.424475	0.082532	0.996588		5.386255	0.74025
468	644244	896517	3.170719	0.8	12.097	5	10	0.90	9.98	0.80	3.1707	0.996940666208096		23	0.424475	0.055311	0.998469		5.344635	0.441813
469	644346	896514	3.483	0.7	12.489	5	10	0.90	9.98	0.70	3.4830	0.996309147802397		23	0.424475	0.060752	0.998153		5.301364	0.424481
470	644344	896615	3.709193	0.2	39.392	5	10	0.90	9.98	0.20	3.7092	0.995814890651621		23	0.424475	0.064692	0.997905		5.086061	0.129114
471	644245	896616	4.378195	0.4	16.987	5	10	0.90	9.98	0.40	4.3782	0.994172269263149		23	0.424475	0.07634	0.997082		5.171839	0.304467
472	644146	896617	6.652709	0.7	6.578	5	10	0.90	9.98	0.70	6.6527	0.986578557238436		23	0.424475	0.115851	0.993267		5.298421	0.805496
473	644045	896615	6.485133	1.2	4.093	5	10	0.90	9.98	1.20	6.4851	0.987243336658900		23	0.424475	0.112945	0.993601		5.511924	1.346672
474	644047	896716	7.150566	2.2	2.185	5	10	0.90	9.98	2.20	7.1506	0.984505425613424		23	0.424475	0.124477	0.992222		5.935924	2.7172
475	644144	896717	7.26001	0.4	10.311	5	10	0.90	9.98	0.40	7.2600	0.984030047385395		23	0.424475	0.126372	0.991983		5.170086	0.501437
476	644166	896748	7.677423	0.4	9.762	5	10	0.90	9.98	0.40	7.6774	0.982152192936538		23	0.424475	0.133596	0.991036		5.169761	0.529592
477	644242	896716	7.099082	0.2	20.732	5	10	0.90	9.98	0.20	7.0991	0.984726605043699		23	0.424475	0.123586	0.992334		5.085103	0.245276
478	644345	896716	6.053216	0.2	24.248	5	10	0.90	9.98	0.20	6.0532	0.988879849453117		23	0.424475	0.105452	0.994424		5.085462	0.209728
479	644344	896812	6.980251	0.8	5.534	5	10	0.90	9.98	0.80	6.9803	0.985231134719179		23	0.424475	0.121527	0.992588		5.340587	0.965012
480	644243	896819	7.303083	1	4.303	5	10	0.90	9.98	1.00	7.3031	0.983841018964876		23	0.424475	0.127118	0.991888		5.425133	1.260867
481	644143	896815	7.531301	1	4.175	5	10	0.90	9.98	1.00	7.5313	0.982821230622197		23	0.424475	0.131068	0.991373		5.424692	1.299371
482	644048	896819	6.82749	1	4.597	5	10	0.90	9.98	1.00	6.8275	0.985867457489489		23	0.424475	0.11888	0.992909		5.426008	1.180373
483	644144	896915	7.200661	1	4.363	5	10	0.90	9.98	1.00	7.2007	0.984288711393097		23	0.424475	0.125345	0.992113		5.425326	1.243561
484	643544	897207	1.693694	4.3	5.397	5	10	0.90	9.98	4.30	1.6937	0.999126429156759		23	0.424475	0.029556	0.999563		6.856473	1.270363
485	643445	897114	3.287652	1	9.485	5	10	0.90	9.98	1.00	3.2877	0.996711107140819		23	0.424475	0.057349	0.998354		5.430694	0.572545
486	643346	897017	4.036829	0.4	18.413	5	10	0.90	9.98	0.40	4.0368	0.995044166537732		23	0.424475	0.070398	0.997519		5.17199	0.280892
487	643346	897118	4.655139	1.9	3.784	5	10	0.90	9.98	1.90	4.6551	0.993413355618566		23	0.424475	0.081158	0.996701		5.815611	1.536918
488	643344	897209	4.711464	3	2.560	5	10	0.90	9.98	3.00	4.7115	0.993253362307185		23	0.424475	0.082138	0.996621		6.2876	2.455811
489	643245	897115	5.506799	0.1	52.793	5	10	0.90	9.98	0.10	5.5068	0.990790935564197		23	0.424475	0.095964	0.995385		5.042814	0.095521
490	643545	896714	1.448959	0.1	199.506	5	10	0.90	9.98	0.10	1.4490	0.999360597479339		23	0.424475	0.025286	0.99968		5.043184	0.025278
491	643546	896615	2.547225	0.1	113.587	5	10	0.90	9.98	0.10	2.5472	0.998024835776332		23	0.424475	0.044443	0.999012		5.043126	0.044399
492	643541	896516	4.432518	0.2	33.002	5	10	0.90	9.98	0.20	4.4325	0.994027045900185		23	0.424475	0.077285	0.997009		5.085907	0.154107
493	643842	896513	5.306489	0.3	18.564	5	10	0.90	9.98	0.30	5.3065	0.991446828664642		23	0.424475	0.092483	0.995714		5.128526	0.276261
494	643844	896416	3.063492	0.7	14.192	5	10	0.90	9.98	0.70	3.0635	0.997143893886071		23	0.424475	0.053443	0.998571		5.301617	0.373563
495	643754	896415	9.77035	1	3.241	5	10	0.90	9.98	1.00	9.7704	0.971202066957599		23	0.424475	0.1697	0.985496		5.419671	1.672382
496	643647	896319	8.373613	1	3.764	5	10	0.90	9.98	1.00	8.3736	0.978792656414875		23	0.424475	0.145627	0.98934		5.422951	1.44075
497	643739	896308	5.564457	0.3	17.713	5	10	0.90	9.98	0.30	5.5645	0.990597691946938		23	0.424475	0.096965	0.995288		5.128416	0.289526
498	643679	896256	13.14615	0.2	11.473	5	10	0.90	9.98	0.20	13.1462	0.948272983390560		23	0.424475	0.227436	0.973793		5.081953	0.442951
499	641348	897415	6.922659	0.2	21.250	5	10	0.90	9.98	0.20	6.9227	0.985472654261822		23	0.424475	0.120529	0.99271		5.085168	0.239301
500	641444	897411	8.807039	0.2	16.802	5	10	0.90	9.98	0.20	8.8070	0.976558172242581		23	0.424475	0.153107	0.98821		5.084397	0.302604
501	641547	897314	7.05557	0.4	10.603	5	10	0.90	9.98	0.40	7.0556	0.984912315482298		23	0.424475	0.122832	0.992427		5.170238	0.487607
502	641544	897216	5.797132	0.4	12.865	5	10	0.90	9.98	0.40	5.7971	0.989797687510281		23	0.424475	0.101006	0.994886		5.171083	0.40196
503	641545	897115	7.072165	0.6	7.169	5	10	0.90	9.98	0.60	7.0722	0.984841619495674		23	0.424475	0.123119	0.992392		5.255339	0.733096
504	641645	897117	7.259437	0.4	10.311	5	10	0.90	9.98	0.40	7.2594	0.984032554655997		23	0.424475	0.126362	0.991984		5.170086	0.501398
505	641745	897017	2.198064	0.5	27.218	5	10	0.90	9.98	0.50	2.1981	0.998528967278390		23	0.424475	0.038354	0.999264		5.21574	0.191629
506	641746	897115	2.333894	0.2	62.502	5	10	0.90	9.98	0.20	2.3339	0.998341647793185		23	0.424475	0.040723	0.99917		5.08628	0.081378
507	641743	897215	7.7	0.1	37.976	5	10	0.90	9.98	0.10	7.7000	0.982047702117055		23	0.424475	0.133986	0.990983		5.042436	0.132778
508	641642	897218	6.706996	0.4	11.144	5	10	0.90	9.98	0.40	6.7070	0.986359627433071		23	0.424475	0.116792	0.993156		5.170488	0.463971
509	642345	896815	8.185696	2.2	1.913	5	10	0.90	9.98	2.20	8.1857	0.979727414556910		23	0.424475	0.142382	0.989812		5.931382	3.100487
510	642445	896816	7.483361	0.7	5.861	5	10	0.90	9.98	0.70	7.4834	0.983037994110007		23	0.424475	0.130238	0.991483		5.29735	0.903903
511	642544	896815	6.417602	0.9	5.386	5	10	0.90	9.98	0.90	6.4176	0.987506522576266		23	0.424475	0.111774	0.993734		5.384045	0.999664
512	642445	896914	9.730234	0.8	4.004	5	10	0.90	9.98	0.80	9.7302	0.971435790635361		23	0.424475	0.169009	0.985614		5.335818	1.332626
513	642545	896915	10.14127	1.6	2.045	5	10	0.90	9.98	1.60	10.1413	0.968997307160282		23	0.424475	0.176076	0.984377		5.66995	2.773199
514	642644	896912	9.101164	0.2	16.276	5	10	0.90	9.98	0.20	9.1012	0.974979680088832		23	0.424475	0.158178	0.987411		5.084261	0.312374
515	642564	896897	9.59481	0.7	4.602	5	10	0.90	9.98	0.70	9.5948	0.972217966961803		23	0.424475	0.166679	0.986011		5.294077	1.150434
516	642593	896884	7.084419	1	4.433	5	10	0.90	9.98	1.00	7.0844	0.984789312081982		23	0.424475	0.123332	0.992366		5.425543	1.2239
517	642584	896862	9.399445	0.8	4.140	5	10	0.90	9.98	0.80	9.3994	0.973327751620608		23	0.424475	0.163316	0.986574		5.336472	1.288989
518	642581	896832	7.237998	0.7	6.055	5	10	0.90	9.98	0.70	7.2380	0.984126225910989		23	0.424475	0.125991	0.992031		5.297679	0.87491
519	642645	896813	10.14579	0.7	4.361	5	10	0.90	9.98	0.70	10.1458	0.968969954505356		23	0.424475	0.176153	0.984363		5.293095	1.213792
520	642632	896816	7.703434	1.2	3.456	5	10	0.90	9.98	1.20	7.7034	0.982031782652502		23	0.424475	0.134046	0.990975		5.509221	1.59403
521	642653	896815	11.26	0.5	5.439	5	10	0.90	9.98	0.50	11.2600	0.961872947255144		23	0.424475	0.195261	0.980751		5.20782	0.957515
522	642673	896799	10.0362	0.1	29.381	5	10	0.90	9.98	0.10	10.0362	0.969629843871879		23	0.424475	0.17427	0.984698		5.041899	0.171604
523	642580	896764	9.49674	1.3	2.622	5	10	0.90	9.98	1.30	9.4967	0.972777808828768		23	0.424475	0.164991	0.986295		5.546458	2.115494
524	642552	896715	8.076813	0.8	4.797	5	10	0.90	9.98	0.80	8.0768	0.980259590324851		23	0.424475	0.140501	0.990081		5.338868	1.112855
525	642446	896716	10.08537	1.8	1.854	5	10	0.90	9.98	1.80	10.0854	0.969334619205425		23	0.424475	0.175115	0.984548		5.753956	3.10337
526	642397	896715	7.959602	2	2.132	5	10	0.90	9.98	2.00	7.9596	0.980824715894079		23	0.424475	0.138475	0.990366		5.847659	2.742816
527	642345	896714	8.398345	1.3	2.955	5	10	0.90	9.98	1.30	8.3983	0.978668096708292		23	0.424475	0.146054	0.989277		5.549767	1.878347
528	642288	896784	6.421445	1.1	4.474	5	10	0.90	9.98	1.10	6.4214	0.987491618082413		23	0.424475	0.111841	0.993726		5.469381	1.222531
529	642246	896819	8.239361	0.1	35.552	5	10	0.90	9.98	0.10	8.2394	0.979462571927370		23	0.424475	0.143309	0.989678		5.042324	0.14183
530	642210	896889	7.374384	0.4	10.154	5	10	0.90	9.98	0.40	7.3744	0.983525706628835		23	0.424475	0.128352	0.991729		5.169999	0.509162
531	642171	896856	9.371318	1.2	2.855	5	10	0.90	9.98	1.20	9.3713	0.973485717508695		23	0.424475	0.162832	0.986654		5.50479	1.927907
532	642129	896843	10.58618	2.3	1.435	5	10	0.90	9.98	2.30	10.5862	0.966249071836701		23	0.424475	0.183714	0.98298		5.960321	4.15351
533	642045	896874	8.614876	1.8	2.161	5	10	0.90	9.98	1.80	8.6149	0.977562340456241		23	0.424475	0.149792	0.988718		5.760355	2.665837
534	642055	896894	10.19966	0.7	4.339	5	10	0.90	9.98	0.70	10.1997	0.968643063181109		23	0.424475	0.177079	0.984197		5.292996	1.219963
535	642094	896921	10.16349	0.4	7.438	5	10	0.90	9.98	0.40	10.1635	0.968862731082369		23	0.424475	0.176458	0.984308		5.167464	0.694755
536	642098	896941	10.3246	0.9	3.388	5	10	0.90	9.98	0.90	10.3246	0.967878531770542		23	0.424475	0.179225	0.983808		5.376412	1.586904
537	642074	896976	11.00697	1	2.890	5	10	0.90	9.98	1.00	11.0070	0.963546342877201		23	0.424475	0.190928	0.981604		5.416363	1.874161
538	642106	896953	10.07136	0.9	3.470	5	10	0.90	9.98	0.90	10.0714	0.969418878408173		23	0.424475	0.174875	0.984591		5.377011	1.549619
539	642095	896931	10.11069	0.6	5.064	5	10	0.90	9.98	0.60	10.1107	0.969182054459707		23	0.424475	0.17555	0.98447		5.251279	1.036945
540	642069	896926	11.34214	0.5	5.401	5	10	0.90	9.98	0.50	11.3421	0.961321967068073		23	0.424475	0.196667	0.98047		5.207701	0.964132
541	642083	896928	10.15366	1	3.123	5	10	0.90	9.98	1.00	10.1537	0.968922301558872		23	0.424475	0.176289	0.984339		5.418686	1.735277
542	642110	896924	9.987301	1	3.173	5	10	0.90	9.98	1.00	9.9873	0.969922069355265		23	0.424475	0.17343	0.984846		5.419118	1.708018
543	642125	896918	9.875353	1	3.207	5	10	0.90	9.98	1.00	9.8754	0.970585925683418		23	0.424475	0.171505	0.985183		5.419405	1.689642
544	642148	896957	9.444052	0.3	10.557	5	10	0.90	9.98	0.30	9.4441	0.973076295792187		23	0.424475	0.164084	0.986446		5.126144	0.485581
545	642190	896968	9.309319	0.6	5.484	5	10	0.90	9.98	0.60	9.3093	0.973832302084232		23	0.424475	0.161764	0.986829		5.252485	0.957803
546	642444	896317	12.0214	1.2	2.248	5	10	0.90	9.98	1.20	12.0214	0.956620685070216		23	0.424475	0.208277	0.97807		5.496045	2.444514
547	642545	896383	8.172775	1.8	2.275	5	10	0.90	9.98	1.80	8.1728	0.979790929682728		23	0.424475	0.142159	0.989844		5.762089	2.532867
548	642544	896313	5.60561	2	3.012	5	10	0.90	9.98	2.00	5.6056	0.990458550207944		23	0.424475	0.09768	0.995218		5.855985	1.944264
549	642644	896311	5.254815	0.9	6.561	5	10	0.90	9.98	0.90	5.2548	0.991612132201158		23	0.424475	0.091585	0.995797		5.385642	0.820804
550	642747	896412	9.143167	1.8	2.039	5	10	0.90	9.98	1.80	9.1432	0.974750171538859		23	0.424475	0.158902	0.987294		5.758168	2.823894
551	642742	896364	7.762243	1.3	3.191	5	10	0.90	9.98	1.30	7.7622	0.981758078934575		23	0.424475	0.135063	0.990837		5.551503	1.739726
552	642749	896312	6.944591	1	4.521	5	10	0.90	9.98	1.00	6.9446	0.985380910832202		23	0.424475	0.120909	0.992664		5.425798	1.200224
553	642745	896213	6.298985	1.9	2.805	5	10	0.90	9.98	1.90	6.2990	0.987962245090677		23	0.424475	0.109717	0.993963		5.811136	2.072032
554	642643	896113	6.637676	1.9	2.663	5	10	0.90	9.98	1.90	6.6377	0.986638873767226		23	0.424475	0.11559	0.993297		5.810049	2.181495
555	642545	896119	8.001678	2	2.121	5	10	0.90	9.98	2.00	8.0017	0.980622774656850		23	0.424475	0.139202	0.990264		5.847484	2.756937
556	642447	896117	12.91792	1	2.483	5	10	0.90	9.98	1.00	12.9179	0.950023173454984		23	0.424475	0.223555	0.974691		5.41052	2.178971
557	642543	896214	5.303069	1.5	4.088	5	10	0.90	9.98	1.50	5.3031	0.991457818556028		23	0.424475	0.092424	0.99572		5.642636	1.380425
558	642568	896218	5.245262	1.9	3.361	5	10	0.90	9.98	1.90	5.2453	0.991642516788035		23	0.424475	0.091419	0.995812		5.814158	1.729693
559	642567	896230	5.257199	1.8	3.514	5	10	0.90	9.98	1.80	5.2572	0.991604541048678		23	0.424475	0.091627	0.995793		5.771278	1.642343
560	642567	896242	5.194274	1.8	3.556	5	10	0.90	9.98	1.80	5.1943	0.991803766224779		23	0.424475	0.090533	0.995893		5.771433	1.622903
561	642579	896253	5.190851	0.8	7.412	5	10	0.90	9.98	0.80	5.1909	0.991814535655727		23	0.424475	0.090474	0.995899		5.342863	0.72082
562	642594	896254	5.435218	2	3.105	5	10	0.90	9.98	2.00	5.4352	0.991028076583219		23	0.424475	0.09472	0.995504		5.856477	1.885887
563	642608	896253	5.380613	2	3.137	5	10	0.90	9.98	2.00	5.3806	0.991206916545182		23	0.424475	0.093771	0.995594		5.856631	1.867165
564	642563	896285	4.247607	2	3.966	5	10	0.90	9.98	2.00	4.2476	0.994514103323544		23	0.424475	0.074067	0.997253		5.85949	1.477268
565	642565	896275	4.258984	1.8	4.331	5	10	0.90	9.98	1.80	4.2590	0.994484730793207		23	0.424475	0.074265	0.997239		5.773518	1.333076
566	642565	896262	4.490443	1.7	4.318	5	10	0.90	9.98	1.70	4.4904	0.993870236260461		23	0.424475	0.078293	0.99693		5.730093	1.326892
567	642555	896253	5.113189	1.8	3.612	5	10	0.90	9.98	1.80	5.1132	0.992056988437809		23	0.424475	0.089124	0.996021		5.77163	1.59784
568	642544	896253	5.212331	1	6.000	5	10	0.90	9.98	1.00	5.2123	0.991746839143008		23	0.424475	0.090847	0.995865		5.428549	0.904712
569	642532	896254	8.620144	1.5	2.534	5	10	0.90	9.98	1.50	8.6201	0.977535098212462		23	0.424475	0.149883	0.988704		5.633612	2.222848
570	643469	896767	4.08735	2	4.121	5	10	0.90	9.98	2.00	4.0874	0.994919557413542		23	0.424475	0.071277	0.997457		5.85984	1.421919
571	643466	896751	2.89722	1.2	9.108	5	10	0.90	9.98	1.20	2.8972	0.997445255339255		23	0.424475	0.050544	0.998722		5.517214	0.605759
572	643458	896675	2.951045	1.1	9.679	5	10	0.90	9.98	1.10	2.9510	0.997349533426417		23	0.424475	0.051483	0.998674		5.474067	0.565559
573	643416	896582	5.369735	2	3.143	5	10	0.90	9.98	2.00	5.3697	0.991242330556116		23	0.424475	0.093582	0.995612		5.856662	1.863435
574	643350	896538	6.18858	1.4	3.731	5	10	0.90	9.98	1.40	6.1886	0.988378900681021		23	0.424475	0.107801	0.994172		5.597931	1.500422
575	643357	896579	7.981215	1	3.944	5	10	0.90	9.98	1.00	7.9812	0.980721115125547		23	0.424475	0.138848	0.990314		5.423785	1.375035
576	643359	896583	7.419147	0.9	4.671	5	10	0.90	9.98	0.90	7.4191	0.983326221937015		23	0.424475	0.129127	0.991628		5.382419	1.152413
577	643383	896579	6.219201	0.9	5.555	5	10	0.90	9.98	0.90	6.2192	0.988264067239809		23	0.424475	0.108333	0.994115		5.38434	0.969254
578	643358	896594	6.373614	0.9	5.422	5	10	0.90	9.98	0.90	6.3736	0.987676498412606		23	0.424475	0.111011	0.993819		5.384111	0.992926
579	643341	896582	7.243325	1.8	2.561	5	10	0.90	9.98	1.80	7.2433	0.984102976501326		23	0.424475	0.126083	0.99202		5.765443	2.25139
580	643333	896582	7.243325	0.9	4.782	5	10	0.90	9.98	0.90	7.2433	0.984102976501326		23	0.424475	0.126083	0.99202		5.382721	1.125695
581	643352	896606	6.175467	1.8	2.997	5	10	0.90	9.98	1.80	6.1755	0.988427905814661		23	0.424475	0.107574	0.994197		5.768807	1.92509
582	643422	896604	4.906214	2.5	2.850	5	10	0.90	9.98	2.50	4.9062	0.992685477620760		23	0.424475	0.085525	0.996336		6.072387	2.13029
583	643431	896597	4.740374	2.2	3.281	5	10	0.90	9.98	2.20	4.7404	0.993170501817400		23	0.424475	0.082641	0.996579		5.944161	1.811878
584	643518	896571	4.66889	0.6	10.801	5	10	0.90	9.98	0.60	4.6689	0.993374471339327		23	0.424475	0.081397	0.996682		5.257551	0.486764

585	644044	897414	7.572745	0.2	19.462	5	10	0.90	9.98	0.20	7.5727	0.982632749489004		23	0.424475	0.131785	0.991278		5.084922	0.261271
586	644044	897314	6.954687	1	4.514	5	10	0.90	9.98	1.00	6.9547	0.985338582778936		23	0.424475	0.121084	0.992642		5.42578	1.201934
587	643944	897218	5.332123	0.2	27.482	5	10	0.90	9.98	0.20	5.3321	0.991364232915680		23	0.424475	0.092929	0.995673		5.085677	0.185053
588	643843	897217	1.383002	0.2	105.401	5	10	0.90	9.98	0.20	1.3830	0.999417473074516		23	0.424475	0.024136	0.999709		5.086373	0.048257
589	643946	897316	5.958983	0.4	12.520	5	10	0.90	9.98	0.40	5.9590	0.989222139203116		23	0.424475	0.103816	0.994596		5.170983	0.413022
590	643941	897419	5.054066	0.2	28.978	5	10	0.90	9.98	0.20	5.0541	0.992239140114217		23	0.424475	0.088096	0.996112		5.085752	0.175506
591	643845	897414	1.534257	0.7	28.301	5	10	0.90	9.98	0.70	1.5343	0.999283118858997		23	0.424475	0.026775	0.999641		5.302264	0.187355
592	643841	897517	3.092806	0.4	24.002	5	10	0.90	9.98	0.40	3.0928	0.997089026602800		23	0.424475	0.053953	0.998543		5.172343	0.215499
593	643744	897511	0.80158	1.4	28.620	5	10	0.90	9.98	1.40	0.8016	0.999804286787273		23	0.424475	0.01399	0.999902		5.604843	0.195837
594	643745	897414	1.085029	1	28.691	5	10	0.90	9.98	1.00	1.0850	0.999641420456123		23	0.424475	0.018936	0.999821		5.43196	0.189328
595	643645	897315	1.48455	3.7	6.885	5	10	0.90	9.98	3.70	1.4846	0.999328807330259		23	0.424475	0.025907	0.999664		6.597754	0.958252
596	643746	897320	1.30549	1	23.848	5	10	0.90	9.98	1.00	1.3055	0.999480929106713		23	0.424475	0.022783	0.99974		5.431891	0.227772
597	643847	897318	2.648253	0.8	14.476	5	10	0.90	9.98	0.80	2.6483	0.997865164629101		23	0.424475	0.046204	0.998932		5.344954	0.369239
598	643824	897401	2.052408	0.5	29.146	5	10	0.90	9.98	0.50	2.0524	0.998717384842811		23	0.424475	0.035814	0.999358		5.215781	0.178953
599	643824	897389	1.978763	0.5	30.229	5	10	0.90	9.98	0.50	1.9788	0.998807743702424		23	0.424475	0.034529	0.999404		5.2158	0.172542
600	643825	897375	1.900763	0.7	22.849	5	10	0.90	9.98	0.70	1.9008	0.998899851408677		23	0.424475	0.033168	0.99945		5.302148	0.232052
601	643833	897375	1.743553	0.7	24.907	5	10	0.90	9.98	0.70	1.7436	0.999074255839155		23	0.424475	0.030426	0.999537		5.302201	0.212884
602	643813	897376	1.934282	0.5	30.923	5	10	0.90	9.98	0.50	1.9343	0.998860723026353		23	0.424475	0.033753	0.99943		5.215812	0.16867
603	643804	897375	1.9152	0.7	22.677	5	10	0.90	9.98	0.70	1.9152	0.998883082116667		23	0.424475	0.03342	0.999441		5.302143	0.233812
604	643795	897375	1.897665	0.9	18.090	5	10	0.90	9.98	0.90	1.8977	0.998903433378124		23	0.424475	0.033114	0.999452		5.388477	0.297867
605	643827	897351	2.132011	1.5	10.127	5	10	0.90	9.98	1.50	2.1320	0.998616009329894		23	0.424475	0.037202	0.999308		5.647276	0.557644
606	643826	897357	2.147906	2.2	7.220	5	10	0.90	9.98	2.20	2.1479	0.998595305692733		23	0.424475	0.037479	0.999297		5.949318	0.823964
607	643826	897364	2.038031	2.1	7.914	5	10	0.90	9.98	2.10	2.0380	0.998735283644037		23	0.424475	0.035563	0.999367		5.906295	0.746347
608	643825	897368	2.038031	0.5	29.351	5	10	0.90	9.98	0.50	2.0380	0.998735283644037		23	0.424475	0.035563	0.999367		5.215784	0.177702
609	643839	897375	1.743553	1.2	15.120	5	10	0.90	9.98	1.20	1.7436	0.999074255839155		23	0.424475	0.030426	0.999537		5.518058	0.364943
610	643850	897375	1.619862	1.3	15.139	5	10	0.90	9.98	1.30	1.6199	0.999200911176659		23	0.424475	0.028268	0.9996		5.561301	0.367339
611	643145	895597	5.168738	2.5	2.707	5	10	0.90	9.98	2.50	5.1687	0.991883938299673		23	0.424475	0.090089	0.995934		6.071521	2.243071
612	643345	895615	5.474043	2.5	2.557	5	10	0.90	9.98	2.50	5.4740	0.990899833417017		23	0.424475	0.095395	0.99544		6.070458	2.373994
613	643344	895716	5.222802	2.8	2.443	5	10	0.90	9.98	2.80	5.2228	0.991713738436227		23	0.424475	0.091029	0.995848		6.199897	2.538227
614	643244	895716	7.158469	1.5	3.040	5	10	0.90	9.98	1.50	7.1585	0.984471335130701		23	0.424475	0.124614	0.992205		5.638108	1.854641
615	643145	895716	6.263826	1.3	3.940	5	10	0.90	9.98	1.30	6.2638	0.988095717837210		23	0.424475	0.109107	0.99403		5.555063	1.40992
616	643046	895717	5.814113	2.1	2.787	5	10	0.90	9.98	2.10	5.8141	0.989738036192999		23	0.424475	0.101301	0.994856		5.89813	2.116385
617	643144	895817	6.442655	1.9	2.743	5	10	0.90	9.98	1.90	6.4427	0.987409200498418		23	0.424475	0.112209	0.993685		5.810682	2.118502
618	643245	895815	6.69657	0.7	6.535	5	10	0.90	9.98	0.70	6.6966	0.986401809158788		23	0.424475	0.116611	0.993178		5.298368	0.81071
619	643348	895813	5.747327	2.8	2.222	5	10	0.90	9.98	2.80	5.7473	0.989971651220271		23	0.424475	0.100142	0.994973		6.197789	2.789871
620	643280	895859	7.445107	0.9	4.655	5	10	0.90	9.98	0.90	7.4451	0.983209991485989		23	0.424475	0.129576	0.991569		5.382374	1.156355
621	643264	895858	6.403592	1.7	3.039	5	10	0.90	9.98	1.70	6.4036	0.987560783951529		23	0.424475	0.111531	0.993761		5.725458	1.884201
622	643245	895835	5.200256	1.5	4.168	5	10	0.90	9.98	1.50	5.2003	0.991784928819775		23	0.424475	0.090637	0.995884		5.642848	1.35396
623	643227	895857	5.620048	1.8	3.289	5	10	0.90	9.98	1.80	5.6200	0.990409494278946		23	0.424475	0.097931	0.995193		5.770348	1.754287
624	643209	895858	6.452086	2.3	2.329	5	10	0.90	9.98	2.30	6.4521	0.987372467809738		23	0.424475	0.112372	0.993666		5.981315	2.568193
625	643189	895856	6.399053	1.8	2.893	5	10	0.90	9.98	1.80	6.3991	0.987578338699333		23	0.424475	0.111453	0.99377		5.768146	1.993646
626	643245	895898	6.175768	1.7	3.149	5	10	0.90	9.98	1.70	6.1758	0.988426782082638		23	0.424475	0.107579	0.994197		5.726094	1.818228
627	643245	895884	6.139836	1.8	3.014	5	10	0.90	9.98	1.80	6.1398	0.988560547051977		23	0.424475	0.106955	0.994264		5.76891	1.914154
628	643245	895869	6.243329	1.6	3.286	5	10	0.90	9.98	1.60	6.2433	0.988173190587079		23	0.424475	0.108751	0.994069		5.683208	1.729698
629	643245	895857	6.035548	1.9	2.925	5	10	0.90	9.98	1.90	6.0355	0.988944429302816		23	0.424475	0.105145	0.994457		5.811942	1.98669
630	643297	895859	7.358956	1.1	3.913	5	10	0.90	9.98	1.10	7.3590	0.983594187422386		23	0.424475	0.128085	0.991763		5.467529	1.397332
631	643345	895916	6.540942	0.5	9.213	5	10	0.90	9.98	0.50	6.5409	0.987023791037482		23	0.424475	0.113913	0.993491		5.213254	0.565858
632	643446	895914	5.260001	1.9	3.352	5	10	0.90	9.98	1.90	5.2600	0.991595614545026		23	0.424475	0.091675	0.995789		5.814119	1.734498
633	643349	896020	5.231471	1	5.979	5	10	0.90	9.98	1.00	5.2315	0.991686284468158		23	0.424475	0.09118	0.995834		5.428523	0.907998
634	643343	896116	4.043277	0.5	14.829	5	10	0.90	9.98	0.50	4.0433	0.995028348364341		23	0.424475	0.07051	0.997511		5.214984	0.351672
635	643244	896117	4.143799	1	7.534	5	10	0.90	9.98	1.00	4.1438	0.994778506307489		23	0.424475	0.07226	0.997386		5.429859	0.72071
636	643146	896118	5.546305	1	5.643	5	10	0.90	9.98	1.00	5.5463	0.990658743640364		23	0.424475	0.09665	0.995318		5.428079	0.961977
637	643048	896116	6.607928	1	4.747	5	10	0.90	9.98	1.00	6.6079	0.986757835954572		23	0.424475	0.115075	0.993357		5.426393	1.143101
638	642946	896119	6.161238	1.2	4.305	5	10	0.90	9.98	1.20	6.1612	0.988480965829291		23	0.424475	0.107327	0.994224		5.512565	1.280482
639	642844	896115	6.090699	1.8	3.038	5	10	0.90	9.98	1.80	6.0907	0.988742226389319		23	0.424475	0.106103	0.994355		5.769051	1.899067
640	642750	896020	6.562805	1.4	3.521	5	10	0.90	9.98	1.40	6.5628	0.986937280826395		23	0.424475	0.114292	0.993447		5.597059	1.589606
641	642750	895916	6.584701	1.8	2.813	5	10	0.90	9.98	1.80	6.5847	0.986850355793783		23	0.424475	0.114672	0.993403		5.76758	2.050478
642	642840	895912	6.202927	1	5.052	5	10	0.90	9.98	1.00	6.2029	0.988325166694996		23	0.424475	0.10805	0.994145		5.42707	1.074176
643	642945	896015	6.743255	1	4.653	5	10	0.90	9.98	1.00	6.7433	0.986212428484974		23	0.424475	0.11742	0.993082		5.426158	1.166082
644	642946	895916	7.332645	1.3	3.374	5	10	0.90	9.98	1.30	7.3326	0.983710651398297		23	0.424475	0.12763	0.991822		5.552599	1.645618
645	642948	895815	5.681246	1.9	3.106	5	10	0.90	9.98	1.90	5.6812	0.990200179294654		23	0.424475	0.098994	0.995088		5.812973	1.871648
646	642945	895716	8.488008	0.6	5.998	5	10	0.90	9.98	0.60	8.4880	0.978213529451277		23	0.424475	0.147602	0.989047		5.253621	0.875914
647	643445	896914	2.875587	1	10.839	5	10	0.90	9.98	1.00	2.8756	0.997483232586045		23	0.424475	0.050167	0.998741		5.431028	0.501042
648	643345	896914	4.506975	0.1	64.375	5	10	0.90	9.98	0.10	4.5070	0.993825111842448		23	0.424475	0.07858	0.996908		5.042945	0.078337
649	643245	896915	3.056422	1	10.200	5	10	0.90	9.98	1.00	3.0564	0.997157048961607		23	0.424475	0.053319	0.998578		5.430887	0.532435
650	643150	896816	6.66713	0.7	6.564	5	10	0.90	9.98	0.70	6.6671	0.986520570306717		23	0.424475	0.116101	0.993237		5.298403	0.807211
651	643148	896714	6.786597	0.8	5.689	5	10	0.90	9.98	0.80	6.7866	0.986035453066743		23	0.424475	0.118172	0.992993		5.340865	0.938749
652	643045	896714	8.347667	1	3.775	5	10	0.90	9.98	1.00	8.3477	0.978922946732941		23	0.424475	0.145179	0.989405		5.423008	1.436413
653	643045	896516	8.901338	0.8	4.364	5	10	0.90	9.98	0.80	8.9013	0.976057557100581		23	0.424475	0.154733	0.987956		5.337416	1.222959
654	642941	896517	8.092203	2	2.098	5	10	0.90	9.98	2.00	8.0922	0.980184791091097		23	0.424475	0.140767	0.990043		5.847106	2.787297
655	642945	896415	6.368031	1.9	2.775	5	10	0.90	9.98	1.90	6.3680	0.987697989693883		23	0.424475	0.110914	0.99383		5.810919	2.094372
656	642945	896315	8.367628	1.1	3.451	5	10	0.90	9.98	1.10	8.3676	0.978822745516182		23	0.424475	0.145524	0.989355		5.465261	1.583724
657	643045	896316	5.833148	1.6	3.514	5	10	0.90	9.98	1.60	5.8331	0.989670964981035		23	0.424475	0.101632	0.994822		5.684243	1.61769
658	643145	896315	6.81893	1	4.603	5	10	0.90	9.98	1.00	6.8189	0.985902705400211		23	0.424475	0.118732	0.992926		5.426024	1.178922
659	643246	896316	10.01068	1	3.166	5	10	0.90	9.98	1.00	10.0107	0.969782524791575		23	0.424475	0.173832	0.984775		5.419058	1.711852
660	643345	896317	8.838826	0.4	8.511	5	10	0.90	9.98	0.40	8.8388	0.976389997858949		23	0.424475	0.153655	0.988124		5.168765	0.607323
661	643443	896316	6.185863	0.1	47.072	5	10	0.90	9.98	0.10	6.1859	0.988389062898448		23	0.424475	0.107754	0.994178		5.04271	0.107127
662	642345	896317	8.536716	1	3.694	5	10	0.90	9.98	1.00	8.5367	0.977964629132336		23	0.424475	0.148443	0.988921		5.422594	1.467985
663	642344	896216	11.01263	1.2	2.444	5	10	0.90	9.98	1.20	11.0126	0.963509305796614		23	0.424475	0.191025	0.981585		5.499617	2.250092
664	642246	896219	5.122682	2.5	2.731	5	10	0.90	9.98	2.50	5.1227	0.992027546226853		23	0.424475	0.089289	0.996006		6.071676	2.223299
665	642247	896317	6.371158	2.5	2.201	5	10	0.90	9.98	2.50	6.3712	0.987685954856496		23	0.424475	0.110969	0.993824		6.066986	2.757083
666	642345	896416	7.528088	2	2.252	5	10	0.90	9.98	2.00	7.5281	0.982835800666512		23	0.424475	0.131012	0.991381		5.849397	2.59766
667	642346	896516	6.540602	0.9	5.286	5	10	0.90	9.98	0.90	6.5406	0.987025134151604		23	0.424475	0.113907	0.993491		5.383858	1.018493
668	642446	896515	6.060792	2	2.788	5	10	0.90	9.98	2.00	6.0608	0.988852100790522		23	0.424475	0.105584	0.99441		5.854596	2.099869
669	642546	896515	6.986179	2	2.423	5	10	0.90	9.98	2.00	6.9862	0.985206163548973		23	0.424475	0.12163	0.992576		5.851445	2.414538
670	642646	896516	6.566966	0.8	5.876	5	10	0.90	9.98	0.80	6.5670	0.986920783943584		23	0.424475	0.114364	0.993439		5.341171	0.908912
671	642743	896616	12.7249	1.2	2.131	5	10	0.90	9.98	1.20	12.7249	0.951481066220099		23	0.424475	0.22027	0.975439		5.49338	2.578321
672	642745	896717	6.42207	1.8	2.883	5	10	0.90	9.98	1.80	6.4221	0.987489193285138		23	0.424475	0.111852	0.993725		5.768077	2.000697
673	642645	896715	11.67679	1.4	2.011	5	10	0.90	9.98	1.40	11.6768	0.959038043226251		23	0.424475	0.202391	0.979305		5.580181	2.774829
674	642545	896616	6.954744	1.3	3.554	5	10	0.90	9.98	1.30	6.9547	0.985338343632075		23	0.424475	0.121085	0.992642		5.553514	1.562527
675	642350	896617	9.918251	0.5	6.141	5	10	0.90	9.98	0.50	9.9183	0.970332387424085		23	0.424475	0.172243	0.985055		5.209648	0.848343
676	642146	897016	7.938124	0.4	9.449	5	10	0.90	9.98	0.40	7.9381	0.980927398433420		23	0.424475	0.138104	0.990418		5.16955	0.547121
677	642047	897017	9.823456	1	3.224	5	10	0.90	9.98	1.00	9.8235	0.970891239874851		23	0.424475	0.170613	0.985338		5.419537	1.681114
678	641944	897016	5.454167	0.5	11.021	5	10	0.90	9.98	0.50	5.4542	0.990965598645572		23	0.424475	0.095049	0.995473		5.214106	0.473096
679	642045	897116	5.76977	0.4	12.925	5	10	0.90	9.98	0.40	5.7698	0.989893443422067		23	0.424475	0.100531	0.994934		5.171099	0.400088
680	642147	897115	4.565215	1.9	3.858	5	10	0.90	9.98	1.90	4.5652	0.993664834580529		23	0.424475	0.079594	0.996827		5.815818	1.507483
681	642899	896810	9.861048	0.1	29.882	5	10	0.90	9.98	0.10	9.8610	0.970670237354794		23	0.424475	0.171259	0.985226		5.041944	0.168729
682	642918	896823	8.237684	0.01	352.904	5	10	0.90	9.98	0.01	8.2377	0.979470873577037		23	0.424475	0.14328	0.989682		5.004232	0.01418
683	642932	896832	7.810815	0.01	371.671	5	10	0.90	9.98	0.01	7.8108	0.981530488488173		23	0.424475	0.135903	0.990722		5.004241	0.013464
684	643573	896818	1.989325	0.4	37.275	5	10	0.90	9.98	0.40	1.9893	0.998794987101812		23	0.424475	0.034713	0.999397		5.172638	0.138769
685	643556	896721	3.364151	0.01	854.259	5	10	0.90	9.98	0.01	3.3642	0.996556448668516		23	0.424475	0.058682	0.998277		5.004306	0.005858
686	643553	896628	10.99094	0.01	267.378	5	10	0.90	9.98	0.01	10.9909	0.963651139452214		23	0.424475	0.190654	0.981657		5.004164	0.018716
687	643545	896544	5.066525	0.01	568.880	5	10	0.90	9.98	0.01	5.0665	0.992200929585661		23	0.424475	0.088312	0.996093		5.004287	0.008797
688	643506	896452	5.46206	0.05	105.988	5	10	0.90	9.98	0.05	5.4621	0.990939510766804		23	0.424475	0.095187	0.995459		5.02141	0.047377
689	643470	896358	5.974604	0.01	483.401	5	10	0.90	9.98	0.01	5.9746	0.989165763754400		23	0.424475	0.104088	0.994568		5.004274	0.010352
690	643416	896276	5.551116	0.01	519.763	5	10	0.90	9.98	0.01	5.5511	0.990642581705140		23	0.424475	0.096734	0.99531		5.004281	0.009628
691	643363	896197	5.489027	0.1	52.962	5	10	0.90	9.98	0.10	5.4890	0.990850098499538		23	0.424475	0.095655	0.995415		5.042816	0.095216
692	643317	896115	4.494529	0.1	64.551	5	10	0.90	9.98	0.10	4.4945	0.993859098744007		23	0.424475	0.078364	0.996925		5.042946	0.078123
693	643239	896052	3.846233	0.1	75.350	5	10	0.90	9.98	0.10	3.8462	0.995500404703590		23	0.424475	0.067079	0.997748		5.043017	0.066928
694	643162	895989	11.68831	0.1	25.412	5	10	0.90	9.98	0.10	11.6883	0.958958304318442		23	0.424475	0.202588	0.979264		5.041438	0.198387
695	643485	896356	5.309824	0.2	27.596	5	10	0.90	9.98	0.20	5.3098	0.991436105168822		23	0.424475	0.092541	0.995709		5.085683	0.184288
696	641855	897241	7.143418	0.1	40.867	5	10	0.90	9.98	0.10	7.1434	0.984536227561935		23	0.424475	0.124353	0.992238		5.042543	0.123388
697	641836	897242	8.392628	0.1	34.921	5	10	0.90	9.98	0.10	8.3926	0.978696921387853		23	0.424475	0.145956	0.989291		5.042291	0.144393
698	641812	897240	8.111229	0.1	36.098	5	10	0.90	9.98	0.10	8.1112	0.980092128435630		23	0.424475	0.141095	0.989996		5.042351	0.139684
699	641799	897241	8.430967	0.2	17.529	5	10	0.90	9.98	0.20	8.4310	0.978503254368524		23	0.424475	0.146618	0.989193		5.084565	0.290066
700	641823	897194	5.415549	0.4	13.760	5	10	0.90	9.98	0.40	5.4155	0.991092701249052		23	0.424475	0.094378	0.995536		5.171307	0.375829
701	641833	897184	7.601377	0.3	13.035	5	10	0.90	9.98	0.30	7.6014	0.982501945438050		23	0.424475	0.13228	0.991212		5.127366	0.393353
702	641848	897170	3.668925	1	8.504	5	10	0.90	9.98	1.00	3.6689	0.995905143189258		23	0.424475	0.063991	0.99795		5.430346	0.638599
703	641828	897155	2.784322	1	11.194	5	10	0.90	9.98	1.00	2.7843	0.997640327346366		23	0.424475	0.048576	0.998819		5.431096	0.485191
704	641793	897142	4.542771	1.1	6.301	5	10	0.90	9.98	1.10	4.5428	0.993726842436649		23	0.424475	0.079203	0.996858		5.472345	0.868499
705	641787	897154	5.83272	0.6	8.666	5	10	0.90	9.98	0.60	5.8327	0.989672475446184		23	0.424475	0.101624	0.994823		5.256592	0.60659
706	641779	897168	5.536505	0.8	6.954	5	10	0.90	9.98	0.80	5.5365	0.990691622675801		23	0.424475	0.09648	0.995335		5.342474	0.768239
707	641752	897158	5.836021	0.7	7.484	5	10	0.90	9.98	0.70	5.8360	0.989660822978038		23	0.424475	0.101682	0.994817		5.299353	0.708083
708	641748	897123	2.853785	0.7	15.231	5	10	0.90	9.98	0.70	2.8538	0.997521219504790		23	0.424475	0.049787	0.99876		5.301731	0.348079
709	641759	897100	1.989746	0.5	30.062	5	10	0.90	9.98	0.50	1.9897	0.998794477220186		23	0.424475	0.034721	0.999397		5.215797	0.173499
710	641739	897068	2.692097	0.5	22.233	5	10	0.90	9.98	0.50	2.6921	0.997793944037072		23	0.424475	0.046969	0.998896		5.215581	0.234584
711	641739	897078	2.284986	0.3	42.919	5	10	0.90	9.98	0.30	2.2850	0.998410386407015		23	0.424475	0.03987	0.999205		5.129429	0.119515
712	641739	897088	1.384185	0.3	70.804	5	10	0.90	9.98	0.30	1.3842	0.999416476271968		23	0.424475	0.024156	0.999708		5.129559	0.072448
713	641739	897098	2.131303	0.4	34.796	5	10	0.90	9.98	0.40	2.1313	0.998616927946899		23	0.424475	0.03719	0.999308		5.172607	0.148656
714	641739	897108	2.480257	0.8	15.454	5	10	0.90	9.98	0.80	2.4803	0.998127262916413		23	0.424475	0.043275	0.999063		5.345045	0.345877
715	641739	897118	2.398675	0.1	120.603	5	10	0.90	9.98	0.10	2.3987	0.998248364193220		23	0.424475	0.041853	0.999124		5.043136	0.041816
716	641739	897128	2.99132	0.5	20.016	5	10	0.90	9.98	0.50	2.9913	0.997276760354557		23	0.424475	0.052185	0.998637		5.215469	0.260568
717	641739	897138	4.758893	0.1	60.995	5	10	0.90	9.98	0.10	4.7589	0.993117159618093		23	0.424475	0.082963	0.996553		5.042914	0.082677
718	641739	897148	5.839908	0.2	25.121	5	10	0.90	9.98	0.20	5.8399	0.989647093605939		23	0.424475	0.101749	0.99481		5.085528	0.202442
719	641728	897148	5.785922	0.2	25.352	5	10	0.90	9.98	0.20	5.7859	0.989836972002296		23	0.424475	0.100812	0.994906		5.085545	0.200597
720	641730	897138	4.83858	0.2	30.255	5	10	0.90	9.98	0.20	4.8386	0.992885278114759		23	0.424475	0.084349	0.996436		5.085808	0.168096
721	641729	897128	3.127516	0.3	31.385	5	10	0.90	9.98	0.30	3.1275	0.997023386579423		23	0.424475	0.054558	0.998511		5.129249	0.163431
722	641728	897119	2.416878	0.3	40.582	5	10	0.90	9.98	0.30	2.4169	0.998221693614561		23	0.424475	0.04217	0.99911		5.129404	0.126397
723	641729	897109	2.446017	0.8	15.669	5	10	0.90	9.98	0.80	2.4460	0.998178581163028		23	0.424475	0.042678	0.999089		5.345063	0.341114

724	641728	897099	2.352051	0.4	31.536	5	10	0.90	9.98	0.40	2.3521	0.998315759003471		23	0.424475	0.04104	0.999158		5.172555	0.16402
725	641729	897088	1.004786	0.4	73.757	5	10	0.90	9.98	0.40	1.0048	0.999692491330464		23	0.424475	0.017536	0.999846		5.172793	0.070133
726	641726	897079	2.089803	0.3	46.919	5	10	0.90	9.98	0.30	2.0898	0.998670241314832		23	0.424475	0.036466	0.999335		5.129462	0.109325
727	641729	897068	2.885744	0.01	995.277	5	10	0.90	9.98	0.01	2.8857	0.997465437057299		23	0.424475	0.050344	0.998732		5.00431	0.005028
728	641719	897068	2.826606	0.5	21.178	5	10	0.90	9.98	0.50	2.8266	0.997568171574376		23	0.424475	0.049314	0.998783		5.215532	0.246268
729	641719	897078	1.496603	0.4	49.531	5	10	0.90	9.98	0.40	1.4966	0.999317866804789		23	0.424475	0.026118	0.999659		5.172728	0.104435
730	641719	897088	1.282517	0.4	57.792	5	10	0.90	9.98	0.40	1.2825	0.999499033759229		23	0.424475	0.022382	0.999749		5.17276	0.089507
731	641719	897098	2.556406	0.6	19.670	5	10	0.90	9.98	0.60	2.5564	0.998010581357166		23	0.424475	0.044603	0.999005		5.258753	0.267351
732	641719	897108	2.542635	0.5	23.537	5	10	0.90	9.98	0.50	2.5426	0.998031943031240		23	0.424475	0.044363	0.999015		5.215632	0.221596
733	641718	897118	2.581877	0.3	37.994	5	10	0.90	9.98	0.30	2.5819	0.997970767299097		23	0.424475	0.045047	0.998985		5.129372	0.135004
734	641719	897128	3.40963	0.7	12.757	5	10	0.90	9.98	0.70	3.4096	0.996462825231609		23	0.424475	0.059474	0.99823		5.301411	0.415582
735	641719	897139	5.012337	0.7	8.699	5	10	0.90	9.98	0.70	5.0123	0.992366440702256		23	0.424475	0.08737	0.996176		5.300172	0.609253
736	641719	897148	5.831517	0.6	8.668	5	10	0.90	9.98	0.60	5.8315	0.989676720397230		23	0.424475	0.101604	0.994825		5.256593	0.606466
737	641710	897149	6.2183	0.6	8.136	5	10	0.90	9.98	0.60	6.2183	0.988267454093989		23	0.424475	0.108317	0.994116		5.256227	0.646078
738	641709	897139	5.564369	0.4	13.396	5	10	0.90	9.98	0.40	5.5644	0.990597988397678		23	0.424475	0.096964	0.995288		5.171221	0.386028
739	641709	897128	4.38589	0.5	13.678	5	10	0.90	9.98	0.50	4.3859	0.994151805992195		23	0.424475	0.076473	0.997072		5.214794	0.381248
740	641708	897118	3.50225	0.7	12.421	5	10	0.90	9.98	0.70	3.5023	0.996268288492111		23	0.424475	0.061088	0.998132		5.301352	0.426816
741	641709	897108	3.190128	0.7	13.631	5	10	0.90	9.98	0.70	3.1901	0.996903136052839		23	0.424475	0.055649	0.99845		5.301544	0.388943
742	641709	897098	3.190112	0.6	15.773	5	10	0.90	9.98	0.60	3.1901	0.996903167085128		23	0.424475	0.055649	0.99845		5.258466	0.333378
743	641709	897088	2.534014	0.6	19.843	5	10	0.90	9.98	0.60	2.5340	0.998045257416326		23	0.424475	0.044212	0.999022		5.258762	0.265015
744	641709	897077	1.283682	0.4	57.739	5	10	0.90	9.98	0.40	1.2837	0.999498123372786		23	0.424475	0.022403	0.999749		5.172759	0.089588
745	641699	897078	1.607721	0.6	31.253	5	10	0.90	9.98	0.60	1.6077	0.999212841628604		23	0.424475	0.028056	0.999606		5.259065	0.168272
746	641699	897089	2.973399	0.6	16.919	5	10	0.90	9.98	0.60	2.9734	0.997309263262555		23	0.424475	0.051872	0.998654		5.258572	0.310815
747	641699	897098	3.188896	0.7	13.636	5	10	0.90	9.98	0.70	3.1889	0.996905525085536		23	0.424475	0.055628	0.998452		5.301545	0.388793
748	641699	897108	3.345004	0.7	13.002	5	10	0.90	9.98	0.70	3.3450	0.996595490515223		23	0.424475	0.058348	0.998296		5.301451	0.407741
749	641699	897118	4.038584	0.4	18.405	5	10	0.90	9.98	0.40	4.0386	0.995039863672113		23	0.424475	0.070428	0.997517		5.171989	0.281013
750	641699	897128	4.840884	0.6	10.420	5	10	0.90	9.98	0.60	4.8409	0.992878516962134		23	0.424475	0.084389	0.996433		5.257423	0.504527
751	641699	897138	5.501963	0.2	26.644	5	10	0.90	9.98	0.20	5.5020	0.990807053300249		23	0.424475	0.09588	0.995393		5.085629	0.190876
752	641699	897148	5.969358	0.4	12.498	5	10	0.90	9.98	0.40	5.9694	0.989184712540860		23	0.424475	0.103997	0.994578		5.170977	0.413731
753	641689	897150	5.34956	0.5	11.234	5	10	0.90	9.98	0.50	5.3496	0.991307824031109		23	0.424475	0.093232	0.995644		5.21418	0.464129
754	641689	897138	5.309671	0.2	27.597	5	10	0.90	9.98	0.20	5.3097	0.991436597277061		23	0.424475	0.092539	0.995709		5.085683	0.184283
755	641689	897128	5.060328	0.9	6.811	5	10	0.90	9.98	0.90	5.0603	0.992219946812567		23	0.424475	0.088205	0.996102		5.385878	0.790747
756	641689	897118	4.611238	0.5	13.015	5	10	0.90	9.98	0.50	4.6112	0.993536735448883		23	0.424475	0.080394	0.996763		5.214661	0.400671
757	641689	897108	3.753272	0.3	26.174	5	10	0.90	9.98	0.30	3.7533	0.995714973471736		23	0.424475	0.06546	0.997855		5.129079	0.195959
758	641689	897098	3.235318	0.4	22.948	5	10	0.90	9.98	0.40	3.2353	0.996814870833029		23	0.424475	0.056437	0.998406		5.172296	0.225388
759	641689	897088	3.061638	0.5	19.558	5	10	0.90	9.98	0.50	3.0616	0.997147346533604		23	0.424475	0.05341	0.998573		5.215441	0.26667
760	641688	897078	2.166287	0.4	34.235	5	10	0.90	9.98	0.40	2.1663	0.998571172600411		23	0.424475	0.0378	0.999285		5.172599	0.151091
761	641679	897088	3.037101	0.1	95.318	5	10	0.90	9.98	0.10	3.0371	0.997192844901770		23	0.424475	0.052983	0.998595		5.04309	0.052908
762	641679	897098	3.46042	0.3	28.378	5	10	0.90	9.98	0.30	3.4604	0.996356789647557		23	0.424475	0.060359	0.998177		5.129162	0.180747
763	641679	897108	4.44594	0.8	8.643	5	10	0.90	9.98	0.80	4.4459	0.993990890758771		23	0.424475	0.077518	0.996991		5.343615	0.618281
764	641679	897118	5.471241	0.6	9.231	5	10	0.90	9.98	0.60	5.4712	0.990909118915713		23	0.424475	0.095346	0.995444		5.256912	0.56947
765	641679	897128	6.142635	0.5	9.801	5	10	0.90	9.98	0.50	6.1426	0.988550154744517		23	0.424475	0.107004	0.994259		5.213584	0.531948
766	641679	897138	6.33094	0.4	11.795	5	10	0.90	9.98	0.40	6.3309	0.987840297997005		23	0.424475	0.110271	0.993902		5.170744	0.438394
767	641679	897148	5.865517	0.7	7.447	5	10	0.90	9.98	0.70	5.8655	0.989556414081543		23	0.424475	0.102194	0.994765		5.299322	0.711612
768	641669	897148	7.957232	0.4	9.427	5	10	0.90	9.98	0.40	7.9572	0.980836059714020		23	0.424475	0.138434	0.990372		5.169534	0.548404
769	641669	897138	8.097035	0.7	5.426	5	10	0.90	9.98	0.70	8.0970	0.980161277781001		23	0.424475	0.14085	0.990031		5.29648	0.976121
770	641669	897128	8.049549	0.6	6.316	5	10	0.90	9.98	0.60	8.0495	0.980391759883515		23	0.424475	0.140029	0.990147		5.254185	0.831899
771	641669	897118	7.276435	0.8	5.313	5	10	0.90	9.98	0.80	7.2764	0.983958094344023		23	0.424475	0.126657	0.991947		5.340147	1.005093
772	641669	897108	6.160624	0.7	7.095	5	10	0.90	9.98	0.70	6.1606	0.988483252726357		23	0.424475	0.107316	0.994225		5.298997	0.746874
773	641669	897098	4.615201	0.1	62.878	5	10	0.90	9.98	0.10	4.6152	0.993525645377731		23	0.424475	0.080463	0.996758		5.042932	0.080202
774	641668	897088	3.489972	0.4	21.281	5	10	0.90	9.98	0.40	3.4900	0.996294375185583		23	0.424475	0.060874	0.998145		5.172206	0.243044
775	641669	897078	3.242726	0.7	13.410	5	10	0.90	9.98	0.70	3.2427	0.996800283566391		23	0.424475	0.056566	0.998399		5.301513	0.395328
776	641659	897078	4.113366	0.5	14.578	5	10	0.90	9.98	0.50	4.1134	0.994854789012980		23	0.424475	0.07173	0.997424		5.214946	0.357727
777	641659	897090	4.641072	0.1	62.530	5	10	0.90	9.98	0.10	4.6411	0.993453015832852		23	0.424475	0.080913	0.996721		5.042929	0.080648
778	641658	897099	6.095254	0.1	47.761	5	10	0.90	9.98	0.10	6.0953	0.988725445172386		23	0.424475	0.106182	0.994347		5.042724	0.105581
779	641659	897108	7.333068	0.9	4.724	5	10	0.90	9.98	0.90	7.3331	0.983708782242388		23	0.424475	0.127637	0.991821		5.382568	1.139338
780	641659	897118	7.82548	0.6	6.492	5	10	0.90	9.98	0.60	7.8255	0.981461501628183		23	0.424475	0.136156	0.990687		5.254463	0.809329
781	641659	897128	8.072021	0.8	4.800	5	10	0.90	9.98	0.80	8.0720	0.980282852342491		23	0.424475	0.140418	0.990092		5.338876	1.112212
782	641660	897138	7.941794	0.6	6.400	5	10	0.90	9.98	0.60	7.9418	0.980909871956466		23	0.424475	0.138167	0.990409		5.25432	0.821051
783	641659	897148	8.073008	0.5	7.497	5	10	0.90	9.98	0.50	8.0730	0.980278062203584		23	0.424475	0.140435	0.99009		5.211797	0.695215
784	641649	897148	7.474928	0.9	4.636	5	10	0.90	9.98	0.90	7.4749	0.983075984524863		23	0.424475	0.130092	0.991502		5.382322	1.160881
785	641646	897138	7.505192	0.5	8.050	5	10	0.90	9.98	0.50	7.5052	0.982939451679469		23	0.424475	0.130616	0.991433		5.212372	0.647485
786	641649	897128	7.407977	1	4.243	5	10	0.90	9.98	1.00	7.4080	0.983376111148403		23	0.424475	0.128934	0.991653		5.424932	1.278575
787	641648	897109	7.194419	0.8	5.372	5	10	0.90	9.98	0.80	7.1944	0.984315795466615		23	0.424475	0.125237	0.992127		5.34027	0.994005
788	641649	897098	6.722161	0.3	14.704	5	10	0.90	9.98	0.30	6.7222	0.986298157571846		23	0.424475	0.117055	0.993125		5.127858	0.348751
789	641649	897088	5.490638	0.01	525.416	5	10	0.90	9.98	0.01	5.4906	0.990844743270666		23	0.424475	0.095683	0.995412		5.004282	0.009524
790	641649	897078	4.775855	0.5	12.570	5	10	0.90	9.98	0.50	4.7759	0.993068121403187		23	0.424475	0.083258	0.996528		5.21456	0.414844
791	641649	897068	4.763376	0.5	12.603	5	10	0.90	9.98	0.50	4.7634	0.993104215787560		23	0.424475	0.083041	0.996546		5.214568	0.41377
792	641659	897068	3.742983	0.7	11.626	5	10	0.90	9.98	0.70	3.7430	0.995738401326823		23	0.424475	0.065281	0.997867		5.301192	0.455992
793	641668	897067	2.291394	0.9	14.986	5	10	0.90	9.98	0.90	2.2914	0.998401462861535		23	0.424475	0.039982	0.9992		5.388282	0.359548
794	641679	897068	1.393888	0.6	36.044	5	10	0.90	9.98	0.60	1.3939	0.999408268330744		23	0.424475	0.024326	0.999704		5.259116	0.14591
795	641691	897067	1.446697	0.8	26.474	5	10	0.90	9.98	0.80	1.4467	0.999362591866227		23	0.424475	0.025247	0.999681		5.345472	0.201911
796	641698	897068	2.171453	0.6	23.149	5	10	0.90	9.98	0.60	2.1715	0.998564353019260		23	0.424475	0.03789	0.999282		5.258897	0.227176
797	641710	897066	2.703981	0.5	22.136	5	10	0.90	9.98	0.50	2.7040	0.997774438703115		23	0.424475	0.047176	0.998887		5.215577	0.235617
798	641739	897058	1.738736	0.7	24.975	5	10	0.90	9.98	0.70	1.7387	0.999079362403236		23	0.424475	0.030342	0.99954		5.302202	0.212296
799	641729	897058	2.330053	1	13.370	5	10	0.90	9.98	1.00	2.3301	0.998347098752306		23	0.424475	0.040656	0.999173		5.431401	0.406223
800	641719	897058	2.682671	0.6	18.746	5	10	0.90	9.98	0.60	2.6827	0.997809354112048		23	0.424475	0.046804	0.998904		5.258701	0.280518
801	641709	897058	2.799014	0.4	26.512	5	10	0.90	9.98	0.40	2.7990	0.997615378995075		23	0.424475	0.048833	0.998807		5.172434	0.195097
802	641699	897058	2.77812	0.1	104.172	5	10	0.90	9.98	0.10	2.7781	0.997650819618985		23	0.424475	0.048468	0.998825		5.04311	0.048411
803	641687	897058	2.691957	0.8	14.241	5	10	0.90	9.98	0.80	2.6920	0.997794173310030		23	0.424475	0.046966	0.998896		5.34493	0.375315
804	641677	897059	2.320842	0.8	16.513	5	10	0.90	9.98	0.80	2.3208	0.998360134051651		23	0.424475	0.040495	0.99918		5.345125	0.323696
805	641669	897058	1.941887	0.8	19.729	5	10	0.90	9.98	0.80	1.9419	0.998851750281318		23	0.424475	0.033886	0.999426		5.345295	0.270931
806	641659	897058	3.14274	0.4	23.622	5	10	0.90	9.98	0.40	3.1427	0.996994366302474		23	0.424475	0.054824	0.998496		5.172327	0.218965
807	641648	897059	4.440961	0.6	11.351	5	10	0.90	9.98	0.60	4.4410	0.994004315454304		23	0.424475	0.077432	0.996998		5.257715	0.463196
808	641623	897025	4.695362	0.7	9.281	5	10	0.90	9.98	0.70	4.6954	0.993299295309314		23	0.424475	0.081858	0.996644		5.300454	0.571082
809	641611	897046	4.811785	0.4	15.468	5	10	0.90	9.98	0.40	4.8118	0.992963674649589		23	0.424475	0.083883	0.996476		5.17163	0.334349
810	641589	897069	8.021358	0.9	4.327	5	10	0.90	9.98	0.90	8.0214	0.980527965779600		23	0.424475	0.139542	0.990216		5.381331	1.243593
811	641573	897081	6.000523	0.9	5.755	5	10	0.90	9.98	0.90	6.0005	0.989071902452521		23	0.424475	0.104538	0.994521		5.384654	0.935683
812	641543	897051	7.99243	0.8	4.847	5	10	0.90	9.98	0.80	7.9924	0.980667248788945		23	0.424475	0.139042	0.990286		5.339009	1.101533
813	641558	897032	7.529242	0.1	38.817	5	10	0.90	9.98	0.10	7.5292	0.982830568302539		23	0.424475	0.131032	0.991378		5.04247	0.129902
814	641574	897015	6.719108	0.4	11.124	5	10	0.90	9.98	0.40	6.7191	0.986310543568157		23	0.424475	0.117002	0.993132		5.17048	0.464793
815	641588	896996	5.693764	0.4	13.095	5	10	0.90	9.98	0.40	5.6938	0.990157088472854		23	0.424475	0.099211	0.995066		5.171145	0.394888
816	641537	896989	7.607464	1	4.134	5	10	0.90	9.98	1.00	7.6075	0.982474075114695		23	0.424475	0.132386	0.991198		5.424542	1.312203
817	641527	896990	9.145752	0.7	4.820	5	10	0.90	9.98	0.70	9.1458	0.974736013500772		23	0.424475	0.158946	0.987287		5.294839	1.098481
818	641513	896991	9.305593	1.1	3.112	5	10	0.90	9.98	1.10	9.3056	0.973853060357286		23	0.424475	0.1617	0.98684		5.462899	1.755294
819	641523	896942	8.009985	0.3	12.386	5	10	0.90	9.98	0.30	8.0100	0.980582783143892		23	0.424475	0.139346	0.990244		5.127117	0.413959
820	641506	896941	7.965839	0.5	7.595	5	10	0.90	9.98	0.50	7.9658	0.980794847255484		23	0.424475	0.138583	0.990351		5.211908	0.686227
821	641510	896894	9.303668	0.9	3.746	5	10	0.90	9.98	0.90	9.3037	0.973863781767537		23	0.424475	0.161667	0.986845		5.378739	1.435863
822	641528	896892	6.952142	0.7	6.299	5	10	0.90	9.98	0.70	6.9521	0.985349258518421		23	0.424475	0.12104	0.992648		5.298049	0.841052
823	641549	896890	5.766021	0.8	6.681	5	10	0.90	9.98	0.80	5.7660	0.989906528593831		23	0.424475	0.100466	0.99494		5.342203	0.799664
824	641542	896845	5.024067	0.9	6.860	5	10	0.90	9.98	0.90	5.0241	0.992330762116931		23	0.424475	0.087574	0.996158		5.385921	0.78514
825	641532	896846	5.395592	0.7	8.088	5	10	0.90	9.98	0.70	5.3956	0.991158035565580		23	0.424475	0.094032	0.995569		5.299806	0.655306
826	641518	896849	6.17039	2	2.739	5	10	0.90	9.98	2.00	6.1704	0.988446851800988		23	0.424475	0.107486	0.994207		5.854246	2.137257
827	641528	896813	5.682996	1.7	3.419	5	10	0.90	9.98	1.70	5.6830	0.990194160881737		23	0.424475	0.099024	0.995085		5.727393	1.675141
828	641512	896818	5.271723	2	3.201	5	10	0.90	9.98	2.00	5.2717	0.991558220060515		23	0.424475	0.091879	0.99577		5.856935	1.829811
829	641496	896795	5.094049	1.5	4.254	5	10	0.90	9.98	1.50	5.0940	0.992116186192905		23	0.424475	0.088791	0.99605		5.643063	1.326602
830	641502	896779	5.491012	1.9	3.212	5	10	0.90	9.98	1.90	5.4910	0.990843499811170		23	0.424475	0.09569	0.995411		5.813502	1.80976
831	641461	896787	4.227892	1.1	6.767	5	10	0.90	9.98	1.10	4.2279	0.994564817778510		23	0.424475	0.073724	0.997279		5.472743	0.808754
832	641468	896768	4.960914	1.6	4.125	5	10	0.90	9.98	1.60	4.9609	0.992521877378863		23	0.424475	0.086476	0.996254		5.686214	1.378435
833	641472	896753	5.049749	2.1	3.205	5	10	0.90	9.98	2.10	5.0497	0.992252358210743		23	0.424475	0.088021	0.996119		5.900412	1.84126
834	641504	896760	5.46333	2.2	2.850	5	10	0.90	9.98	2.20	5.4633	0.990935309692584		23	0.424475	0.095209	0.995457		5.942036	2.085076
835	641539	896749	4.730917	1.3	5.201	5	10	0.90	9.98	1.30	4.7309	0.993197662306694		23	0.424475	0.082476	0.996593		5.557929	1.068539
836	641556	896751	4.531148	1	6.894	5	10	0.90	9.98	1.00	4.5311	0.993758835139035		23	0.424475	0.079001	0.996875		5.429418	0.787541
837	641569	896754	4.476857	0.6	11.261	5	10	0.90	9.98	0.60	4.4769	0.993907196398170		23	0.424475	0.078056	0.996949		5.25769	0.46691
838	641591	896705	6.169435	1.5	3.519	5	10	0.90	9.98	1.50	6.1694	0.988450413887641		23	0.424475	0.107469	0.994208		5.640687	1.602699
839	641578	896699	4.684447	1.7	4.141	5	10	0.90	9.98	1.70	4.6844	0.993330343110412		23	0.424475	0.081668	0.99666		5.729697	1.383718
840	641566	896688	4.535617	1.6	4.509	5	10	0.90	9.98	1.60	4.5356	0.993746543681842		23	0.424475	0.079079	0.996868		5.687061	1.261298
841	642206	896410	6.512019	2.3	2.308	5	10	0.90	9.98	2.30	6.5120	0.987137801282652		23	0.424475	0.113412	0.993548		5.981082	2.591638
842	642194	896414	9.332695	2.5	1.513	5	10	0.90	9.98	2.50	9.3327	0.973701886954771		23	0.424475	0.162167	0.986763		6.051879	4.00051
843	642183	896415	10.9448	2.1	1.501	5	10	0.90	9.98	2.10	10.9448	0.963951970604175		23	0.424475	0.189863	0.981811		5.874731	3.914603
844	642174	896414	10.93884	2	1.565	5	10	0.90	9.98	2.00	10.9388	0.963990741838679		23	0.424475	0.189761	0.98183		5.83311	3.726263
845	642164	896414	11.56092	1.9	1.552	5	10	0.90	9.98	1.90	11.5609	0.959835939737465		23	0.424475	0.20041	0.979712		5.788044	3.730533
846	642154	896414	12.45731	0.8	3.163	5	10	0.90	9.98	0.80	12.4573	0.953468275130386		23	0.424475	0.215712	0.976457		5.329607	1.685069
847	642141	896412	12.6904	1.4	1.858	5	10	0.90	9.98	1.40	12.6904	0.951739489841896		23	0.424475	0.219683	0.975571		5.575766	3.000427
848	642132	896412	12.65815	0.7	3.533	5	10	0.90	9.98	0.70	12.6582	0.951980467303827		23	0.424475	0.219134	0.975695		5.287956	1.496653
849	642120	896411	13.72344	0.9	2.588	5	10	0.90	9.98	0.90	13.7234	0.943719273883921		23	0.424475	0.237236	0.971452		5.367016	2.074167
850	642123	896401	12.8135	1.2	2.117	5	10	0.90	9.98	1.20	12.8135	0.950814405333656		23	0.424475	0.221778	0.975097		5.493034	2.595064
851	642122	896395	13.73334	1.4	1.725	5	10	0.90	9.98	1.40	13.7333	0.943639605086380		23	0.424475	0.237403	0.971411		5.570866	3.228629
852	642121	896383	13.30821	1.7	1.496	5	10	0.90	9.98	1.70	13.3082	0.947012939975894		23	0.424475	0.230189	0.973146		5.695672	3.80813
853	642124	896374	12.72197	2	1.355	5	10	0.90	9.98	2.00	12.7220	0.951503038949764		23	0.424475	0.22022	0.97545		5.822318	4.296278
854	642126	896362	12.13645	1	2.634	5	10	0.90	9.98	1.00	12.1365	0.955798907241120		23	0.424475	0.210241	0.97765		5.413015	2.055416
855	642122	896350	12.80932	2	1.346	5	10	0.90	9.98	2.00	12.8093	0.950845954248711		23	0.424475	0.221707	0.975113		5.82175	4.323791
856	642124	896344	11.99251	1.9	1.498	5	10	0.90	9.98	1.90	11.9925	0.956825883922195		23	0.424475	0.207784	0.978175		5.785572	3.861729
857	642124	896332	11.14778	1.7	1.770	5	10	0.90	9.98	1.70	11.1478	0.962619560329639		23	0.424475	0.19334	0.981132		5.707137	3.224768
858	642126	896322	9.803999	1.4	2.379	5	10	0.90	9.98	1.40	9.8040	0.971005308721788		23	0.424475	0.170278	0.985396		5.587421	2.349081
859	642124	896312	9.803999	0.9	3.561	5	10	0.90	9.98	0.90	9.8040	0.971005308721788		23	0.424475	0.170278	0.985396		5.377628	1.510124
860	642132	896313	9.803999	0.8	3.975	5	10	0.90	9.98	0.80	9.8040	0.971005308721788		23	0.424475	0.170278	0.985396		5.335669	1.342332
861	642144	896314	15.55802	0.7	2.920	5	10	0.90	9.98	0.70	15.5580	0.928061223561744		23	0.424475	0.268214	0.963359		5.280721	1.808706
862	642144	896324	13.28878	0.6	3.908	5	10	0.90	9.98	0.60	13.2888	0.947164766973793		23	0.424475	0.229859	0.973224		5.245571	1.342227

863	642134	896324	8.954479	0.8	4.339	5	10	0.90	9.98	0.80	8.9545	0.975773169044334		23	0.424475	0.15565	0.987812		5.337317	1.230022
864	642134	896334	9.467995	0.9	3.683	5	10	0.90	9.98	0.90	9.4680	0.972940852706440		23	0.424475	0.164497	0.986378		5.37838	1.460302
865	642144	896334	10.33193	0.1	28.575	5	10	0.90	9.98	0.10	10.3319	0.967833401611677		23	0.424475	0.17935	0.983785		5.041822	0.176442
866	642144	896344	8.932688	0.2	16.573	5	10	0.90	9.98	0.20	8.9327	0.975889983290212		23	0.424475	0.155274	0.987871		5.084339	0.306782
867	642135	896343	10.86258	1.9	1.647	5	10	0.90	9.98	1.90	10.8626	0.964485058485557		23	0.424475	0.188454	0.982082		5.791861	3.51647
868	642134	896354	11.6873	1.6	1.784	5	10	0.90	9.98	1.60	11.6873	0.958965298284746		23	0.424475	0.20257	0.979268		5.663014	3.173928
869	642144	896354	10.7027	0.9	3.273	5	10	0.90	9.98	0.90	10.7027	0.965510711450353		23	0.424475	0.185713	0.982604		5.375491	1.64234
870	642154	896354	7.74226	2.3	1.946	5	10	0.90	9.98	2.30	7.7423	0.981851309845797		23	0.424475	0.134717	0.990884		5.975828	3.070247
871	642164	896364	6.379541	3	1.896	5	10	0.90	9.98	3.00	6.3795	0.987653662664010		23	0.424475	0.111114	0.993808		6.280341	3.312781
872	642174	896374	5.937299	1	5.275	5	10	0.90	9.98	1.00	5.9373	0.989300154627886		23	0.424475	0.10344	0.994636		5.427492	1.028852
873	642182	896385	9.063381	2.7	1.461	5	10	0.90	9.98	2.70	9.0634	0.975185257821098		23	0.424475	0.157527	0.987515		6.13776	4.200125
874	642194	896394	5.882326	0.3	16.768	5	10	0.90	9.98	0.30	5.8823	0.989496682027484		23	0.424475	0.102486	0.994734		5.128273	0.305838
875	642204	896404	6.512019	0.8	5.925	5	10	0.90	9.98	0.80	6.5120	0.987137801282652		23	0.424475	0.113412	0.993548		5.341246	0.901439
876	642194	896404	7.204471	3.1	1.638	5	10	0.90	9.98	3.10	7.2045	0.984272168481645		23	0.424475	0.125411	0.992105		6.318489	3.857036
877	642184	896404	10.55709	2.2	1.494	5	10	0.90	9.98	2.20	10.5571	0.966432205738460		23	0.424475	0.183215	0.983073		5.918742	3.962505
878	642174	896404	11.39289	2	1.505	5	10	0.90	9.98	2.00	11.3929	0.960979649534662		23	0.424475	0.197536	0.980296		5.830508	3.872868
879	642164	896404	11.80291	0.8	3.328	5	10	0.90	9.98	0.80	11.8029	0.958161029057833		23	0.424475	0.204546	0.978857		5.331229	1.601768
880	642154	896404	12.55143	0.9	2.813	5	10	0.90	9.98	0.90	12.5514	0.952773811683929		23	0.424475	0.217316	0.976101		5.370537	1.909101
881	642144	896404	12.71026	0.9	2.780	5	10	0.90	9.98	0.90	12.7103	0.951590807717186		23	0.424475	0.220021	0.975495		5.370077	1.931664
882	642134	896404	12.7276	1.1	2.306	5	10	0.90	9.98	1.10	12.7276	0.951460814131054		23	0.424475	0.220316	0.975429		5.452255	2.363929
883	642135	896391	12.94867	1.1	2.269	5	10	0.90	9.98	1.10	12.9487	0.949789028419954		23	0.424475	0.224078	0.974571		5.45146	2.40218
884	642134	896384	12.94867	1.7	1.535	5	10	0.90	9.98	1.70	12.9487	0.949789028419954		23	0.424475	0.224078	0.974571		5.697711	3.71246
885	642133	896372	12.85333	0.8	3.071	5	10	0.90	9.98	0.80	12.8533	0.950513303583785		23	0.424475	0.222456	0.974943		5.328585	1.735055
886	642134	896364	12.57146	1.8	1.501	5	10	0.90	9.98	1.80	12.5715	0.952625389581765		23	0.424475	0.217657	0.976025		5.740959	3.823899
887	642144	896364	12.51738	1.4	1.883	5	10	0.90	9.98	1.40	12.5174	0.953025613860171		23	0.424475	0.216736	0.97623		5.576544	2.962176
888	642154	896364	10.15208	1.4	2.300	5	10	0.90	9.98	1.40	10.1521	0.968931871317541		23	0.424475	0.176262	0.984343		5.586166	2.429026
889	642165	896374	9.716514	1.9	1.834	5	10	0.90	9.98	1.90	9.7165	0.971515513921526		23	0.424475	0.168773	0.985655		5.797633	3.160696
890	642174	896384	9.063381	1.8	2.057	5	10	0.90	9.98	1.80	9.0634	0.975185257821098		23	0.424475	0.157527	0.987515		5.758507	2.800083
891	642183	896395	8.429271	2	2.016	5	10	0.90	9.98	2.00	8.4293	0.978511839724187		23	0.424475	0.146588	0.989198		5.84566	2.900098
892	642174	896394	11.74047	2.1	1.403	5	10	0.90	9.98	2.10	11.7405	0.958596335704169		23	0.424475	0.203479	0.979079		5.869871	4.183662
893	642162	896395	12.88983	1.4	1.831	5	10	0.90	9.98	1.40	12.8898	0.950236610847390		23	0.424475	0.223077	0.974801		5.574857	3.04438
894	642152	896392	12.8435	1.2	2.112	5	10	0.90	9.98	1.20	12.8435	0.950587696126257		23	0.424475	0.222289	0.974981		5.492916	2.600728
895	642144	896394	12.8435	2	1.343	5	10	0.90	9.98	2.00	12.8435	0.950587696126257		23	0.424475	0.222289	0.974981		5.821527	4.334546
896	642142	896383	12.94867	1.9	1.393	5	10	0.90	9.98	1.90	12.9487	0.949789028419954		23	0.424475	0.224078	0.974571		5.779795	4.14922
897	642144	896374	12.95234	1	2.477	5	10	0.90	9.98	1.00	12.9523	0.949761048684418		23	0.424475	0.22414	0.974557		5.410406	2.184376
898	642154	896374	13.15059	1.9	1.373	5	10	0.90	9.98	1.90	13.1506	0.948238652596510		23	0.424475	0.227511	0.973775		5.778522	4.209352
899	642154	896384	13.21666	1.9	1.366	5	10	0.90	9.98	1.90	13.2167	0.947726517000985		23	0.424475	0.228634	0.973512		5.778102	4.228982
900	642164	896384	12.69019	2	1.358	5	10	0.90	9.98	2.00	12.6902	0.951741060849554		23	0.424475	0.219679	0.975572		5.822524	4.286258
901	642194	896324	8.150999	2.8	1.574	5	10	0.90	9.98	2.80	8.1510	0.979897752036192		23	0.424475	0.141782	0.989898		6.185601	3.929803
902	642194	896334	8.16499	2.5	1.724	5	10	0.90	9.98	2.50	8.1650	0.979829150907621		23	0.424475	0.142024	0.989863		6.058498	3.514611
903	642194	896344	7.808022	2.5	1.801	5	10	0.90	9.98	2.50	7.8080	0.981543612970406		23	0.424475	0.135854	0.990729		6.06035	3.364869
904	642184	896334	8.915605	2.5	1.582	5	10	0.90	9.98	2.50	8.9156	0.975981366992582		23	0.424475	0.154979	0.987918		6.054341	3.827674
905	642185	896323	9.047338	2.6	1.510	5	10	0.90	9.98	2.60	9.0473	0.975272297995518		23	0.424475	0.15725	0.987559		6.095718	4.037645
906	642204	896324	7.925331	2.3	1.902	5	10	0.90	9.98	2.30	7.9253	0.980988431060752		23	0.424475	0.137882	0.990449		5.97497	3.141006
907	642204	896334	7.558167	2.5	1.860	5	10	0.90	9.98	2.50	7.5582	0.982699163240103		23	0.424475	0.131533	0.991312		6.061599	3.259747
908	642204	896344	7.014147	2.8	1.825	5	10	0.90	9.98	2.80	7.0141	0.985088070632365		23	0.424475	0.122114	0.992516		6.191881	3.393614
909	642204	896354	7.764986	2.4	1.873	5	10	0.90	9.98	2.40	7.7650	0.981745263139940		23	0.424475	0.13511	0.990831		6.018145	3.212909
910	642224	896446	6.50541	3	1.860	5	10	0.90	9.98	3.00	6.5054	0.987163783306918		23	0.424475	0.113297	0.993561		6.279706	3.377026
911	642199	896434	10.40118	1.2	2.582	5	10	0.90	9.98	1.20	10.4012	0.967405524414389		23	0.424475	0.180539	0.983568		5.501637	2.130873
912	642177	896449	10.09056	2.3	1.503	5	10	0.90	9.98	2.30	10.0906	0.969303376916907		23	0.424475	0.175205	0.984532		5.963357	3.967373
913	642197	896474	9.368011	1.9	1.900	5	10	0.90	9.98	1.90	9.3680	0.973504260184592		23	0.424475	0.162775	0.986663		5.799266	3.05148
914	642211	896461	9.300887	2.1	1.757	5	10	0.90	9.98	2.10	9.3009	0.973879266946105		23	0.424475	0.161619	0.986853		5.883739	3.349381
915	642232	896513	10.52485	1.8	1.779	5	10	0.90	9.98	1.80	10.5249	0.966634608342822		23	0.424475	0.182662	0.983176		5.751856	3.232599
916	642244	896505	7.354893	2.1	2.210	5	10	0.90	9.98	2.10	7.3549	0.983612198669142		23	0.424475	0.128015	0.991772		5.892571	2.666193
917	642255	896503	6.642068	2	2.547	5	10	0.90	9.98	2.00	6.6421	0.986621265711012		23	0.424475	0.115666	0.993288		5.852668	2.297803
918	642267	896552	7.401163	2	2.290	5	10	0.90	9.98	2.00	7.4012	0.983406508820114		23	0.424475	0.128816	0.991669		5.84989	2.55485
919	642256	896560	8.305569	1.5	2.628	5	10	0.90	9.98	1.50	8.3056	0.979133510016615		23	0.424475	0.144452	0.989512		5.634648	2.14406
920	642272	896615	8.774836	2.6	1.555	5	10	0.90	9.98	2.60	8.7748	0.976727949255845		23	0.424475	0.152552	0.988295		6.097354	3.919923
921	642285	896615	7.110966	2.4	2.042	5	10	0.90	9.98	2.40	7.1110	0.984675689367904		23	0.424475	0.123791	0.992308		6.021184	2.948141
922	642282	896888	5.083059	1.6	4.027	5	10	0.90	9.98	1.60	5.0831	0.992150077686987		23	0.424475	0.0886	0.996067		5.685957	1.412022
923	642291	896887	5.822413	0.8	6.617	5	10	0.90	9.98	0.80	5.8224	0.989708817119910		23	0.424475	0.101445	0.994841		5.342135	0.807377
924	642323	896933	6.552931	1.1	4.385	5	10	0.90	9.98	1.10	6.5529	0.986976386607045		23	0.424475	0.114121	0.993467		5.469136	1.24713
925	642314	896934	5.964912	2.2	2.612	5	10	0.90	9.98	2.20	5.9649	0.989200758849359		23	0.424475	0.103919	0.994586		5.940387	2.273848
926	642299	896936	7.477012	1.1	3.852	5	10	0.90	9.98	1.10	7.4770	0.983066600060618		23	0.424475	0.130128	0.991497		5.467278	1.419241
927	642317	896979	9.236907	1.5	2.370	5	10	0.90	9.98	1.50	9.2369	0.974234287257390		23	0.424475	0.160517	0.987033		5.631472	2.376534
928	642332	896974	8.926038	1.7	2.194	5	10	0.90	9.98	1.70	8.9260	0.975925576879016		23	0.424475	0.155159	0.987889		5.716911	2.605765
929	642355	896961	9.547712	1	3.314	5	10	0.90	9.98	1.00	9.5477	0.972487521407857		23	0.424475	0.165869	0.986148		5.420227	1.635712
930	642363	896979	5.825356	1.7	3.336	5	10	0.90	9.98	1.70	5.8254	0.989698446798360		23	0.424475	0.101497	0.994836		5.727029	1.716531
931	642371	896994	6.739729	1.8	2.749	5	10	0.90	9.98	1.80	6.7397	0.986226777012677		23	0.424475	0.117359	0.99309		5.767095	2.097871
932	642347	897006	7.134975	1.1	4.033	5	10	0.90	9.98	1.10	7.1350	0.984572571027575		23	0.424475	0.124207	0.992256		5.467994	1.355699
933	642333	897013	7.650353	1.3	3.237	5	10	0.90	9.98	1.30	7.6504	0.982277083467190		23	0.424475	0.133127	0.991099		5.551794	1.715252
934	642333	897041	8.582337	1.8	2.169	5	10	0.90	9.98	1.80	8.5823	0.977730250410607		23	0.424475	0.149231	0.988802		5.760486	2.656071
935	642357	897036	8.440662	1.2	3.161	5	10	0.90	9.98	1.20	8.4407	0.978454144920895		23	0.424475	0.146785	0.989168		5.507366	1.742342
936	642373	897028	8.278209	1.1	3.487	5	10	0.90	9.98	1.10	8.2782	0.979269802945586		23	0.424475	0.14398	0.989581		5.465473	1.567276
937	642388	897081	11.23089	0.6	4.580	5	10	0.90	9.98	0.60	11.2309	0.962067300801554		23	0.424475	0.194763	0.98085		5.249434	1.146201
938	642379	897083	11.90903	0.9	2.956	5	10	0.90	9.98	0.90	11.9090	0.957416211156741		23	0.424475	0.206358	0.978476		5.372343	1.817252
939	642357	897089	7.227915	1.3	3.422	5	10	0.90	9.98	1.30	7.2279	0.984170186801862		23	0.424475	0.125817	0.992054		5.552858	1.622618
940	642360	897076	10.77494	0.9	3.252	5	10	0.90	9.98	0.90	10.7749	0.965049075193258		23	0.424475	0.186952	0.982369		5.375311	1.6529
941	642365	897061	8.548369	1	3.689	5	10	0.90	9.98	1.00	8.5484	0.977904876870672		23	0.424475	0.148644	0.988891		5.422568	1.46993
942	642309	897050	8.693921	2	1.956	5	10	0.90	9.98	2.00	8.6939	0.977151881315110		23	0.424475	0.151156	0.98851		5.844485	2.988383
943	642302	897062	7.420932	1	4.236	5	10	0.90	9.98	1.00	7.4209	0.983318242679709		23	0.424475	0.129158	0.991624		5.424907	1.280761
944	642295	897077	6.961159	1.9	2.541	5	10	0.90	9.98	1.90	6.9612	0.985311416845357		23	0.424475	0.121196	0.992629		5.80896	2.285758
945	642281	897054	7.270406	1	4.322	5	10	0.90	9.98	1.00	7.2704	0.983984524081767		23	0.424475	0.126552	0.99196		5.425195	1.255348
946	642288	897019	7.973935	0.9	4.352	5	10	0.90	9.98	0.90	7.9739	0.980756041981657		23	0.424475	0.138723	0.990331		5.38142	1.236432
947	642269	896988	7.902479	0.5	7.654	5	10	0.90	9.98	0.50	7.9025	0.981097214292303		23	0.424475	0.137487	0.990504		5.211974	0.680909
948	642259	896988	9.077582	0.9	3.836	5	10	0.90	9.98	0.90	9.0776	0.975108086949411		23	0.424475	0.157772	0.987476		5.379223	1.402161
949	642259	897000	8.225641	1.2	3.241	5	10	0.90	9.98	1.20	8.2256	0.979530441748178		23	0.424475	0.143072	0.989712		5.507924	1.6992
950	642269	896998	8.350254	0.6	6.094	5	10	0.90	9.98	0.60	8.3503	0.978909973495482		23	0.424475	0.145224	0.989399		5.253801	0.862107
951	642269	897008	7.69639	1	4.087	5	10	0.90	9.98	1.00	7.6964	0.982064430020983		23	0.424475	0.133924	0.990992		5.424365	1.327173
952	642259	897008	7.37513	0.8	5.243	5	10	0.90	9.98	0.80	7.3751	0.983522391778497		23	0.424475	0.128365	0.991727		5.339996	1.018425
953	642269	897018	7.513386	1.2	3.542	5	10	0.90	9.98	1.20	7.5134	0.982902392588801		23	0.424475	0.130758	0.991414		5.509673	1.555622
954	642249	897018	7.04084	0.8	5.487	5	10	0.90	9.98	0.80	7.0408	0.984974930110664		23	0.424475	0.122577	0.992459		5.340498	0.97322
955	642238	897018	6.978078	0.9	4.960	5	10	0.90	9.98	0.90	6.9781	0.985240283083597		23	0.424475	0.12149	0.992593		5.383164	1.085307
956	642226	897028	7.3603	1.7	2.649	5	10	0.90	9.98	1.70	7.3603	0.983588227340011		23	0.424475	0.128108	0.99176		5.72254	2.159898
957	642239	897028	7.218919	1.5	3.015	5	10	0.90	9.98	1.50	7.2189	0.984209357851875		23	0.424475	0.125661	0.992073		5.637938	1.869971
958	642249	897028	7.404188	0.9	4.680	5	10	0.90	9.98	0.90	7.4042	0.983393017485144		23	0.424475	0.128868	0.991662		5.382445	1.150142
959	642259	897028	7.732679	0.8	5.006	5	10	0.90	9.98	0.80	7.7327	0.981895926960003		23	0.424475	0.134551	0.990907		5.339434	1.066623
960	642269	897028	7.990235	0.2	18.469	5	10	0.90	9.98	0.20	7.9902	0.980677797307460		23	0.424475	0.139004	0.990292		5.084753	0.27531
961	642269	897038	8.007597	0.7	5.485	5	10	0.90	9.98	0.70	8.0076	0.980594283578719		23	0.424475	0.139304	0.99025		5.296611	0.965623
962	642259	897039	7.651708	0.8	5.058	5	10	0.90	9.98	0.80	7.6517	0.982270842257122		23	0.424475	0.133151	0.991096		5.339563	1.055722
963	642248	897039	7.178107	1.1	4.010	5	10	0.90	9.98	1.10	7.1781	0.984386464770590		23	0.424475	0.124954	0.992163		5.467905	1.363723
964	642239	897039	6.794008	1.5	3.200	5	10	0.90	9.98	1.50	6.7940	0.986005080851223		23	0.424475	0.1183	0.992978		5.639102	1.762041
965	642229	897038	6.146256	1.2	4.315	5	10	0.90	9.98	1.20	6.1463	0.988536703543309		23	0.424475	0.107067	0.994252		5.512594	1.277416
966	642219	897038	5.681019	0.1	51.194	5	10	0.90	9.98	0.10	5.6810	0.990200959834760		23	0.424475	0.09899	0.995088		5.042788	0.098504
967	642218	897048	5.956289	0.3	16.563	5	10	0.90	9.98	0.30	5.9563	0.989231847015887		23	0.424475	0.10377	0.994601		5.128239	0.309628
968	642229	897048	6.20589	1.9	2.846	5	10	0.90	9.98	1.90	6.2059	0.988314054077301		23	0.424475	0.108102	0.99414		5.811425	2.041893
969	642239	897048	6.546122	1.5	3.320	5	10	0.90	9.98	1.50	6.5461	0.987003319814855		23	0.424475	0.114003	0.99348		5.639749	1.698896
970	642249	897048	6.659255	1.3	3.709	5	10	0.90	9.98	1.30	6.6593	0.986552251011814		23	0.424475	0.115964	0.993253		5.554196	1.497367
971	642259	897048	6.949771	1.2	3.824	5	10	0.90	9.98	1.20	6.9498	0.985359200917987		23	0.424475	0.120999	0.992653		5.510947	1.441322
972	642269	897048	7.419092	1.6	2.772	5	10	0.90	9.98	1.60	7.4191	0.983326467766685		23	0.424475	0.129126	0.991628		5.679857	2.04872
973	642269	897059	6.837505	1.4	3.382	5	10	0.90	9.98	1.40	6.8375	0.985826163191875		23	0.424475	0.119054	0.992888		5.596387	1.654901
974	642259	897058	6.637123	1.9	2.664	5	10	0.90	9.98	1.90	6.6371	0.986641090000000		23	0.424475	0.115581	0.993298		5.810051	2.181317
975	642249	897058	6.587194	1.7	2.955	5	10	0.90	9.98	1.70	6.5872	0.986840440786310		23	0.424475	0.114715	0.993398		5.724929	1.937283
976	642239	897058	6.411407	1.6	3.201	5	10	0.90	9.98	1.60	6.4114	0.987530530476585		23	0.424475	0.111667	0.993746		5.682763	1.775494
977	642229	897058	6.03021	1.5	3.600	5	10	0.90	9.98	1.50	6.0302	0.988963904112189		23	0.424475	0.105053	0.994467		5.64102	1.567073
978	642219	897058	6.390817	0.5	9.426	5	10	0.90	9.98	0.50	6.3908	0.987610160474917		23	0.424475	0.11131	0.993786		5.213381	0.55309
979	642219	897068	7.505715	1	4.189	5	10	0.90	9.98	1.00	7.5057	0.982937087482198		23	0.424475	0.130625	0.991432		5.424742	1.295059
980	642228	897070	6.436142	0.8	5.994	5	10	0.90	9.98	0.80	6.4361	0.987434537068256		23	0.424475	0.112096	0.993697		5.341349	0.891114
981	642239	897068	6.471757	1.4	3.570	5	10	0.90	9.98	1.40	6.4718	0.987295681493740		23	0.424475	0.112713	0.993628		5.597276	1.567932
982	642247	897067	6.634354	1.8	2.792	5	10	0.90	9.98	1.80	6.6344	0.986652184467275		23	0.424475	0.115533	0.993304		5.767426	2.065664
983	642259	897068	6.725908	1.6	3.053	5	10	0.90	9.98	1.60	6.7259	0.986282948474326		23	0.424475	0.11712	0.993118		5.681901	1.86102
984	642269	897068	6.769424	1.3	3.650	5	10	0.90	9.98	1.30	6.7694	0.986105707495087		23	0.424475	0.117874	0.993029		5.553945	1.52168
985	642269	897079	6.804596	1.4	3.398	5	10	0.90	9.98	1.40	6.8046	0.985961632032503		23	0.424475	0.118484	0.992956		5.596469	1.647086
986	642259	897078	6.775746	1.7	2.874	5	10	0.90	9.98	1.70	6.7757	0.986079864623655		23	0.424475	0.117984	0.993016		5.72437	1.991713
987	642249	897078	6.687357	1.7	2.912	5	10	0.90	9.98	1.70	6.6874	0.986439029687547		23	0.424475	0.116452	0.993196		5.724634	1.966208
988	642238	897080	6.610151	1.6	3.106	5	10	0.90	9.98	1.60	6.6102	0.986748964326130		23	0.424475	0.115113	0.993352		5.682223	1.829567
989	642229	897078	6.690351	1.5	3.249	5	10	0.90	9.98	1.50	6.6904	0.986426939442562		23	0.424475	0.116503	0.99319		5.639375	1.735652
990	642219	897078	7.282565	1.8	2.547	5	10	0.90	9.98	1.80	7.2826	0.983931199869599		23	0.424475	0.126763	0.991933		5.765309	2.263323
991	642198	897078	7.830909	0.1	37.357	5	10	0.90	9.98	0.10	7.8309	0.981435930612966		23	0.424475	0.13625	0.990674		5.042409	0.134979
992	642189	897078	9.459904	0.01	308.669	5	10	0.90	9.98	0.01	9.4599	0.972986659620479		23	0.424475	0.164357	0.986401		5.004204	0.016212
993	642178	897078	9.508283	0.9	3.668	5	10	0.90	9.98	0.90	9.5083	0.972712202076981		23	0.424475	0.16519	0.986262		5.378291	1.466287
994	642179	897068	9.893902	0.4	7.632	5	10	0.90	9.98	0.40	9.8939	0.970476425756199		23	0.424475	0.171824	0.985128		5.167743	0.677075
995	642189	897069	10.365	1	3.061	5	10	0.90	9.98	1.00	10.3650	0.967629411807137		23	0.424475	0.179918	0.983682		5.418128	1.769823
996	642197	897067	9.334702	0.5	6.511	5	10	0.90	9.98	0.50	9.3347	0.973690675161881		23	0.424475	0.162201	0.986758		5.210373	0.800268
997	642199	897058	9.519203	0.1	30.914	5	10	0.90	9.98	0.10	9.5192	0.972650065616012		23	0.424475	0.165378	0.98623		5.04203	0.163101
998	642189	897058	11.15632	1.1	2.614	5	10	0.90	9.98	1.10	11.1563	0.962562992096968		23	0.424475	0.193486	0.981103		5.457532	2.088131
999	642179	897058	10.38347	1.2	2.586	5	10	0.90	9.98	1.20	10.3835	0.967515209780571		23	0.424475	0.180235	0.983624		5.501694	2.127405
1000	642179	897048	10.71009	1.2	2.510	5	10	0.90	9.98	1.20	10.7101	0.965463622898585		23	0.424475	0.18584	0.98258		5.50063	2.191228
1001	642189	897048	11.1879	0.6	4.597	5	10	0.90	9.98	0.60	11.1879	0.962353451856167		23	0.424475	0.194027	0.980996		5.249509	1.14204

1002	642198	897048	8.643497	0.5	7.015	5	10	0.90	9.98	0.50	8.6435	0.977414139131747	23	0.424475	0.150286	0.988643	5.211178	0.742895
1003	642206	897037	6.218204	0.1	46.831	5	10	0.90	9.98	0.10	6.2182	0.988267814929004	23	0.424475	0.108315	0.994117	5.042705	0.107678
1004	642199	897038	8.203982	1	3.840	5	10	0.90	9.98	1.00	8.2040	0.979637360184535	23	0.424475	0.142698	0.989766	5.423316	1.412374
1005	642189	897038	10.72533	0.7	4.135	5	10	0.90	9.98	0.70	10.7253	0.965366416911177	23	0.424475	0.186101	0.982531	5.292005	1.27995
1006	642179	897039	10.87254	1.2	2.474	5	10	0.90	9.98	1.20	10.8725	0.964420684644241	23	0.424475	0.188625	0.982049	5.500089	2.222866
1007	642179	897028	10.14011	0.5	6.012	5	10	0.90	9.98	0.50	10.1401	0.969004324985596	23	0.424475	0.176056	0.98438	5.209361	0.86653
1008	642189	897029	8.88018	0.4	8.472	5	10	0.90	9.98	0.40	8.8802	0.976170329848880	23	0.424475	0.154369	0.988013	5.168727	0.610073
1009	642199	897028	6.738236	1.2	3.942	5	10	0.90	9.98	1.20	6.7382	0.986232850332340	23	0.424475	0.117333	0.993093	5.5114	1.398276
1010	642208	897028	5.341671	1.9	3.301	5	10	0.90	9.98	1.90	5.3417	0.991333367579300	23	0.424475	0.093095	0.995657	5.813904	1.761119
1011	642209	897018	5.981587	1.8	3.093	5	10	0.90	9.98	1.80	5.9816	0.989140515397240	23	0.424475	0.104209	0.994555	5.769361	1.865547
1012	642199	897018	6.316925	1.1	4.547	5	10	0.90	9.98	1.10	6.3169	0.987893856961418	23	0.424475	0.110028	0.993928	5.469573	1.202959
1013	642188	897020	7.158328	1.3	3.455	5	10	0.90	9.98	1.30	7.1583	0.984471943673159	23	0.424475	0.124612	0.992206	5.553027	1.607325
1014	642179	897019	8.333249	1.2	3.201	5	10	0.90	9.98	1.20	8.3332	0.978995178299723	23	0.424475	0.14493	0.989442	5.507647	1.720802
1015	642179	897008	7.726526	1.5	2.821	5	10	0.90	9.98	1.50	7.7265	0.981924552029373	23	0.424475	0.134445	0.990921	5.636457	1.998365
1016	642190	897009	7.779912	1.3	3.184	5	10	0.90	9.98	1.30	7.7799	0.981675448754709	23	0.424475	0.135368	0.990795	5.551456	1.743588
1017	642199	897008	7.980505	1	3.945	5	10	0.90	9.98	1.00	7.9805	0.980724522819744	23	0.424475	0.138836	0.990315	5.423786	1.374916
1018	642207	897008	8.372036	0.8	4.632	5	10	0.90	9.98	0.80	8.3720	0.978800586682029	23	0.424475	0.1456	0.989344	5.338364	1.152389
1019	642217	897009	7.630079	0.4	9.821	5	10	0.90	9.98	0.40	7.6301	0.982370337859508	23	0.424475	0.132777	0.991146	5.169799	0.526405
1020	642229	896998	7.490724	1.6	2.746	5	10	0.90	9.98	1.60	7.4907	0.983004789786369	23	0.424475	0.130366	0.991466	5.679634	2.06805
1021	642219	896998	7.812517	1.3	3.171	5	10	0.90	9.98	1.30	7.8125	0.981522488438994	23	0.424475	0.135932	0.990718	5.55137	1.750714
1022	642209	896998	9.472576	0.9	3.681	5	10	0.90	9.98	0.90	9.4726	0.972914900808442	23	0.424475	0.164576	0.986364	5.37837	1.460983
1023	642199	896998	9.815428	0.5	6.203	5	10	0.90	9.98	0.50	9.8154	0.970938331251282	23	0.424475	0.170475	0.985362	5.209779	0.839897
1024	642188	896998	9.590547	0.9	3.638	5	10	0.90	9.98	0.90	9.5905	0.972242417795571	23	0.424475	0.166606	0.986024	5.378109	1.478498
1025	642179	896998	8.814216	0.1	33.299	5	10	0.90	9.98	0.10	8.8142	0.976520252409888	23	0.424475	0.153231	0.98819	5.042197	0.151421
1026	642189	896990	9.907193	0.4	7.623	5	10	0.90	9.98	0.40	9.9072	0.970397843970817	23	0.424475	0.172053	0.985088	5.16773	0.677948
1027	642199	896988	10.02419	0.7	4.412	5	10	0.90	9.98	0.70	10.0242	0.969701743666731	23	0.424475	0.174064	0.984734	5.293316	1.199847
1028	642209	896988	9.325916	1.2	2.869	5	10	0.90	9.98	1.20	9.3259	0.973739739593208	23	0.424475	0.16205	0.986783	5.504921	1.918899
1029	642219	896988	8.096921	1	3.889	5	10	0.90	9.98	1.00	8.0969	0.980161832681172	23	0.424475	0.140848	0.990031	5.423543	1.394439
1030	642229	896987	8.922957	1.9	1.993	5	10	0.90	9.98	1.90	8.9230	0.975942058990143	23	0.424475	0.155106	0.987898	5.801267	2.911353
1031	642239	896988	10.87574	0.01	270.071	5	10	0.90	9.98	0.01	10.8757	0.964399990369989	23	0.424475	0.18868	0.982039	5.004167	0.018529
1032	642385	896951	8.223842	0.8	4.714	5	10	0.90	9.98	0.80	8.2238	0.979539332849279	23	0.424475	0.143041	0.989717	5.338619	1.132559
1033	642390	896965	6.237779	1.2	4.253	5	10	0.90	9.98	1.20	6.2378	0.988194124994295	23	0.424475	0.108655	0.99408	5.512417	1.296139
1034	642398	896983	6.588022	1.2	4.030	5	10	0.90	9.98	1.20	6.5880	0.986837146899644	23	0.424475	0.114729	0.993397	5.511713	1.367663
1035	642440	896965	6.333572	0.7	6.904	5	10	0.90	9.98	0.70	6.3336	0.987830226665870	23	0.424475	0.110317	0.993896	5.2988	0.767504
1036	642434	896942	7.437974	1.3	3.327	5	10	0.90	9.98	1.30	7.4380	0.983241967534618	23	0.424475	0.129453	0.991586	5.552336	1.668726
1037	642428	896928	9.236875	0.9	3.772	5	10	0.90	9.98	0.90	9.2369	0.974234464231363	23	0.424475	0.160516	0.987033	5.378884	1.425916
1038	642479	896899	8.274225	0.4	9.074	5	10	0.90	9.98	0.40	8.2742	0.979289612650041	23	0.424475	0.143911	0.989591	5.169266	0.569652
1039	642483	896875	6.866036	1.1	4.189	5	10	0.90	9.98	1.10	6.8660	0.985708197400680	23	0.424475	0.119548	0.992828	5.468534	1.305601
1040	642499	896819	9.399162	2	1.813	5	10	0.90	9.98	2.00	9.3992	0.973329343268006	23	0.424475	0.163312	0.986575	5.841181	3.22238
1041	642509	896819	9.961334	1.8	1.876	5	10	0.90	9.98	1.80	9.9613	0.970076694321651	23	0.424475	0.172984	0.984925	5.754533	3.066764
1042	642519	896819	12.55872	1	2.550	5	10	0.90	9.98	1.00	12.5587	0.952719818471163	23	0.424475	0.21744	0.976074	5.411685	2.122375
1043	642529	896819	11.29731	0.9	3.108	5	10	0.90	9.98	0.90	11.2973	0.961623148939735	23	0.424475	0.1959	0.980624	5.373979	1.728939
1044	642539	896819	9.472467	1.1	3.059	5	10	0.90	9.98	1.10	9.4725	0.972915518446568	23	0.424475	0.164574	0.986365	5.462453	1.785626
1045	642549	896819	6.417602	1.5	3.385	5	10	0.90	9.98	1.50	6.4176	0.987506522576266	23	0.424475	0.111774	0.993734	5.640075	1.666107
1046	642559	896817	5.576542	1.4	4.135	5	10	0.90	9.98	1.40	5.5765	0.990556936532994	23	0.424475	0.097175	0.995267	5.599249	1.354017
1047	642569	896819	6.782073	0.7	6.454	5	10	0.90	9.98	0.70	6.7821	0.986053977613489	23	0.424475	0.118093	0.993003	5.298262	0.820868
1048	642580	896818	6.858248	0.7	6.384	5	10	0.90	9.98	0.70	6.8582	0.985740445888214	23	0.424475	0.119413	0.992845	5.298168	0.829912
1049	642588	896820	6.956086	1	4.513	5	10	0.90	9.98	1.00	6.9561	0.985332712636817	23	0.424475	0.121109	0.992639	5.425777	1.202171
1050	642589	896828	7.079855	0.9	4.890	5	10	0.90	9.98	0.90	7.0799	0.984808804334871	23	0.424475	0.123253	0.992375	5.382996	1.100815
1051	642569	896829	7.17674	0.6	7.066	5	10	0.90	9.98	0.60	7.1767	0.984392379962399	23	0.424475	0.12493	0.992166	5.255223	0.74371
1052	642558	896830	7.175112	0.9	4.826	5	10	0.90	9.98	0.90	7.1751	0.984399423097201	23	0.424475	0.124902	0.992169	5.382837	1.115317
1053	642548	896828	10.013	0.5	6.085	5	10	0.90	9.98	0.50	10.0130	0.969768660111000	23	0.424475	0.173872	0.984768	5.209526	0.856116
1054	642539	896830	11.43065	1.3	2.194	5	10	0.90	9.98	1.30	11.4307	0.960724013117886	23	0.424475	0.198182	0.980165	5.539687	2.525261
1055	642529	896829	12.08471	1.4	1.946	5	10	0.90	9.98	1.40	12.0847	0.956169385530800	23	0.424475	0.209358	0.977839	5.578446	2.866053
1056	642519	896829	13.74	2	1.260	5	10	0.90	9.98	2.00	13.7400	0.943585979903754	23	0.424475	0.237516	0.971384	5.815476	4.61439
1057	642509	896829	11.15212	1.6	1.866	5	10	0.90	9.98	1.60	11.1521	0.962590817676401	23	0.424475	0.193415	0.981117	5.66552	3.036197
1058	642499	896829	9.421176	1.9	1.890	5	10	0.90	9.98	1.90	9.4212	0.973205394283267	23	0.424475	0.163691	0.986512	5.79902	3.068171
1059	642499	896839	9.544533	2.2	1.647	5	10	0.90	9.98	2.20	9.5445	0.972505669674770	23	0.424475	0.165814	0.986157	5.924516	3.597413
1060	642508	896838	11.32085	2.6	1.215	5	10	0.90	9.98	2.60	11.3209	0.961465140804122	23	0.424475	0.196303	0.980543	6.080206	5.004573
1061	642519	896839	13.32172	3	0.926	5	10	0.90	9.98	3.00	13.3217	0.946907250957026	23	0.424475	0.230419	0.973092	6.22752	6.726553
1062	642530	896837	11.93317	1.2	2.264	5	10	0.90	9.98	1.20	11.9332	0.957245904575484	23	0.424475	0.206771	0.978389	5.496369	2.427626
1063	642548	896839	13.15664	0.5	4.697	5	10	0.90	9.98	0.50	13.1566	0.948191855692647	23	0.424475	0.227614	0.973751	5.204864	1.108197
1064	642558	896839	9.870544	0.4	7.650	5	10	0.90	9.98	0.40	9.8705	0.970614282350970	23	0.424475	0.171423	0.985198	5.167767	0.675541
1065	642569	896837	7.11376	0.7	6.159	5	10	0.90	9.98	0.70	7.1138	0.984663706675853	23	0.424475	0.12384	0.992302	5.297842	0.860205
1066	642579	896839	7.237998	0.8	5.341	5	10	0.90	9.98	0.80	7.2380	0.984126225910989	23	0.424475	0.125991	0.992031	5.340205	0.999898
1067	642590	896839	7.111022	0.5	8.487	5	10	0.90	9.98	0.50	7.1110	0.984675449244690	23	0.424475	0.123792	0.992308	5.212747	0.614201
1068	642589	896849	7.699552	0.5	7.851	5	10	0.90	9.98	0.50	7.6996	0.982049778461325	23	0.424475	0.133978	0.990984	5.212179	0.663853
1069	642579	896849	8.337881	0.7	5.273	5	10	0.90	9.98	0.70	8.3379	0.978971986046242	23	0.424475	0.14501	0.98943	5.29612	1.004344
1070	642568	896850	8.494886	0.4	8.845	5	10	0.90	9.98	0.40	8.4949	0.978178466332035	23	0.424475	0.147721	0.989029	5.169074	0.584402
1071	642556	896850	11.73271	0.3	8.579	5	10	0.90	9.98	0.30	11.7327	0.958650283155301	23	0.424475	0.203346	0.979107	5.124274	0.597293
1072	642549	896849	12.33652	1.2	2.194	5	10	0.90	9.98	1.20	12.3365	0.954352350218417	23	0.424475	0.213653	0.97691	5.494868	2.504637
1073	642538	896850	9.08992	1.3	2.736	5	10	0.90	9.98	1.30	9.0899	0.975040945187318	23	0.424475	0.157984	0.987442	5.547729	2.028004
1074	642529	896847	9.189799	0.8	4.231	5	10	0.90	9.98	0.80	9.1898	0.974494174224874	23	0.424475	0.159705	0.987165	5.336875	1.261245
1075	642518	896848	10.43356	2.5	1.358	5	10	0.90	9.98	2.50	10.4336	0.967204519835451	23	0.424475	0.181095	0.983466	6.04486	4.452523
1076	642509	896849	9.052437	1.6	2.282	5	10	0.90	9.98	1.60	9.0524	0.975244649884380	23	0.424475	0.157338	0.987545	5.674269	2.486058
1077	642499	896847	8.928355	1.9	1.991	5	10	0.90	9.98	1.90	8.9284	0.975913178234216	23	0.424475	0.155199	0.987883	5.801243	2.913057
1078	642498	896859	6.741411	0.9	5.131	5	10	0.90	9.98	0.90	6.7414	0.986219933284931	23	0.424475	0.117389	0.993086	5.383545	1.049192
1079	642509	896858	5.995524	1.6	3.420	5	10	0.90	9.98	1.60	5.9955	0.989090036653485	23	0.424475	0.104451	0.99453	5.683842	1.662071
1080	642520	896856	7.429602	2.1	2.188	5	10	0.90	9.98	2.10	7.4296	0.983279459596882	23	0.424475	0.129308	0.991604	5.892269	2.692669
1081	642530	896857	7.592922	1.7	2.570	5	10	0.90	9.98	1.70	7.5929	0.982540621892990	23	0.424475	0.132134	0.991232	5.721771	2.226581
1082	642539	896858	5.106468	1.5	4.244	5	10	0.90	9.98	1.50	5.1065	0.992077800718768	23	0.424475	0.089007	0.996031	5.643038	1.329802
1083	642549	896857	7.974051	1.2	3.341	5	10	0.90	9.98	1.20	7.9741	0.980755485698224	23	0.424475	0.138725	0.990331	5.508559	1.648599
1084	642557	896858	11.31272	1	2.815	5	10	0.90	9.98	1.00	11.3127	0.961519747235776	23	0.424475	0.196164	0.980571	5.415487	1.923526
1085	642569	896869	10.17321	0.5	5.993	5	10	0.90	9.98	0.50	10.1732	0.968803772932957	23	0.424475	0.176625	0.984278	5.209317	0.869238
1086	642579	896857	10.2125	0.8	3.822	5	10	0.90	9.98	0.80	10.2125	0.968564903513216	23	0.424475	0.177299	0.984157	5.334825	1.395924
1087	642590	896857	9.620574	0.2	15.427	5	10	0.90	9.98	0.20	9.6206	0.972069972595502	23	0.424475	0.167123	0.985936	5.084009	0.329545
1088	642589	896870	9.399445	0.5	6.467	5	10	0.90	9.98	0.50	9.3994	0.973327751620608	23	0.424475	0.163316	0.986574	5.210295	0.805618
1089	642579	896869	9.990357	0.5	6.098	5	10	0.90	9.98	0.50	9.9904	0.969903846482798	23	0.424475	0.173482	0.984837	5.209555	0.85426
1090	642568	896869	9.895846	0.5	6.154	5	10	0.90	9.98	0.50	9.8958	0.970464938361597	23	0.424475	0.171858	0.985122	5.209676	0.846504
1091	642559	896869	8.675762	1.4	2.678	5	10	0.90	9.98	1.40	8.6758	0.977246497570016	23	0.424475	0.150843	0.988558	5.591197	2.087633
1092	642549	896869	4.549954	1.5	4.758	5	10	0.90	9.98	1.50	4.5500	0.993707030352254	23	0.424475	0.079328	0.996849	5.644094	1.186174
1093	642537	896868	7.477232	1.8	2.482	5	10	0.90	9.98	1.80	7.4772	0.983065609229035	23	0.424475	0.130132	0.991497	5.764636	2.322462
1094	642528	896870	7.886197	1.4	2.940	5	10	0.90	9.98	1.40	7.8862	0.981174535352664	23	0.424475	0.137206	0.990543	5.593573	1.902716
1095	642519	896869	5.577048	0.2	26.289	5	10	0.90	9.98	0.20	5.5770	0.990555228196142	23	0.424475	0.097184	0.995266	5.085607	0.193448
1096	642509	896869	3.819718	0.2	38.259	5	10	0.90	9.98	0.20	3.8197	0.995562137488584	23	0.424475	0.066617	0.997779	5.08604	0.132939
1097	642498	896870	4.534185	0.8	8.476	5	10	0.90	9.98	0.80	4.5342	0.993750483537099	23	0.424475	0.079054	0.99687	5.343532	0.630452
1098	642498	896880	6.300069	1	4.975	5	10	0.90	9.98	1.00	6.3001	0.987958118263030	23	0.424475	0.109736	0.993961	5.426912	1.090728
1099	642509	896880	5.587174	0.5	10.762	5	10	0.90	9.98	0.50	5.5872	0.990521009027335	23	0.424475	0.09736	0.995249	5.21401	0.484488
1100	642520	896878	6.307046	0.5	9.549	5	10	0.90	9.98	0.50	6.3070	0.987931539849543	23	0.424475	0.109857	0.993947	5.21345	0.545958
1101	642529	896879	8.452392	0.4	8.888	5	10	0.90	9.98	0.40	8.4524	0.978394654045842	23	0.424475	0.146988	0.989138	5.169112	0.581564
1102	642539	896878	8.051374	2.1	2.022	5	10	0.90	9.98	2.10	8.0514	0.980382926292403	23	0.424475	0.140061	0.990143	5.889641	2.912288
1103	642550	896879	5.857275	2	2.884	5	10	0.90	9.98	2.00	5.8573	0.989585641073021	23	0.424475	0.102051	0.994779	5.85523	2.03036
1104	642559	896879	6.495566	1.6	3.160	5	10	0.90	9.98	1.60	6.4956	0.987202435046637	23	0.424475	0.113126	0.993581	5.682537	1.798402
1105	642567	896879	8.27973	0.9	4.195	5	10	0.90	9.98	0.90	8.2797	0.979262237609034	23	0.424475	0.144006	0.989577	5.380839	1.282546
1106	642576	896878	7.977668	0.6	6.371	5	10	0.90	9.98	0.60	7.9777	0.980738136250655	23	0.424475	0.138787	0.990322	5.254275	0.824664
1107	642589	896878	7.65092	0.6	6.637	5	10	0.90	9.98	0.60	7.6509	0.982274471962963	23	0.424475	0.133137	0.991098	5.254674	0.791712
1108	642589	896889	6.637671	0.9	5.210	5	10	0.90	9.98	0.90	6.6377	0.986638893806309	23	0.424475	0.11559	0.993297	5.383708	1.033339
1109	642578	896889	7.015659	0.5	8.600	5	10	0.90	9.98	0.50	7.0157	0.985081673144500	23	0.424475	0.122141	0.992513	5.212834	0.606131
1110	642568	896889	7.865508	0.5	7.690	5	10	0.90	9.98	0.50	7.8655	0.981272560441703	23	0.424475	0.136848	0.990592	5.212011	0.677804
1111	642560	896890	7.493729	1.5	2.906	5	10	0.90	9.98	1.50	7.4937	0.982991229213560	23	0.424475	0.130418	0.991459	5.637148	1.939557
1112	642549	896887	8.391563	1.9	2.116	5	10	0.90	9.98	1.90	8.3916	0.978702288930499	23	0.424475	0.145937	0.989294	5.803533	2.743124
1113	642539	896888	8.336082	1.5	2.619	5	10	0.90	9.98	1.50	8.3361	0.978980995060259	23	0.424475	0.144979	0.989435	5.634549	2.151714
1114	642529	896888	8.548651	0.2	17.295	5	10	0.90	9.98	0.20	8.5487	0.977903429899295	23	0.424475	0.148649	0.98889	5.084513	0.293995
1115	642518	896890	7.997584	0.3	12.404	5	10	0.90	9.98	0.30	7.9976	0.980642469102988	23	0.424475	0.139131	0.990274	5.127125	0.413334
1116	642506	896889	7.92905	0.3	12.509	5	10	0.90	9.98	0.30	7.9291	0.980970698406932	23	0.424475	0.137947	0.99044	5.127168	0.409884
1117	642497	896888	8.283259	0.8	4.681	5	10	0.90	9.98	0.80	8.2833	0.979244679432007	23	0.424475	0.144067	0.989568	5.338517	1.140513
1118	642499	896898	7.40231	0.3	13.378	5	10	0.90	9.98	0.30	7.4023	0.983401393897071	23	0.424475	0.128836	0.991666	5.127483	0.383286
1119	642509	896898	7.59012	0.4	9.872	5	10	0.90	9.98	0.40	7.5901	0.982553430057021	23	0.424475	0.132085	0.991238	5.169831	0.523713
1120	642518	896900	7.977191	0.5	7.584	5	10	0.90	9.98	0.50	7.9772	0.980740424686705	23	0.424475	0.138779	0.990323	5.211897	0.68718
1121	642529	896898	8.42231	0.4	8.919	5	10	0.90	9.98	0.40	8.4223	0.978547059574002	23	0.424475	0.146468	0.989215	5.169138	0.579554
1122	642540	896897	9.301269	0.2	15.938	5	10	0.90	9.98	0.20	9.3013	0.973877140156302	23	0.424475	0.161626	0.986852	5.084165	0.319001
1123	642549	896898	9.934969	1.8	1.881	5	10	0.90	9.98	1.80	9.9350	0.970233294109053	23	0.424475	0.17253	0.985004	5.754655	3.058975
1124	642560	896899	9.341072	1.1	3.101	5	10	0.90	9.98	1.10	9.3411	0.973655074749804	23	0.424475	0.162311	0.98674	5.462804	1.761748
1125	642569	896898	9.59481	1.5	2.284	5	10	0.90	9.98	1.50	9.5948	0.972217966961803	23	0.424475	0.166679	0.986011	5.630165	2.465217
1126	642578	896900	9.66076	0.7	4.571	5	10	0.90	9.98	0.70	9.6608	0.971838372754514	23	0.424475	0.167814	0.985819	5.293962	1.158041
1127	642589	896898	8.337363	0.6	6.103	5	10	0.90	9.98	0.60	8.3374	0.978974580275038	23	0.424475	0.145001	0.989431	5.253818	0.860814
1128	642589	896908	10.79787	0.9	3.245	5	10	0.90	9.98	0.90	10.7979	0.964901926878263	23	0.424475	0.187345	0.982294	5.375254	1.656249
1129	642578	896912	9.966448	1	3.179	5	10	0.90	9.98	1.00	9.9664	0.970046272666283	23	0.424475	0.173071	0.984909	5.419172	1.704597
1130	642568	896910	10.00216	0.9	3.493	5	10	0.90	9.98	0.90	10.0022	0.969833415201818	23	0.424475	0.173685	0.984801	5.377172	1.539409
1131	642559	896908	10.23796	1.7	1.921	5	10	0.90	9.98	1.70	10.2380	0.968409645013911	23	0.424475	0.177737	0.984078	5.71139	2.973416
1132	642549	896908	10.14757	1.5	2.163	5	10	0.90	9.98	1.50	10.1476	0.968959179680589	23	0.424475	0.176184	0.984357	5.628053	2.601421
1133	642538	896910	9.636429	0.3	10.353	5	10	0.90	9.98	0.30	9.6364	0.971978708026730	23	0.424475	0.167396	0.98589	5.126002	0.495101
1134	642529	896908	8.404507	0.3	11.819	5	10	0.90	9.98	0.30	8.4045	0.978637007026369	23	0.424475	0.146161	0.989261	5.126865	0.433774
1135	642519	896911	7.764311	0.6	6.542	5	10	0.90	9.98	0.60	7.7643	0.981748417272340	23	0.424475	0.135098	0.990832	5.254537	0.803159
1136	642508	896909	7.476645	0.5	8.080	5	10	0.90	9.98	0.50	7.4766	0.983068252884447	23	0.424475	0.130122	0.991498	5.212399	0.645079
1137	642499	896909	7.456111	0.5	8.102	5	10	0.90	9.98	0.50	7.4561	0.983160603637168	23	0.424475	0.129767	0.991545	5.212419	0.643347
1138	642486	896916	8.952579	0.6	5.695	5	10	0.90	9.98	0.60	8.9526	0.975783365262920	23	0.424475	0.155617	0.987817	5.252991	0.922327
1139	642493	896933	7.670405	0.7	5.721	5	10	0.90	9.98	0.70	7.6704	0.982184612621096	23	0.424475	0.133474	0.991052	5.297092	0.92596
1140	642467	896943	8.095463	1.2	3.292	5	10	0.90	9.98	1.20	8.0955	0.980168928891819	23	0.424475	0.140823	0.990035	5.508255	1.673034

1141	642461	896929	9.247965	1.1	3.131	5	10	0.90	9.98	1.10	9.2480	0.974173096259147	23	0.424475	0.160708	0.987002	5.463051	1.744805
1142	642410	897123	8.031326	0.9	4.322	5	10	0.90	9.98	0.90	8.0313	0.980479858176991	23	0.424475	0.139715	0.990192	5.381312	1.245097
1143	642398	897127	7.255735	1	4.330	5	10	0.90	9.98	1.00	7.2557	0.984048748794896	23	0.424475	0.126298	0.991992	5.425223	1.252869
1144	642383	897129	7.431914	0.7	5.900	5	10	0.90	9.98	0.70	7.4319	0.983269109965607	23	0.424475	0.129348	0.991599	5.29742	0.897829
1145	642377	897160	5.981343	0.6	8.453	5	10	0.90	9.98	0.60	5.9813	0.989141398115403	23	0.424475	0.104205	0.994556	5.256454	0.621824
1146	642393	897161	4.999268	0.8	7.693	5	10	0.90	9.98	0.80	4.9993	0.992406094841509	23	0.424475	0.087143	0.996196	5.343067	0.694492
1147	642411	897163	5.514647	1	5.675	5	10	0.90	9.98	1.00	5.5146	0.990764749474045	23	0.424475	0.0961	0.995372	5.428125	0.956554
1148	642394	897208	6.248246	0.8	6.172	5	10	0.90	9.98	0.80	6.2482	0.988154628527168	23	0.424475	0.108836	0.99406	5.341597	0.865519
1149	642368	897239	5.373682	0.6	9.397	5	10	0.90	9.98	0.60	5.3737	0.991229489037267	23	0.424475	0.093651	0.995605	5.256995	0.559437
1150	642341	897243	5.406713	0.5	11.117	5	10	0.90	9.98	0.50	5.4067	0.991121657544827	23	0.424475	0.094225	0.995551	5.214139	0.469029
1151	642356	897211	6.051243	0.6	8.357	5	10	0.90	9.98	0.60	6.0512	0.988887070361231	23	0.424475	0.105418	0.994428	5.256388	0.628983
1152	642336	897205	6.045499	0.8	6.376	5	10	0.90	9.98	0.80	6.0455	0.988908079407062	23	0.424475	0.105318	0.994439	5.341858	0.83786
1153	642294	897229	5.697286	0.3	17.305	5	10	0.90	9.98	0.30	5.6973	0.990144947790890	23	0.424475	0.099273	0.99506	5.128357	0.296347
1154	642404	896114	13.43745	0.8	2.946	5	10	0.90	9.98	0.80	13.4375	0.945997822778135	23	0.424475	0.232384	0.972624	5.327024	1.808176
1155	642405	896103	12.84713	1.3	1.964	5	10	0.90	9.98	1.30	12.8471	0.950560230795434	23	0.424475	0.222351	0.974967	5.533977	2.818197
1156	642406	896094	12.56661	1.6	1.665	5	10	0.90	9.98	1.60	12.5666	0.952661348338541	23	0.424475	0.217574	0.976044	5.658655	3.397795
1157	642405	896083	11.43096	0.2	13.083	5	10	0.90	9.98	0.20	11.4310	0.960721911094680	23	0.424475	0.198187	0.980164	5.083029	0.388512
1158	642414	896075	9.610323	0.2	15.443	5	10	0.90	9.98	0.20	9.6103	0.972128902449166	23	0.424475	0.166946	0.985966	5.084014	0.329207
1159	642414	896084	11.52174	1.7	1.715	5	10	0.90	9.98	1.70	11.5217	0.960104037313430	23	0.424475	0.19974	0.979849	5.705289	3.327151
1160	642414	896095	12.41745	1.5	1.784	5	10	0.90	9.98	1.50	12.4175	0.953760906764720	23	0.424475	0.215033	0.976607	5.618202	3.150037
1161	642414	896104	13.08421	1.6	1.603	5	10	0.90	9.98	1.60	13.0842	0.948750790174911	23	0.424475	0.226383	0.974038	5.655952	3.52809
1162	642414	896114	13.60269	0.9	2.609	5	10	0.90	9.98	0.90	13.6027	0.944686724231485	23	0.424475	0.235188	0.97195	5.367392	2.057316
1163	642425	896152	12.46561	1.3	2.020	5	10	0.90	9.98	1.30	12.4656	0.953407230344946	23	0.424475	0.215854	0.976426	5.535576	2.739945
1164	642424	896144	12.46561	1.3	2.020	5	10	0.90	9.98	1.30	12.4656	0.953407230344946	23	0.424475	0.215854	0.976426	5.535576	2.739945
1165	642424	896134	13.07062	1.6	1.605	5	10	0.90	9.98	1.60	13.0706	0.948855343242329	23	0.424475	0.226152	0.974092	5.656024	3.524683
1166	642424	896124	13.57244	1.2	2.006	5	10	0.90	9.98	1.20	13.5724	0.944927850751774	23	0.424475	0.234675	0.972074	5.489981	2.737452
1167	642424	896114	13.60747	0.8	2.912	5	10	0.90	9.98	0.80	13.6075	0.944648576885271	23	0.424475	0.235269	0.97193	5.326558	1.829319
1168	642426	896102	13.30124	0.9	2.664	5	10	0.90	9.98	0.90	13.3012	0.947067427561664	23	0.424475	0.230071	0.973174	5.368318	2.01509
1169	642424	896094	12.43505	0.6	4.159	5	10	0.90	9.98	0.60	12.4351	0.953631804881813	23	0.424475	0.215333	0.976541	5.247247	1.261687
1170	642424	896084	11.45679	1.8	1.640	5	10	0.90	9.98	1.80	11.4568	0.960546575600930	23	0.424475	0.198629	0.980075	5.74712	3.50408
1171	642426	896075	9.689692	0.6	5.276	5	10	0.90	9.98	0.60	9.6897	0.971671057067194	23	0.424475	0.168312	0.985734	5.251924	0.995465
1172	642433	896073	10.74592	0.1	27.523	5	10	0.90	9.98	0.10	10.7459	0.965234877617703	23	0.424475	0.186454	0.982464	5.041709	0.183184
1173	642433	896083	12.94872	0.7	3.459	5	10	0.90	9.98	0.70	12.9487	0.949788647274245	23	0.424475	0.224079	0.974571	5.287293	1.528666
1174	642433	896092	12.94872	2.2	1.229	5	10	0.90	9.98	2.20	12.9487	0.949788647274245	23	0.424475	0.224079	0.974571	5.90292	4.804378
1175	642434	896103	13.31417	1.1	2.211	5	10	0.90	9.98	1.10	13.3142	0.946966327021636	23	0.424475	0.23029	0.973122	5.450119	2.465107
1176	642433	896114	13.34517	0.7	3.363	5	10	0.90	9.98	0.70	13.3452	0.946723565138377	23	0.424475	0.230817	0.972997	5.286366	1.572089
1177	642433	896123	12.67979	1.8	1.489	5	10	0.90	9.98	1.80	12.6798	0.951818832763344	23	0.424475	0.219502	0.975612	5.740332	3.85468
1178	642433	896134	13.07062	1.7	1.521	5	10	0.90	9.98	1.70	13.0706	0.948855343242329	23	0.424475	0.226152	0.974092	5.697025	3.744976
1179	642434	896142	10.94669	1.4	2.139	5	10	0.90	9.98	1.40	10.9467	0.963939671505572	23	0.424475	0.189896	0.981804	5.583146	2.610164
1180	642435	896152	10.61841	1.3	2.354	5	10	0.90	9.98	1.30	10.6184	0.966045608919046	23	0.424475	0.184267	0.982876	5.542676	2.354454
1181	642444	896153	10.0809	1.8	1.855	5	10	0.90	9.98	1.80	10.0809	0.969361514956937	23	0.424475	0.175039	0.984562	5.753977	3.102052
1182	642448	896145	9.027249	2.5	1.563	5	10	0.90	9.98	2.50	9.0272	0.975381079283422	23	0.424475	0.156904	0.987614	6.053693	3.874018
1183	642446	896135	9.297523	1.9	1.914	5	10	0.90	9.98	1.90	9.2975	0.973897992420252	23	0.424475	0.161561	0.986863	5.799589	3.029335
1184	642444	896124	11.28344	1.8	1.664	5	10	0.90	9.98	1.80	11.2834	0.961716102970060	23	0.424475	0.195663	0.980671	5.74803	3.453854
1185	642447	896103	13.33181	2.2	1.195	5	10	0.90	9.98	2.20	13.3318	0.946828251835619	23	0.424475	0.23059	0.973051	5.900106	4.936268
1186	642444	896094	14.01595	2.5	1.024	5	10	0.90	9.98	2.50	14.0160	0.941343036510795	23	0.424475	0.242192	0.970228	6.016922	5.874538
1187	642445	896084	14.08157	1.2	1.938	5	10	0.90	9.98	1.20	14.0816	0.940803637490275	23	0.424475	0.243303	0.96995	5.487843	2.831902
1188	642446	896074	10.78691	0.5	5.666	5	10	0.90	9.98	0.50	10.7869	0.964972297471162	23	0.424475	0.187157	0.98233	5.20849	0.919249
1189	642454	896074	10.7968	0.2	13.813	5	10	0.90	9.98	0.20	10.7968	0.964908799997453	23	0.424475	0.187326	0.982298	5.08339	0.368021
1190	642454	896083	13.69667	0.6	3.800	5	10	0.90	9.98	0.60	13.6967	0.943934436134080	23	0.424475	0.236782	0.971563	5.244733	1.38029
1191	642453	896094	13.11249	2.2	1.214	5	10	0.90	9.98	2.20	13.1125	0.948532897624516	23	0.424475	0.226864	0.973927	5.901726	4.860867
1192	642454	896104	12.5152	2	1.376	5	10	0.90	9.98	2.00	12.5152	0.953041713320499	23	0.424475	0.216699	0.976239	5.823648	4.230991
1193	642455	896113	12.04446	2.4	1.223	5	10	0.90	9.98	2.40	12.0445	0.956456562060783	23	0.424475	0.208671	0.977986	5.991919	4.897847
1194	642454	896124	10.993	1.5	2.003	5	10	0.90	9.98	1.50	10.9930	0.963637680272741	23	0.424475	0.190689	0.98165	5.624604	2.80785
1195	642455	896133	10.64309	2	1.607	5	10	0.90	9.98	2.00	10.6431	0.965889409157178	23	0.424475	0.184691	0.982797	5.834751	3.630265
1196	642455	896142	10.66428	2.1	1.539	5	10	0.90	9.98	2.10	10.6643	0.965755021722404	23	0.424475	0.185054	0.982728	5.876367	3.819014
1197	642454	896154	11.1952	2.3	1.360	5	10	0.90	9.98	2.30	11.1952	0.962304934794383	23	0.424475	0.194152	0.980971	5.956402	4.380528
1198	642465	896153	13.70458	1.4	1.729	5	10	0.90	9.98	1.40	13.7046	0.943870900328722	23	0.424475	0.236916	0.97153	5.571006	3.222392
1199	642466	896145	13.99967	2	1.238	5	10	0.90	9.98	2.00	13.9997	0.941476500362263	23	0.424475	0.241916	0.970297	5.813653	4.694614
1200	642464	896134	13.29509	2.5	1.077	5	10	0.90	9.98	2.50	13.2951	0.947115482866416	23	0.424475	0.229966	0.973199	6.023158	5.595073
1201	642463	896125	12.31171	0.9	2.865	5	10	0.90	9.98	0.90	12.3117	0.954532937887931	23	0.424475	0.21323	0.977002	5.371222	1.874936
1202	642464	896114	12.06622	2.6	1.143	5	10	0.90	9.98	2.60	12.0662	0.956301420215042	23	0.424475	0.209042	0.977907	6.074405	5.315014
1203	642464	896104	11.61054	2	1.478	5	10	0.90	9.98	2.00	11.6105	0.959495169876444	23	0.424475	0.201258	0.979538	5.829225	3.9428
1204	642466	896092	11.59306	2.1	1.420	5	10	0.90	9.98	2.10	11.5931	0.959615372690767	23	0.424475	0.200959	0.9796	5.870796	4.134052
1205	642466	896087	12.79131	1.2	2.120	5	10	0.90	9.98	1.20	12.7913	0.950981776518058	23	0.424475	0.221401	0.975183	5.493121	2.590873
1206	642466	896075	12.2989	0.1	24.222	5	10	0.90	9.98	0.10	12.2989	0.954626046205881	23	0.424475	0.213012	0.97705	5.041251	0.208123
1207	642474	896073	13.25977	2.9	0.956	5	10	0.90	9.98	2.90	13.2598	0.947391069724105	23	0.424475	0.229366	0.97334	6.187208	6.474293
1208	642476	896085	12.8984	2.2	1.233	5	10	0.90	9.98	2.20	12.8984	0.950171538944109	23	0.424475	0.223223	0.974767	5.903284	4.786989
1209	642472	896094	11.59306	1.1	2.520	5	10	0.90	9.98	1.10	11.5931	0.959615372690767	23	0.424475	0.200959	0.9796	5.456131	2.165456
1210	642472	896103	11.61054	1.7	1.702	5	10	0.90	9.98	1.70	11.6105	0.959495169876444	23	0.424475	0.201258	0.979538	5.704841	3.35138
1211	642474	896113	11.48391	1.6	1.814	5	10	0.90	9.98	1.60	11.4839	0.960362080601697	23	0.424475	0.199093	0.979981	5.66398	3.121713
1212	642475	896122	11.2649	0.7	3.945	5	10	0.90	9.98	0.70	11.2649	0.961840185400176	23	0.424475	0.195345	0.980735	5.290938	1.341074
1213	642474	896134	11.96064	1	2.670	5	10	0.90	9.98	1.00	11.9606	0.957051710069030	23	0.424475	0.20724	0.97829	5.413557	2.027406
1214	642475	896141	11.96064	1.6	1.745	5	10	0.90	9.98	1.60	11.9606	0.957051710069030	23	0.424475	0.20724	0.97829	5.661691	3.243849
1215	642475	896152	12.60378	0.7	3.548	5	10	0.90	9.98	0.70	12.6038	0.952385432167853	23	0.424475	0.218208	0.975902	5.288078	1.490645
1216	642483	896156	8.82956	0.9	3.941	5	10	0.90	9.98	0.90	8.8296	0.976439081740287	23	0.424475	0.153496	0.988149	5.379741	1.36509
1217	642487	896143	8.932639	1.3	2.782	5	10	0.90	9.98	1.30	8.9326	0.975890245652541	23	0.424475	0.155273	0.987872	5.548206	1.994069
1218	642484	896134	9.076536	1.7	2.159	5	10	0.90	9.98	1.70	9.0765	0.975113775090829	23	0.424475	0.157754	0.987478	5.716315	2.648232
1219	642484	896124	9.331545	1.8	1.999	5	10	0.90	9.98	1.80	9.3315	0.973708310202890	23	0.424475	0.162147	0.986767	5.757358	2.880025
1220	642484	896112	10.34055	1.1	2.811	5	10	0.90	9.98	1.10	10.3406	0.967780289850455	23	0.424475	0.179498	0.983758	5.460012	1.942414
1221	642484	896104	11.65715	1.2	2.315	5	10	0.90	9.98	1.20	11.6572	0.959173815834038	23	0.424475	0.202055	0.979374	5.497368	2.374648
1222	642485	896095	12.48265	1.5	1.775	5	10	0.90	9.98	1.50	12.4827	0.953281785395614	23	0.424475	0.216144	0.976362	5.617892	3.16552
1223	642486	896083	12.95323	1.7	1.534	5	10	0.90	9.98	1.70	12.9532	0.949754262295893	23	0.424475	0.224156	0.974553	5.697686	3.713677
1224	642485	896075	12.57997	2.3	1.216	5	10	0.90	9.98	2.30	12.5800	0.952562263587463	23	0.424475	0.217802	0.975993	5.946719	4.889185
1225	642485	896064	12.83987	2.5	1.113	5	10	0.90	9.98	2.50	12.8399	0.950615154222600	23	0.424475	0.222227	0.974995	6.026939	5.416755
1226	642492	896063	12.83987	2	1.343	5	10	0.90	9.98	2.00	12.8399	0.950615154222600	23	0.424475	0.222227	0.974995	5.821551	4.333404
1227	642495	896073	12.40997	1.7	1.598	5	10	0.90	9.98	1.70	12.4100	0.953815723206777	23	0.424475	0.214905	0.976635	5.700669	3.568028
1228	642494	896085	12.00161	0.5	5.120	5	10	0.90	9.98	0.50	12.0016	0.956761298881260	23	0.424475	0.207939	0.978142	5.206716	1.01697
1229	642493	896093	10.24932	0.7	4.318	5	10	0.90	9.98	0.70	10.2493	0.968340250837133	23	0.424475	0.177932	0.984043	5.292904	1.225648
1230	642495	896104	9.293934	1.2	2.878	5	10	0.90	9.98	1.20	9.2939	0.973917963136695	23	0.424475	0.161499	0.986873	5.505014	1.912552
1231	642493	896115	8.912922	1.8	2.090	5	10	0.90	9.98	1.80	8.9129	0.975995704039740	23	0.424475	0.154933	0.987925	5.759137	2.755123
1232	642494	896124	8.656355	1.6	2.384	5	10	0.90	9.98	1.60	8.6564	0.977347404471350	23	0.424475	0.150508	0.988609	5.675723	2.380693
1233	642494	896135	8.457233	2	2.009	5	10	0.90	9.98	2.00	8.4572	0.978370078633503	23	0.424475	0.147071	0.989126	5.845537	2.909438
1234	642494	896145	8.369979	2.5	1.682	5	10	0.90	9.98	2.50	8.3700	0.978810928546874	23	0.424475	0.145565	0.989349	6.057398	3.600355
1235	642495	896152	8.384917	1.5	2.604	5	10	0.90	9.98	1.50	8.3849	0.978735769466427	23	0.424475	0.145823	0.989311	5.63439	2.163958
1236	642504	896154	8.391385	2.2	1.867	5	10	0.90	9.98	2.20	8.3914	0.978703185976387	23	0.424475	0.145934	0.989294	5.930408	3.176183
1237	642503	896144	8.358794	2.5	1.685	5	10	0.90	9.98	2.50	8.3588	0.978867119544388	23	0.424475	0.145372	0.989377	6.057459	3.595682
1238	642504	896133	8.222545	2.5	1.712	5	10	0.90	9.98	2.50	8.2225	0.979545741769598	23	0.424475	0.143018	0.98972	6.058192	3.538704
1239	642503	896123	7.899841	1.4	2.935	5	10	0.90	9.98	1.40	7.8998	0.981109752354934	23	0.424475	0.137442	0.99051	5.593534	1.905924
1240	642505	896114	7.33907	1.1	3.923	5	10	0.90	9.98	1.10	7.3391	0.983682249191019	23	0.424475	0.127741	0.991808	5.467571	1.393639
1241	642504	896103	7.059203	2	2.399	5	10	0.90	9.98	2.00	7.0592	0.984896852531670	23	0.424475	0.122895	0.99242	5.851178	2.439266
1242	642508	896093	7.741135	0.9	4.480	5	10	0.90	9.98	0.90	7.7411	0.981856551575336	23	0.424475	0.134698	0.990887	5.381848	1.201231
1243	642504	896084	9.927477	0.7	4.453	5	10	0.90	9.98	0.70	9.9275	0.970277721564487	23	0.424475	0.172402	0.985027	5.29349	1.188741
1244	642505	896074	11.98178	1.8	1.571	5	10	0.90	9.98	1.80	11.9818	0.956901978273378	23	0.424475	0.207601	0.978214	5.744286	3.6554
1245	642503	896063	14.2902	2.2	1.120	5	10	0.90	9.98	2.20	14.2902	0.939073338567031	23	0.424475	0.246833	0.969058	5.892734	5.262306
1246	642404	896025	10.45097	1.8	1.791	5	10	0.90	9.98	1.80	10.4510	0.967096197427684	23	0.424475	0.181394	0.98341	5.752215	3.210927
1247	642403	896034	13.51155	1.5	1.647	5	10	0.90	9.98	1.50	13.5116	0.945411707974204	23	0.424475	0.233641	0.972323	5.61279	3.407623
1248	642404	896041	13.51155	1.7	1.475	5	10	0.90	9.98	1.70	13.5116	0.945411707974204	23	0.424475	0.233641	0.972323	5.694496	3.861972
1249	642413	896041	14.4863	1.1	2.044	5	10	0.90	9.98	1.10	14.4863	0.937425726440510	23	0.424475	0.250149	0.968207	5.445584	2.664152
1250	642414	896034	14.4863	1.4	1.642	5	10	0.90	9.98	1.40	14.4863	0.937425726440510	23	0.424475	0.250149	0.968207	5.567106	3.390739
1251	642415	896025	10.84685	1.8	1.728	5	10	0.90	9.98	1.80	10.8469	0.964586610848308	23	0.424475	0.188184	0.982134	5.750263	3.326801
1252	642424	896024	11.03935	1.6	1.884	5	10	0.90	9.98	1.60	11.0394	0.963334215072362	23	0.424475	0.191483	0.981496	5.666034	3.007038
1253	642437	896038	9.790956	1.8	1.908	5	10	0.90	9.98	1.80	9.7910	0.971081653138270	23	0.424475	0.170054	0.985435	5.755315	3.016387
1254	642444	896044	11.04623	0.1	26.810	5	10	0.90	9.98	0.10	11.0462	0.963289066571928	23	0.424475	0.191601	0.981473	5.041625	0.188051
1255	642444	896034	10.73938	1.9	1.665	5	10	0.90	9.98	1.90	10.7394	0.965276684480067	23	0.424475	0.186342	0.982485	5.792511	3.478485
1256	642448	896025	10.66632	2	1.604	5	10	0.90	9.98	2.00	10.6663	0.965742070550568	23	0.424475	0.185089	0.982722	5.834624	3.637819
1257	642455	896022	10.85171	1.9	1.649	5	10	0.90	9.98	1.90	10.8517	0.964555249799311	23	0.424475	0.188268	0.982118	5.791918	3.513121
1258	642456	896034	10.91446	0.1	27.118	5	10	0.90	9.98	0.10	10.9145	0.964149130493839	23	0.424475	0.189343	0.981911	5.041662	0.185918
1259	642454	896043	10.76085	0.01	272.816	5	10	0.90	9.98	0.01	10.7609	0.965139346941256	23	0.424475	0.18671	0.982415	5.004171	0.018343
1260	642454	896051	10.76085	2.1	1.525	5	10	0.90	9.98	2.10	10.7609	0.965139346941256	23	0.424475	0.18671	0.982415	5.875808	3.851963
1261	642466	896052	9.143377	1.8	2.039	5	10	0.90	9.98	1.80	9.1434	0.974749021513675	23	0.424475	0.158906	0.987294	5.758167	2.823657
1262	642465	896045	9.53784	1.5	2.297	5	10	0.90	9.98	1.50	9.5378	0.972543859635135	23	0.424475	0.165699	0.986176	5.630377	2.451126
1263	642464	896034	10.53214	1.9	1.697	5	10	0.90	9.98	1.90	10.5321	0.966588893448049	23	0.424475	0.182787	0.983153	5.793588	3.414444
1264	642463	896021	11.49565	1.4	2.041	5	10	0.90	9.98	1.40	11.4957	0.960282086439570	23	0.424475	0.199294	0.97994	5.580934	2.734139
1265	642474	896025	11.37567	0.9	3.088	5	10	0.90	9.98	0.90	11.3757	0.961095963624834	23	0.424475	0.197241	0.980355	5.373774	1.740296
1266	642474	896034	10.87444	1.1	2.678	5	10	0.90	9.98	1.10	10.8744	0.964408398117752	23	0.424475	0.188657	0.982043	5.458409	2.037966
1267	642474	896044	9.883476	2	1.726	5	10	0.90	9.98	2.00	9.8835	0.970537997623695	23	0.424475	0.171645	0.985159	5.838769	3.381952
1268	642476	896050	9.883476	2	1.726	5	10	0.90	9.98	2.00	9.8835	0.970537997623695	23	0.424475	0.171645	0.985159	5.838769	3.381952
1269	642485	896045	10.30623	2	1.658	5	10	0.90	9.98	2.00	10.3062	0.967991499648516	23	0.424475	0.178909	0.983866	5.836568	3.520452
1270	642484	896034	10.83007	2.1	1.516	5	10	0.90	9.98	2.10	10.8301	0.964694787571147	23	0.424475	0.187897	0.982189	5.875405	3.875553
1271	642485	896023	11.30109	1.7	1.747	5	10	0.90	9.98	1.70	11.3011	0.961597797354006	23	0.424475	0.195965	0.980611	5.706386	3.266809
1272	642494	896025	10.22514	1.9	1.746	5	10	0.90	9.98	1.90	10.2251	0.968487869346300	23	0.424475	0.177517	0.984118	5.795147	3.319247
1273	642494	896034	10.18071	2.1	1.609	5	10	0.90	9.98	2.10	10.1807	0.968758243646629	23	0.424475	0.176753	0.984255	5.879092	3.653379
1274	642495	896046	10.58405	2	1.616	5	10	0.90	9.98	2.00	10.5841	0.966262497405215	23	0.424475	0.183678	0.982987	5.835074	3.611054
1275	642516	896029	13.22344	2.4	1.119	5	10	0.90	9.98	2.40	13.2234	0.947673827673847	23	0.424475	0.228749	0.973485	5.982811	5.344415
1276	642529	896047	11.22143	0.3	8.949	5	10	0.90	9.98	0.30	11.2214	0.962130357992202	23	0.424475	0.194601	0.980882	5.124725	0.572643
1277	642538	896065	8.127698	1.6	2.535	5	10	0.90	9.98	1.60	8.1277	0.980011748200450	23	0.424475	0.14138	0.989955	5.677565	2.239355
1278	642549	896084	8.992303	2	1.892	5	10	0.90	9.98	2.00	8.9923	0.975569753706330	23	0.424475	0.156302	0.987709	5.843117	3.087615
1279	642592	896039	8.607355	1.8	2.163	5	10	0.90	9.98	1.80	8.6074	0.977601205583182	23	0.424475	0.149662	0.988737	5.760386	2.66358

1280	642581	896021	9.725654	2.8	1.325	5	10	0.90	9.98	2.80	9.7257	0.971462415826391		23	0.424475	0.168931	0.985628		6.175395	4.662079
1281	642568	896000	10.27711	2	1.662	5	10	0.90	9.98	2.00	10.2771	0.968170181257179		23	0.424475	0.178409	0.983956		5.836722	3.510936
1282	642621	895993	9.223764	2	1.846	5	10	0.90	9.98	2.00	9.2238	0.974306923997751		23	0.424475	0.160291	0.98707		5.842026	3.16436
1283	642619	896011	8.092959	3	1.500	5	10	0.90	9.98	3.00	8.0930	0.980181113171678		23	0.424475	0.14078	0.990041		6.270654	4.181326
1284	642627	896032	7.823058	2.3	1.927	5	10	0.90	9.98	2.30	7.8231	0.981472903860362		23	0.424475	0.136114	0.990693		5.975452	3.101492
1285	642678	896046	7.030554	2.1	2.310	5	10	0.90	9.98	2.10	7.0306	0.985018578053825		23	0.424475	0.122399	0.992481		5.893847	2.551044
1286	642687	896023	6.319339	1.7	3.079	5	10	0.90	9.98	1.70	6.3193	0.987884640073701		23	0.424475	0.11007	0.993924		5.725696	1.859817
1287	642698	896003	6.239762	1.5	3.480	5	10	0.90	9.98	1.50	6.2398	0.988186647290929		23	0.424475	0.108689	0.994076		5.640516	1.62068
1288	642746	896036	6.343831	1.4	3.641	5	10	0.90	9.98	1.40	6.3438	0.987790931364138		23	0.424475	0.110495	0.993877		5.597575	1.537453
1289	642750	896062	6.296165	1.6	3.258	5	10	0.90	9.98	1.60	6.2962	0.987972977660924		23	0.424475	0.109668	0.993968		5.683069	1.744101
1290	642783	896063	6.357403	2	2.660	5	10	0.90	9.98	2.00	6.3574	0.987738850079339		23	0.424475	0.11073	0.993851		5.853634	2.200983
1291	642783	896035	6.570057	1.3	3.759	5	10	0.90	9.98	1.30	6.5701	0.986908522579943		23	0.424475	0.114418	0.993433		5.554396	1.477665
1292	642788	896014	6.682489	1.1	4.302	5	10	0.90	9.98	1.10	6.6825	0.986458676098337		23	0.424475	0.116367	0.993206		5.46889	1.271343
1293	642833	896012	7.17482	1.9	2.467	5	10	0.90	9.98	1.90	7.1748	0.984400686196714		23	0.424475	0.124897	0.99217		5.808212	2.354465
1294	642836	896028	7.046654	1.2	3.772	5	10	0.90	9.98	1.20	7.0467	0.984950231138754		23	0.424475	0.122677	0.992447		5.510735	1.46101
1295	642837	896057	6.551554	1.7	2.971	5	10	0.90	9.98	1.70	6.5516	0.986981835591870		23	0.424475	0.114097	0.99347		5.725033	1.926985
1296	642838	896078	6.397515	1	4.901	5	10	0.90	9.98	1.00	6.3975	0.987584284194014		23	0.424475	0.111426	0.993773		5.42675	1.10732
1297	642863	896093	5.934729	1.4	3.888	5	10	0.90	9.98	1.40	5.9347	0.989309382479904		23	0.424475	0.103395	0.99464		5.598494	1.439778
1298	642863	896084	5.960076	1.9	2.962	5	10	0.90	9.98	1.90	5.9601	0.989218199350504		23	0.424475	0.103835	0.994594		5.812167	1.962209
1299	642863	896074	6.143054	1	5.101	5	10	0.90	9.98	1.00	6.1431	0.988548598653008		23	0.424475	0.107011	0.994258		5.427167	1.063967
1300	642863	896064	6.530297	1.1	4.400	5	10	0.90	9.98	1.10	6.5303	0.987065809811213		23	0.424475	0.113729	0.993512		5.469179	1.242898
1301	642863	896054	6.690093	0.9	5.170	5	10	0.90	9.98	0.90	6.6901	0.986427981496511		23	0.424475	0.116499	0.993191		5.383626	1.041352
1302	642863	896044	6.648992	1	4.718	5	10	0.90	9.98	1.00	6.6490	0.986593483333694		23	0.424475	0.115787	0.993274		5.426322	1.150077
1303	642863	896034	6.676671	1	4.699	5	10	0.90	9.98	1.00	6.6767	0.986482138120183		23	0.424475	0.116266	0.993218		5.426274	1.154778
1304	642863	896024	6.728715	1.1	4.273	5	10	0.90	9.98	1.10	6.7287	0.986271549392615		23	0.424475	0.117168	0.993112		5.468801	1.279976
1305	642863	896014	6.808118	1.1	4.224	5	10	0.90	9.98	1.10	6.8081	0.985947164472573		23	0.424475	0.118545	0.992949		5.468647	1.294796
1306	642863	896004	6.837554	2	2.475	5	10	0.90	9.98	2.00	6.8376	0.985825961006911		23	0.424475	0.119055	0.992888		5.851981	2.36416
1307	642873	896004	6.845353	2.1	2.372	5	10	0.90	9.98	2.10	6.8454	0.985793762472292		23	0.424475	0.11919	0.992871		5.894551	2.485146
1308	642873	896013	6.78383	1.1	4.238	5	10	0.90	9.98	1.10	6.7838	0.986046784617054		23	0.424475	0.118124	0.992999		5.468695	1.290264
1309	642874	896024	6.712368	1	4.674	5	10	0.90	9.98	1.00	6.7124	0.986337868137720		23	0.424475	0.116885	0.993145		5.426212	1.160839
1310	642873	896034	6.677537	0.9	5.179	5	10	0.90	9.98	0.90	6.6775	0.986478647106725		23	0.424475	0.116281	0.993216		5.383645	1.039433
1311	642873	896044	6.64865	0.9	5.202	5	10	0.90	9.98	0.90	6.6487	0.986594856267499		23	0.424475	0.115781	0.993275		5.383691	1.035017
1312	642873	896054	6.684054	0.8	5.775	5	10	0.90	9.98	0.80	6.6841	0.986452361559444		23	0.424475	0.116394	0.993203		5.341009	0.924826
1313	642873	896064	6.471999	1	4.845	5	10	0.90	9.98	1.00	6.4720	0.987294735409048		23	0.424475	0.112718	0.993627		5.426625	1.119993
1314	642873	896074	6.108197	1.5	3.554	5	10	0.90	9.98	1.50	6.1082	0.988677694032538		23	0.424475	0.106406	0.994323		5.640834	1.587033
1315	642873	896084	5.953474	1.2	4.453	5	10	0.90	9.98	1.20	5.9535	0.989241986229207		23	0.424475	0.103721	0.994606		5.51296	1.237937
1316	642873	896094	5.965382	1.6	3.437	5	10	0.90	9.98	1.60	5.9654	0.989199063102885		23	0.424475	0.103928	0.994585		5.683917	1.653836
1317	642873	896114	6.57987	1.8	2.815	5	10	0.90	9.98	1.80	6.5799	0.986869558857528		23	0.424475	0.114588	0.993413		5.767595	2.049
1318	642883	896094	6.055545	1.5	3.585	5	10	0.90	9.98	1.50	6.0555	0.988871322649872		23	0.424475	0.105493	0.99442		5.64096	1.573559
1319	642883	896084	5.953021	1.6	3.444	5	10	0.90	9.98	1.60	5.9530	0.989243617426902		23	0.424475	0.103713	0.994607		5.683948	1.650459
1320	642883	896074	6.039183	1.3	4.085	5	10	0.90	9.98	1.30	6.0392	0.988931157891021		23	0.424475	0.105209	0.99445		5.555532	1.360121
1321	642883	896064	6.271672	0.8	6.149	5	10	0.90	9.98	0.80	6.2717	0.988065996089608		23	0.424475	0.109243	0.994015		5.341567	0.868712
1322	642883	896054	6.585615	0.8	5.860	5	10	0.90	9.98	0.80	6.5856	0.986846721116817		23	0.424475	0.114688	0.993402		5.341145	0.911448
1323	642883	896044	6.671343	0.7	6.560	5	10	0.90	9.98	0.70	6.6713	0.986503606537250		23	0.424475	0.116174	0.993229		5.298398	0.807711
1324	642883	896034	6.670191	0.8	5.787	5	10	0.90	9.98	0.80	6.6702	0.986508246144606		23	0.424475	0.116154	0.993231		5.341028	0.922942
1325	642883	896024	6.696965	1	4.685	5	10	0.90	9.98	1.00	6.6970	0.986400212233754		23	0.424475	0.116618	0.993177		5.426239	1.158224
1326	642883	896014	6.749063	2	2.507	5	10	0.90	9.98	2.00	6.7491	0.986188777642421		23	0.424475	0.117521	0.99307		5.852295	2.334136
1327	642883	896004	6.90333	1.6	2.976	5	10	0.90	9.98	1.60	6.9033	0.985553273237760		23	0.424475	0.120195	0.99275		5.681396	1.909171
1328	642893	896004	7.054156	1.3	3.505	5	10	0.90	9.98	1.30	7.0542	0.984918331709332		23	0.424475	0.122807	0.992431		5.553278	1.584412
1329	642893	896014	6.822328	2.1	2.380	5	10	0.90	9.98	2.10	6.8223	0.985888718489645		23	0.424475	0.118791	0.992919		5.894637	2.476946
1330	642894	896024	6.781859	2.3	2.217	5	10	0.90	9.98	2.30	6.7819	0.986054853584909		23	0.424475	0.11809	0.993003		5.980006	2.697056
1331	642893	896034	6.688074	1	4.691	5	10	0.90	9.98	1.00	6.6881	0.986436134812105		23	0.424475	0.116464	0.993195		5.426254	1.156715
1332	642893	896044	6.587265	0.8	5.859	5	10	0.90	9.98	0.80	6.5873	0.986840158355448		23	0.424475	0.114716	0.993398		5.341143	0.911672
1333	642893	896054	6.53224	0.7	6.697	5	10	0.90	9.98	0.70	6.5322	0.987058145267227		23	0.424475	0.113762	0.993508		5.298566	0.791166
1334	642893	896074	6.320286	1.1	4.544	5	10	0.90	9.98	1.10	6.3203	0.987881023389163		23	0.424475	0.110086	0.993922		5.469566	1.203588
1335	642893	896084	6.31123	1.8	2.933	5	10	0.90	9.98	1.80	6.3112	0.987915587300538		23	0.424475	0.109929	0.993939		5.768408	1.966732
1336	642893	896094	6.321269	1.8	2.928	5	10	0.90	9.98	1.80	6.3213	0.987877268653235		23	0.424475	0.110103	0.99392		5.768379	1.96981
1337	642903	896094	6.506391	1.6	3.155	5	10	0.90	9.98	1.60	6.5064	0.987159928330935		23	0.424475	0.113314	0.993559		5.682507	1.801347
1338	642903	896084	6.754962	1.2	3.932	5	10	0.90	9.98	1.20	6.7550	0.986164735781762		23	0.424475	0.117623	0.993058		5.511364	1.401683
1339	642903	896074	6.637195	0.4	11.259	5	10	0.90	9.98	0.40	6.6372	0.986640801459165		23	0.424475	0.115582	0.993298		5.170537	0.459229
1340	642903	896064	6.45464	0.6	7.842	5	10	0.90	9.98	0.60	6.4546	0.987362511176872		23	0.424475	0.112417	0.993661		5.255993	0.670224
1341	642903	896054	6.543848	0.7	6.685	5	10	0.90	9.98	0.70	6.5438	0.987012308563251		23	0.424475	0.113964	0.993485		5.298552	0.792548
1342	642903	896044	6.41777	1	4.886	5	10	0.90	9.98	1.00	6.4178	0.987505871197062		23	0.424475	0.111777	0.993733		5.426716	1.110767
1343	642903	896034	6.583199	1.5	3.301	5	10	0.90	9.98	1.50	6.5832	0.986856327676751		23	0.424475	0.114646	0.993406		5.639654	1.708349
1344	642903	896024	6.865062	2	2.466	5	10	0.90	9.98	2.00	6.8651	0.985712232495975		23	0.424475	0.119531	0.99283		5.851883	2.373489
1345	642903	896014	7.035558	1.8	2.635	5	10	0.90	9.98	1.80	7.0356	0.984997351729106		23	0.424475	0.122485	0.99247		5.766138	2.188134
1346	642903	896004	7.333135	2.2	2.131	5	10	0.90	9.98	2.20	7.3331	0.983708486172558		23	0.424475	0.127638	0.991821		5.935166	2.785073
1347	642913	896004	7.520551	2	2.254	5	10	0.90	9.98	2.00	7.5206	0.982869954991236		23	0.424475	0.130882	0.991398		5.849426	2.595119
1348	642913	896014	7.149793	1	4.393	5	10	0.90	9.98	1.00	7.1498	0.984508758056613		23	0.424475	0.124464	0.992224		5.425421	1.23496
1349	642913	896024	6.770923	1	4.635	5	10	0.90	9.98	1.00	6.7709	0.986099582071388		23	0.424475	0.1179	0.993025		5.426109	1.170777
1350	642913	896034	6.370281	1.9	2.774	5	10	0.90	9.98	1.90	6.3703	0.987689330739359		23	0.424475	0.110953	0.993826		5.810912	2.095099
1351	642913	896044	6.292666	1.4	3.670	5	10	0.90	9.98	1.40	6.2927	0.987986287847807		23	0.424475	0.109607	0.993975		5.597694	1.525254
1352	642913	896064	6.507156	0.6	7.780	5	10	0.90	9.98	0.60	6.5072	0.987156921760577		23	0.424475	0.113327	0.993558		5.255939	0.675583
1353	642913	896074	6.686385	0.8	5.773	5	10	0.90	9.98	0.80	6.6864	0.986442953634671		23	0.424475	0.116435	0.993198		5.341006	0.925142
1354	642913	896084	6.838851	1	4.589	5	10	0.90	9.98	1.00	6.8389	0.985820608778004		23	0.424475	0.119077	0.992885		5.425988	1.1823
1355	642913	896094	6.525043	2	2.592	5	10	0.90	9.98	2.00	6.5250	0.987086524022427		23	0.424475	0.113637	0.993522		5.853071	2.258027
1356	642913	896114	6.052973	1.9	2.917	5	10	0.90	9.98	1.90	6.0530	0.988880738924842		23	0.424475	0.105448	0.994425		5.81189	1.99234
1357	642923	896094	6.615747	1.5	3.285	5	10	0.90	9.98	1.50	6.6157	0.986726618632620		23	0.424475	0.11521	0.993341		5.63957	1.716645
1358	642923	896084	6.685676	1.1	4.300	5	10	0.90	9.98	1.10	6.6857	0.986445815502153		23	0.424475	0.116422	0.9932		5.468884	1.271938
1359	642923	896074	6.593498	0.7	6.636	5	10	0.90	9.98	0.70	6.5935	0.986815352454017		23	0.424475	0.114824	0.993386		5.298493	0.798455
1360	642923	896064	6.691378	0.7	6.540	5	10	0.90	9.98	0.70	6.6914	0.986422791030523		23	0.424475	0.116521	0.993188		5.298374	0.810093
1361	642923	896054	6.553002	1	4.786	5	10	0.90	9.98	1.00	6.5530	0.986976105619446		23	0.424475	0.114122	0.993467		5.426488	1.133767
1362	642923	896044	6.288961	1.4	3.672	5	10	0.90	9.98	1.40	6.2890	0.988000373723015		23	0.424475	0.109543	0.993982		5.597702	1.52437
1363	642923	896034	6.21857	1	5.040	5	10	0.90	9.98	1.00	6.2186	0.988266439216113		23	0.424475	0.108322	0.994116		5.427045	1.076842
1364	642923	896024	6.543767	1.2	4.057	5	10	0.90	9.98	1.20	6.5438	0.987012628686345		23	0.424475	0.113962	0.993485		5.511804	1.358636
1365	642923	896014	7.07605	1.3	3.494	5	10	0.90	9.98	1.30	7.0761	0.984825045591549		23	0.424475	0.123187	0.992384		5.553225	1.589229
1366	642923	896004	7.557626	1	4.161	5	10	0.90	9.98	1.00	7.5576	0.982701625496615		23	0.424475	0.131523	0.991313		5.42464	1.303808
1367	642933	896004	7.571852	1.2	3.515	5	10	0.90	9.98	1.20	7.5719	0.982636821368955		23	0.424475	0.131769	0.99128		5.509535	1.567445
1368	642933	896014	6.929898	0.9	4.994	5	10	0.90	9.98	0.90	6.9299	0.985442404362310		23	0.424475	0.120655	0.992695		5.383242	1.077961
1369	642933	896024	6.33668	1	4.947	5	10	0.90	9.98	1.00	6.3367	0.987818328621711		23	0.424475	0.110371	0.993891		5.426851	1.096963
1370	642933	896034	6.159399	0.8	6.259	5	10	0.90	9.98	0.80	6.1594	0.988487814676297		23	0.424475	0.107295	0.994227		5.341713	0.853404
1371	642933	896044	6.314306	1.3	3.909	5	10	0.90	9.98	1.30	6.3143	0.987903852641078		23	0.424475	0.109982	0.993934		5.554955	1.421099
1372	642933	896054	6.601718	1.1	4.353	5	10	0.90	9.98	1.10	6.6017	0.986782603516005		23	0.424475	0.114967	0.993369		5.469044	1.256251
1373	642933	896064	6.735809	0.9	5.135	5	10	0.90	9.98	0.90	6.7358	0.986242720217879		23	0.424475	0.117291	0.993098		5.383554	1.048336
1374	642933	896074	6.491036	1	4.831	5	10	0.90	9.98	1.00	6.4910	0.987220202430445		23	0.424475	0.113048	0.99359		5.426593	1.123231
1375	642933	896084	6.417698	0.9	5.386	5	10	0.90	9.98	0.90	6.4177	0.987506150361631		23	0.424475	0.111776	0.993733		5.384045	0.999679
1376	642933	896094	6.55008	1.8	2.827	5	10	0.90	9.98	1.80	6.5501	0.986987667172701		23	0.424475	0.114072	0.993473		5.767687	2.039886
1377	642943	896094	6.185325	1.3	3.989	5	10	0.90	9.98	1.30	6.1853	0.988391074623614		23	0.424475	0.107745	0.994179		5.555229	1.392527
1378	642943	896084	6.198961	0.9	5.573	5	10	0.90	9.98	0.90	6.1990	0.988340032850093		23	0.424475	0.107981	0.994153		5.384369	0.96615
1379	642943	896074	6.709105	0.7	6.523	5	10	0.90	9.98	0.70	6.7091	0.986351086963946		23	0.424475	0.116829	0.993152		5.298352	0.8122
1380	642943	896064	6.990626	0.9	4.951	5	10	0.90	9.98	0.90	6.9906	0.985187417320360		23	0.424475	0.121707	0.992566		5.383143	1.08722
1381	642943	896054	6.833818	1.5	3.182	5	10	0.90	9.98	1.50	6.8338	0.985841372501728		23	0.424475	0.11899	0.992895		5.638996	1.77217
1382	642943	896044	6.463421	1.1	4.445	5	10	0.90	9.98	1.10	6.4634	0.987328249363857		23	0.424475	0.112569	0.993644		5.469304	1.230387
1383	642943	896034	6.23487	1.2	4.255	5	10	0.90	9.98	1.20	6.2349	0.988205090322495		23	0.424475	0.108604	0.994085		5.512422	1.295544
1384	642943	896024	6.269908	0.9	5.511	5	10	0.90	9.98	0.90	6.2699	0.988072681559038		23	0.424475	0.109212	0.994018		5.384265	0.977031
1385	642943	896004	7.435656	1.1	3.873	5	10	0.90	9.98	1.10	7.4357	0.983252352292165		23	0.424475	0.129413	0.991591		5.467366	1.411569
1386	642953	896004	7.135965	0.6	7.106	5	10	0.90	9.98	0.60	7.1360	0.984568311683688		23	0.424475	0.124224	0.992254		5.255268	0.739573
1387	642953	896014	6.562704	0.8	5.880	5	10	0.90	9.98	0.80	6.5627	0.986937681127719		23	0.424475	0.114291	0.993447		5.341177	0.908333
1388	642953	896024	6.281847	1	4.990	5	10	0.90	9.98	1.00	6.2818	0.988027397241328		23	0.424475	0.109419	0.993996		5.426942	1.087624
1389	642953	896034	6.378181	1.2	4.161	5	10	0.90	9.98	1.20	6.3782	0.987658904363921		23	0.424475	0.11109	0.99381		5.512139	1.324834
1390	642953	896044	6.7254	1.4	3.437	5	10	0.90	9.98	1.40	6.7254	0.986285010937126		23	0.424475	0.117111	0.993119		5.596664	1.628272
1391	642953	896054	7.105443	1	4.420	5	10	0.90	9.98	1.00	7.1054	0.984699362421216		23	0.424475	0.123696	0.99232		5.425504	1.227458
1392	642953	896064	7.0984	1.3	3.483	5	10	0.90	9.98	1.30	7.0984	0.984729524466073		23	0.424475	0.123574	0.992335		5.553172	1.594146
1393	642953	896074	6.606499	0.5	9.123	5	10	0.90	9.98	0.50	6.6065	0.986763537311622		23	0.424475	0.11505	0.99336		5.213198	0.571429
1394	642953	896084	5.88201	0.9	5.869	5	10	0.90	9.98	0.90	5.8820	0.989497806511723		23	0.424475	0.10248	0.994735		5.384819	0.917466
1395	642953	896094	5.861684	1.4	3.936	5	10	0.90	9.98	1.40	5.8617	0.989570011339813		23	0.424475	0.102127	0.994771		5.598652	1.422307
1396	642964	896093	5.850263	0.6	8.640	5	10	0.90	9.98	0.60	5.8503	0.989610474452776		23	0.424475	0.101929	0.994792		5.256576	0.608389
1398	642993	896116	6.467904	1	4.848	5	10	0.90	9.98	1.00	6.4679	0.987310739885255		23	0.424475	0.112647	0.993635		5.426632	1.119296
1399	643003	896094	6.258725	0.6	8.084	5	10	0.90	9.98	0.60	6.2587	0.988115021501478		23	0.424475	0.109018	0.99404		5.256188	0.650211
1400	643003	896066	6.209417	1.2	4.272	5	10	0.90	9.98	1.20	6.2094	0.988300819389482		23	0.424475	0.108163	0.994133		5.512472	1.290338
1401	643490	896850	8.63373	0.01	337.175	5	10	0.90	9.98	0.01	8.6337	0.977464766835342		23	0.424475	0.150117	0.988668		5.004224	0.014842
1402	643473	896854	6.523953	2.1	2.487	5	10	0.90	9.98	2.10	6.5240	0.987090819361037		23	0.424475	0.113619	0.993524		5.895728	2.370539
1403	643448	896867	4.96467	2.1	3.259	5	10	0.90	9.98	2.10	4.9647	0.992510577806443		23	0.424475	0.086541	0.996248		5.900646	1.810552
1404	643423	896877	6.241178	0.5	9.648	5	10	0.90	9.98	0.50	6.2412	0.988181306258860		23	0.424475	0.108714	0.994073		5.213504	0.540347
1405	643396	896886	5.519011	1.6	3.712	5	10	0.90	9.98	1.60	5.5190	0.990750172365248		23	0.424475	0.096176	0.995364		5.684989	1.531683
1406	643374	896895	3.744748	1.2	7.054	5	10	0.90	9.98	1.20	3.7447	0.995734386999555		23	0.424475	0.065312	0.997865		5.516327	0.782067
1407	643354	896860	2.902097	0.7	14.979	5	10	0.90	9.98	0.70	2.9021	0.997436654466280		23	0.424475	0.050629	0.998718		5.301705	0.353952
1408	643340	896839	3.1931	1.7	6.063	5	10	0.90	9.98	1.70	3.1931	0.996897369116893		23	0.424475	0.055701	0.998447		5.732317	0.945451
1409	643369	896830	3.545313	1.7	5.463	5	10	0.90	9.98	1.70	3.5453	0.996176073345729		23	0.424475	0.061838	0.998086		5.731787	1.049233
1410	643382	896855	4.164063	1.9	4.227	5	10	0.90	9.98	1.90	4.1641	0.994727403321367		23	0.424475	0.072613	0.99736		5.81669	1.375998
1411	643408	896844	4.501915	0.4	16.523	5	10	0.90	9.98	0.40	4.5019	0.993838940676469		23	0.424475	0.078492	0.996915		5.171781	0.313001
1412	643397	896815	4.688118	1	6.665	5	10	0.90	9.98	1.00	4.6881	0.993319908915122		23	0.424475	0.081732	0.996654		5.429229	0.814584
1413	643422	896806	4.658235	1.5	4.648	5	10	0.90	9.98	1.50	4.6582	0.993404610845550		23	0.424475	0.081212	0.996697		5.643898	1.214156
1414	643435	896829	4.293675	1.1	6.664	5	10	0.90	9.98	1.10	4.2937	0.994394685990855		23	0.424475	0.074869	0.997193		5.472663	0.821244
1415	643456	896823	4.934791	1.2	5.362	5	10	0.90	9.98	1.20	4.9348	0.992600231747831		23	0.424475	0.086022	0.996293		5.514701	1.028437
1416	643461	896796	4.581722	1.5	4.725	5	10	0.90	9.98	1.50	4.5817	0.993619035976401		23	0.424475	0.079881	0.996804		5.644037	1.194385
1417	643479	896799	3.850392	1.4	5.973	5	10	0.90	9.98	1.40	3.8504	0.995490683118997		23	0.424475	0.067151	0.997743		5.602234	0.937998
1418	643504	896761	3.582339	1.3	6.858	5	10	0.90	9.98	1.30	3.5823	0.996095889432184		23	0.424475	0.062483	0.998046		5.559557	0.81069
1419	643513	896718	4.759182	2	3.543	5	10	0.90	9.98	2.00	4.7592	0.993116325548357		23	0.424475	0.082968	0.996552		5.858282	1.653637

1420	643485	896737	2.917047	1.3	8.416	5	10	0.90	9.98	1.30	2.9170	0.997410199443527		23	0.424475	0.05089	0.998704		5.560295	0.660714
1421	643450	896753	3.314263	2	5.078	5	10	0.90	9.98	2.00	3.3143	0.996657709212515		23	0.424475	0.057813	0.998327		5.861342	1.154317
1422	643430	896761	3.470057	2	4.851	5	10	0.90	9.98	2.00	3.4701	0.996336494128746		23	0.424475	0.060527	0.998167		5.861065	1.208319
1423	643422	896721	4.108359	0.9	8.376	5	10	0.90	9.98	0.90	4.1084	0.994867285956611		23	0.424475	0.071643	0.99743		5.386908	0.64313
1424	643437	896711	3.163741	1.1	9.030	5	10	0.90	9.98	1.10	3.1637	0.996954103452431		23	0.424475	0.05519	0.998476		5.473879	0.606161
1425	643448	896690	3.01772	1.5	7.160	5	10	0.90	9.98	1.50	3.0177	0.997228524798004		23	0.424475	0.052645	0.998613		5.646377	0.788577
1426	643438	896689	2.963437	1.4	7.752	5	10	0.90	9.98	1.40	2.9634	0.997327246956652		23	0.424475	0.051699	0.998663		5.603345	0.722814
1427	643428	896689	3.541407	1.3	6.937	5	10	0.90	9.98	1.30	3.5414	0.996184483894804		23	0.424475	0.06177	0.99809		5.559607	0.801475
1428	643418	896691	4.246073	2.1	3.807	5	10	0.90	9.98	2.10	4.2461	0.994518057755934		23	0.424475	0.07404	0.997255		5.902468	1.550575
1429	643412	896700	4.325661	1.8	4.265	5	10	0.90	9.98	1.80	4.3257	0.994311019965540		23	0.424475	0.075425	0.997151		5.773383	1.353789
1430	643406	896689	4.343522	1.7	4.464	5	10	0.90	9.98	1.70	4.3435	0.994264032683908		23	0.424475	0.075736	0.997128		5.730382	1.283817
1431	643397	896687	4.345003	2.4	3.326	5	10	0.90	9.98	2.40	4.3450	0.994260127962209		23	0.424475	0.075762	0.997126		6.031124	1.813061
1432	643389	896689	4.332428	1.6	4.719	5	10	0.90	9.98	1.60	4.3324	0.994293240493829		23	0.424475	0.075543	0.997143		5.687439	1.205236
1433	643379	896689	4.432789	0.8	8.668	5	10	0.90	9.98	0.80	4.4328	0.994026316974064		23	0.424475	0.07729	0.997009		5.343627	0.616467
1434	643370	896689	4.754416	1.1	6.023	5	10	0.90	9.98	1.10	4.7544	0.993130074073550		23	0.424475	0.082885	0.996559		5.472061	0.908598
1435	643359	896689	4.949646	1.9	3.560	5	10	0.90	9.98	1.90	4.9496	0.992555725297805		23	0.424475	0.08628	0.996271		5.814907	1.633211
1436	643346	896690	4.898627	1.5	4.422	5	10	0.90	9.98	1.50	4.8986	0.992708027469193		23	0.424475	0.085393	0.996347		5.643447	1.276217
1437	643349	896681	4.643493	1.5	4.663	5	10	0.90	9.98	1.50	4.6435	0.993446198590542		23	0.424475	0.080956	0.996718		5.643925	1.210347
1438	643358	896678	4.678837	0.7	9.314	5	10	0.90	9.98	0.70	4.6788	0.993346272935726		23	0.424475	0.08157	0.996668		5.300468	0.56909
1439	643368	896677	4.660622	0.9	7.390	5	10	0.90	9.98	0.90	4.6606	0.993397864736522		23	0.424475	0.081254	0.996693		5.386336	0.728864
1440	643378	896679	4.539146	2	3.713	5	10	0.90	9.98	2.00	4.5391	0.993736829093445		23	0.424475	0.07914	0.996863		5.858818	1.577839
1441	643390	896679	4.468378	1.8	4.129	5	10	0.90	9.98	1.80	4.4684	0.993930206863015		23	0.424475	0.077909	0.99696		5.773087	1.398097
1442	643398	896677	4.426167	1	7.056	5	10	0.90	9.98	1.00	4.4262	0.994044115934956		23	0.424475	0.077174	0.997018		5.429542	0.769442
1443	643407	896681	4.379652	1.3	5.615	5	10	0.90	9.98	1.30	4.3797	0.994168397407387		23	0.424475	0.076365	0.99708		5.558474	0.989845
1444	643419	896679	4.290388	1.5	5.044	5	10	0.90	9.98	1.50	4.2904	0.994403248901586		23	0.424475	0.074811	0.997198		5.644545	1.119027
1445	643428	896679	3.569308	1.4	6.441	5	10	0.90	9.98	1.40	3.5693	0.996124204019967		23	0.424475	0.062256	0.99806		5.602617	0.869892
1446	643441	896678	2.926318	1.3	8.389	5	10	0.90	9.98	1.30	2.9263	0.997393725741405		23	0.424475	0.051052	0.998696		5.560286	0.662806
1447	643440	896667	2.9365	1.4	7.823	5	10	0.90	9.98	1.40	2.9365	0.997375573256129		23	0.424475	0.051229	0.998687		5.603374	0.716266
1448	643429	896666	3.626673	1.5	5.962	5	10	0.90	9.98	1.50	3.6267	0.995998789065146		23	0.424475	0.063255	0.997997		5.64558	0.946927
1449	643418	896667	4.434298	1.7	4.373	5	10	0.90	9.98	1.70	4.4343	0.994022257311330		23	0.424475	0.077316	0.997007		5.730205	1.310435
1450	643408	896668	4.542953	1.8	4.062	5	10	0.90	9.98	1.80	4.5430	0.993726340829190		23	0.424475	0.079206	0.996858		5.772928	1.421237
1451	643397	896668	4.650259	1.1	6.156	5	10	0.90	9.98	1.10	4.6503	0.993427127668879		23	0.424475	0.081073	0.996708		5.472203	0.88887
1452	643387	896667	4.727604	0.9	7.286	5	10	0.90	9.98	0.90	4.7276	0.993207164525571		23	0.424475	0.082419	0.996598		5.386262	0.739244
1453	643378	896668	4.726219	1	6.612	5	10	0.90	9.98	1.00	4.7262	0.993211134974049		23	0.424475	0.082395	0.9966		5.429182	0.821144
1454	643366	896669	4.624229	1.4	4.979	5	10	0.90	9.98	1.40	4.6242	0.993500346131884		23	0.424475	0.08062	0.996745		5.601029	1.125012
1455	643357	896669	4.49842	0.1	64.496	5	10	0.90	9.98	0.10	4.4984	0.993848483414918		23	0.424475	0.078432	0.996919		5.042946	0.07819
1456	643348	896669	4.504697	1.6	4.540	5	10	0.90	9.98	1.60	4.5047	0.993831339457395		23	0.424475	0.078541	0.996911		5.68712	1.252771
1457	643348	896657	4.604948	1.5	4.702	5	10	0.90	9.98	1.50	4.6049	0.993554318012517		23	0.424475	0.080285	0.996772		5.643995	1.200388
1458	643359	896657	4.486087	1	6.963	5	10	0.90	9.98	1.00	4.4861	0.993882098671671		23	0.424475	0.078217	0.996936		5.429472	0.779774
1459	643368	896659	4.603712	1.3	5.344	5	10	0.90	9.98	1.30	4.6037	0.993557770231164		23	0.424475	0.080264	0.996774		5.558131	1.040059
1460	643381	896659	4.785259	0.9	7.199	5	10	0.90	9.98	0.90	4.7853	0.993040859361732		23	0.424475	0.083421	0.996514		5.386197	0.748176
1461	643389	896659	4.848858	1.1	5.906	5	10	0.90	9.98	1.10	4.8489	0.992855092425871		23	0.424475	0.084528	0.996421		5.471931	0.926475
1462	643398	896659	4.826995	1.9	3.650	5	10	0.90	9.98	1.90	4.8270	0.992919226304579		23	0.424475	0.084147	0.996453		5.815206	1.593129
1463	643408	896659	4.771329	1.7	4.066	5	10	0.90	9.98	1.70	4.7713	0.993081223263976		23	0.424475	0.083179	0.996535		5.729514	1.409146
1464	643418	896659	4.704744	1.5	4.603	5	10	0.90	9.98	1.50	4.7047	0.993272550908452		23	0.424475	0.082021	0.996631		5.643812	1.22617
1465	643429	896659	3.770866	0.9	9.121	5	10	0.90	9.98	0.90	3.7709	0.995674764117277		23	0.424475	0.065767	0.997835		5.387222	0.590617
1466	643442	896658	3.001896	1.3	8.178	5	10	0.90	9.98	1.30	3.0019	0.997257487597450		23	0.424475	0.052369	0.998628		5.560209	0.679863
1467	643439	896650	2.98972	1.5	7.227	5	10	0.90	9.98	1.50	2.9897	0.997279670149499		23	0.424475	0.052157	0.998639		5.64641	0.781287
1468	643429	896649	3.873878	1.8	4.759	5	10	0.90	9.98	1.80	3.8739	0.995435589044511		23	0.424475	0.06756	0.997715		5.774257	1.213309
1469	643418	896648	4.851336	1.3	5.073	5	10	0.90	9.98	1.30	4.8513	0.992847805240735		23	0.424475	0.084571	0.996417		5.557732	1.09548
1470	643408	896649	4.84934	1.3	5.075	5	10	0.90	9.98	1.30	4.8493	0.992853675271955		23	0.424475	0.084536	0.99642		5.557736	1.095033
1471	643397	896649	4.849765	1.1	5.905	5	10	0.90	9.98	1.10	4.8498	0.992852425591035		23	0.424475	0.084543	0.99642		5.471929	0.926647
1472	643388	896648	4.849681	1.4	4.749	5	10	0.90	9.98	1.40	4.8497	0.992852672595394		23	0.424475	0.084542	0.99642		5.600638	1.179349
1473	643378	896649	4.790079	0.7	9.099	5	10	0.90	9.98	0.70	4.7901	0.993026865666962		23	0.424475	0.083505	0.996507		5.300372	0.582495
1474	643368	896649	4.735914	0.9	7.273	5	10	0.90	9.98	0.90	4.7359	0.993183317626809		23	0.424475	0.082563	0.996586		5.386253	0.740532
1475	643358	896648	4.829439	1.1	5.930	5	10	0.90	9.98	1.10	4.8294	0.992912071220009		23	0.424475	0.08419	0.99645		5.471958	0.9228
1476	643349	896645	5.142439	1	6.081	5	10	0.90	9.98	1.00	5.1424	0.991966097349701		23	0.424475	0.089632	0.995975		5.428644	0.892713
1477	643347	896636	5.738767	0.9	6.014	5	10	0.90	9.98	0.90	5.7388	0.990001401293054		23	0.424475	0.099993	0.994988		5.385015	0.895427
1478	643349	896627	5.658796	1.1	5.068	5	10	0.90	9.98	1.10	5.6588	0.990277224674856		23	0.424475	0.098604	0.995127		5.470705	1.07936
1479	643348	896599	6.830059	1.1	4.210	5	10	0.90	9.98	1.10	6.8301	0.985856870535413		23	0.424475	0.118925	0.992903		5.468604	1.29889
1480	643348	896588	7.524439	0.9	4.607	5	10	0.90	9.98	0.90	7.5244	0.982852340481627		23	0.424475	0.130949	0.991389		5.382235	1.168393
1481	643358	896589	7.419147	1.1	3.882	5	10	0.90	9.98	1.10	7.4191	0.983326221937015		23	0.424475	0.129127	0.991628		5.467401	1.408505
1482	643359	896611	5.729533	2.1	2.828	5	10	0.90	9.98	2.10	5.7295	0.990033444785710		23	0.424475	0.099833	0.995004		5.898398	2.086012
1483	643358	896619	5.532389	2.2	2.815	5	10	0.90	9.98	2.20	5.5324	0.990705414747775		23	0.424475	0.096408	0.995342		5.941818	2.111106
1484	643360	896630	5.575027	0.8	6.907	5	10	0.90	9.98	0.80	5.5750	0.990562050500001		23	0.424475	0.097149	0.99527		5.34243	0.773517
1485	643358	896640	5.412196	0.9	6.373	5	10	0.90	9.98	0.90	5.4122	0.991103694805325		23	0.424475	0.09432	0.995542		5.385444	0.845098
1486	643370	896638	5.052489	0.7	8.631	5	10	0.90	9.98	0.70	5.0525	0.992243969980404		23	0.424475	0.088068	0.996114		5.300135	0.614083
1487	643369	896629	5.241977	1.8	3.524	5	10	0.90	9.98	1.80	5.2420	0.991652952535703		23	0.424475	0.091362	0.995818		5.771315	1.637641
1488	643366	896618	5.249482	1.9	3.359	5	10	0.90	9.98	1.90	5.2495	0.991629101257556		23	0.424475	0.091493	0.995806		5.814147	1.731069
1489	643371	896608	5.268391	1.2	5.026	5	10	0.90	9.98	1.20	5.2684	0.991568857883548		23	0.424475	0.091821	0.995776		5.514167	1.0972
1490	643371	896602	5.566141	1.2	4.760	5	10	0.90	9.98	1.20	5.5661	0.990592018065884		23	0.424475	0.096995	0.995285		5.51366	1.158449
1491	643368	896588	6.540483	1.1	4.394	5	10	0.90	9.98	1.10	6.5405	0.987025604225340		23	0.424475	0.113905	0.993492		5.46916	1.244803
1492	643380	896587	5.727287	1.5	3.788	5	10	0.90	9.98	1.50	5.7273	0.990041231076042		23	0.424475	0.099794	0.995008		5.641718	1.489432
1493	643378	896599	4.953116	1.6	4.132	5	10	0.90	9.98	1.60	4.9531	0.992545309892588		23	0.424475	0.086341	0.996266		5.686231	1.37629
1494	643378	896610	4.84847	1.4	4.750	5	10	0.90	9.98	1.40	4.8485	0.992856233104015		23	0.424475	0.084521	0.996422		5.60064	1.179057
1495	643379	896619	4.870557	1.6	4.201	5	10	0.90	9.98	1.60	4.8706	0.992791155806280		23	0.424475	0.084905	0.996389		5.6864	1.353573
1496	643378	896628	4.869835	1.2	5.433	5	10	0.90	9.98	1.20	4.8698	0.992793287743690		23	0.424475	0.084892	0.99639		5.514801	1.015031
1497	643377	896638	4.829385	1.8	3.823	5	10	0.90	9.98	1.80	4.8294	0.992912229349833		23	0.424475	0.084189	0.99645		5.772295	1.51002
1498	643389	896639	4.833611	2.1	3.347	5	10	0.90	9.98	2.10	4.8336	0.992899848932492		23	0.424475	0.084262	0.996444		5.900999	1.763217
1499	643389	896627	4.794713	0.7	9.091	5	10	0.90	9.98	0.70	4.7947	0.993013398818713		23	0.424475	0.083586	0.996501		5.300367	0.583054
1500	643388	896619	4.772932	0.7	9.132	5	10	0.90	9.98	0.70	4.7729	0.993076584308536		23	0.424475	0.083207	0.996532		5.300387	0.58043
1501	643388	896609	4.723047	1.6	4.331	5	10	0.90	9.98	1.60	4.7230	0.993220223961009		23	0.424475	0.082339	0.996604		5.686697	1.312957
1502	643388	896599	4.823512	2	3.496	5	10	0.90	9.98	2.00	4.8235	0.992929416978974		23	0.424475	0.084087	0.996458		5.85812	1.675779
1503	643390	896589	5.580354	1.9	3.161	5	10	0.90	9.98	1.90	5.5804	0.990544062845495		23	0.424475	0.097242	0.995261		5.813256	1.838835
1504	643398	896589	5.505122	2	3.066	5	10	0.90	9.98	2.00	5.5051	0.990796526363174		23	0.424475	0.095935	0.995388		5.856277	1.909845
1505	643400	896598	4.892734	1.3	5.031	5	10	0.90	9.98	1.30	4.8927	0.992725518617738		23	0.424475	0.085291	0.996356		5.557664	1.104737
1506	643398	896610	4.750588	1.9	3.708	5	10	0.90	9.98	1.90	4.7506	0.993141106857743		23	0.424475	0.082818	0.996565		5.815388	1.568145
1507	643397	896619	4.756902	1.4	4.841	5	10	0.90	9.98	1.40	4.7569	0.993122904388730		23	0.424475	0.082928	0.996556		5.600801	1.156997
1508	643397	896630	4.806179	1.6	4.257	5	10	0.90	9.98	1.60	4.8062	0.992980022076833		23	0.424475	0.083785	0.996484		5.686531	1.335851
1509	643398	896639	4.842745	1.6	4.225	5	10	0.90	9.98	1.60	4.8427	0.992873053477953		23	0.424475	0.084421	0.99643		5.686457	1.345918
1510	643408	896639	4.84888	1	6.446	5	10	0.90	9.98	1.00	4.8489	0.992855027745536		23	0.424475	0.084528	0.996421		5.429028	0.842254
1511	643408	896628	4.820443	1.4	4.777	5	10	0.90	9.98	1.40	4.8204	0.992938390320087		23	0.424475	0.084033	0.996463		5.60069	1.172306
1512	643408	896619	4.738468	1.2	5.583	5	10	0.90	9.98	1.20	4.7385	0.993175980170765		23	0.424475	0.082608	0.996582		5.515	0.987903
1513	643408	896610	4.808614	1.4	4.789	5	10	0.90	9.98	1.40	4.8086	0.992972923791964		23	0.424475	0.083828	0.99648		5.60071	1.169456
1514	643411	896598	4.989993	2.4	2.899	5	10	0.90	9.98	2.40	4.9900	0.992434175004045		23	0.424475	0.086982	0.99621		6.029231	2.07965
1515	643408	896589	5.441137	2.4	2.661	5	10	0.90	9.98	2.40	5.4411	0.991008583747324		23	0.424475	0.094823	0.995494		6.027752	2.2655
1516	643420	896591	5.369735	2.3	2.793	5	10	0.90	9.98	2.30	5.3697	0.991242330556116		23	0.424475	0.093582	0.995612		5.985161	2.14295
1517	643418	896599	4.989796	2.7	2.632	5	10	0.90	9.98	2.70	4.9898	0.992434770863870		23	0.424475	0.086978	0.99621		6.157885	2.339515
1518	643417	896618	4.775	1.7	4.063	5	10	0.90	9.98	1.70	4.7750	0.993070597399288		23	0.424475	0.083243	0.996529		5.729506	1.41022
1519	643419	896629	4.805768	1.9	3.666	5	10	0.90	9.98	1.90	4.8058	0.992981219834387		23	0.424475	0.083778	0.996484		5.815257	1.586189
1520	643417	896640	4.850835	1.4	4.748	5	10	0.90	9.98	1.40	4.8508	0.992849278855229		23	0.424475	0.084562	0.996418		5.600636	1.179627
1521	643429	896638	3.859497	1.6	5.294	5	10	0.90	9.98	1.60	3.8595	0.995469363895861		23	0.424475	0.06731	0.997732		5.688252	1.074518
1522	643428	896627	3.891913	1.5	5.558	5	10	0.90	9.98	1.50	3.8919	0.995393056042093		23	0.424475	0.067874	0.997694		5.645187	1.015769
1523	643428	896619	4.228963	0.7	10.297	5	10	0.90	9.98	0.70	4.2290	0.994562068776620		23	0.424475	0.073742	0.997277		5.300836	0.514791
1524	643429	896609	4.659337	1.3	5.281	5	10	0.90	9.98	1.30	4.6593	0.993401496812839		23	0.424475	0.081231	0.996695		5.558043	1.052515
1525	643430	896589	4.914413	2.8	2.595	5	10	0.90	9.98	2.80	4.9144	0.992661069955084		23	0.424475	0.085668	0.996324		6.201043	2.389873
1526	643438	896600	4.442215	1.7	4.365	5	10	0.90	9.98	1.70	4.4422	0.994000935745819		23	0.424475	0.077454	0.996996		5.730189	1.312756
1527	643439	896608	4.19556	2	4.015	5	10	0.90	9.98	2.00	4.1956	0.994647480897208		23	0.424475	0.073161	0.99732		5.859605	1.459297
1528	643438	896619	3.545909	2.3	4.219	5	10	0.90	9.98	2.30	3.5459	0.996174789204561		23	0.424475	0.061848	0.998086		5.990064	1.419787
1529	643439	896629	3.033556	1.2	8.700	5	10	0.90	9.98	1.20	3.0336	0.997199388156058		23	0.424475	0.052921	0.998599		5.517086	0.63416
1530	643439	896639	2.923012	0.7	14.872	5	10	0.90	9.98	0.70	2.9230	0.997399606170914		23	0.424475	0.050994	0.998699		5.301694	0.356494
1531	643478	896697	3.244701	1.6	6.292	5	10	0.90	9.98	1.60	3.2447	0.996796388938635		23	0.424475	0.0566	0.998397		5.68917	0.904155
1532	643464	896705	3.193477	2	5.269	5	10	0.90	9.98	2.00	3.1935	0.996896637195359		23	0.424475	0.055708	0.998447		5.861549	1.112427
1533	643456	896714	3.114386	0.5	19.228	5	10	0.90	9.98	0.50	3.1144	0.997048302503954		23	0.424475	0.05433	0.998523		5.21542	0.271246
1534	643470	896725	2.890399	1.7	6.696	5	10	0.90	9.98	1.70	2.8904	0.997457260387310		23	0.424475	0.050426	0.998728		5.732728	0.856144
1535	643493	896713	3.004092	1.5	7.193	5	10	0.90	9.98	1.50	3.0041	0.997253477306406		23	0.424475	0.052407	0.998626		5.646393	0.785029
1536	643487	896700	3.279755	1.2	8.049	5	10	0.90	9.98	1.20	3.2798	0.996726870885681		23	0.424475	0.057211	0.998362		5.516841	0.685411
1537	643518	896656	4.46737	0.9	7.707	5	10	0.90	9.98	0.90	4.4674	0.993932939514177		23	0.424475	0.077891	0.996962		5.386544	0.698892
1538	643523	896666	5.574271	0.9	6.189	5	10	0.90	9.98	0.90	5.5743	0.990564601907054		23	0.424475	0.097136	0.995271		5.385234	0.87009
1539	643534	896680	2.152706	1.1	13.259	5	10	0.90	9.98	1.10	2.1527	0.998589023397286		23	0.424475	0.037563	0.999294		5.474656	0.412901
1540	643569	896637	12.16506	1	2.628	5	10	0.90	9.98	1.00	12.1651	0.955593410211396		23	0.424475	0.210729	0.977545		5.412927	2.059967
1541	643584	896604	4.913964	0.9	7.012	5	10	0.90	9.98	0.90	4.9140	0.992662407631063		23	0.424475	0.08566	0.996324		5.38605	0.768104
1542	643601	896619	4.865757	1	6.424	5	10	0.90	9.98	1.00	4.8658	0.992805323474586		23	0.424475	0.084821	0.996396		5.429006	0.845158
1543	643602	896593	4.942033	0.8	7.782	5	10	0.90	9.98	0.80	4.9420	0.992578550836968		23	0.424475	0.086148	0.996282		5.343127	0.686621
1544	643635	896623	6.304447	0.9	5.481	5	10	0.90	9.98	0.90	6.3044	0.987941443948193		23	0.424475	0.109811	0.993952		5.384214	0.982326
1545	643637	896601	7.134225	0.7	6.141	5	10	0.90	9.98	0.70	7.1342	0.984575797417988		23	0.424475	0.124194	0.992258		5.297815	0.862629
1546	643643	896577	8.031447	2	2.113	5	10	0.90	9.98	2.00	8.0314	0.980479273848931		23	0.424475	0.139717	0.990192		5.84736	2.766924
1547	643609	896566	7.46415	0.2	19.739	5	10	0.90	9.98	0.20	7.4642	0.983124478156698		23	0.424475	0.129906	0.991526		5.084965	0.25761
1548	643591	896567	9.868281	0.3	10.119	5	10	0.90	9.98	0.30	9.8683	0.970627621729741		23	0.424475	0.171384	0.985204		5.125827	0.506544
1549	643576	896558	2.168921	0.1	133.351	5	10	0.90	9.98	0.10	2.1689	0.998567697511044		23	0.424475	0.037846	0.999284		5.04315	0.037819
1550	643584	896523	7.954556	0.6	6.389	5	10	0.90	9.98	0.60	7.9546	0.980848864223439		23	0.424475	0.138388	0.990378		5.254304	0.822336
1551	643592	896523	7.954556	1.3	3.116	5	10	0.90	9.98	1.30	7.9546	0.980848864223439		23	0.424475	0.138388	0.990378		5.550992	1.781729
1552	643605	896523	8.889365	1	3.551	5	10	0.90	9.98	1.00	8.8894	0.976121405434028		23	0.424475	0.154527	0.987989		5.421797	1.526709
1553	643623	896494	6.339355	1.2	4.186	5	10	0.90	9.98	1.20	6.3394	0.987808083590466		23	0.424475	0.110417	0.993885		5.512216	1.316902
1554	643602	896484	8.509369	1.6	2.424	5	10	0.90	9.98	1.60	8.5094	0.978104543820747		23	0.424475	0.147971	0.988992		5.676246	2.341476
1555	643592	896481	3.107527	0.01	924.493	5	10	0.90	9.98	0.01	3.1075	0.997061276852843		23	0.424475	0.05421	0.99853		5.004308	0.005413
1556	643637	896407	6.906215	0.4	10.828	5	10	0.90	9.98	0.40	6.9062	0.985541254276420		23	0.424475	0.120245	0.992744		5.170347	0.477488
1557	643655	896417	6.196016	0.6	8.164	5	10	0.90	9.98	0.60	6.1960	0.988351065833361		23	0.424475	0.10793	0.994158		5.256249	0.643799
1558	643679	896414	6.208222	0.6	8.149	5	10	0.90	9.98	0.60	6.2082	0.988305304327378		23	0.424475	0.108142	0.994135		5.256237	0.645047

1559	643645	896397	7.089601	0.6	7.151	5	10	0.90	9.98	0.60	7.0896	0.984767165514845		23	0.424475	0.123421	0.992354		5.25532	0.734866
1560	643643	896384	7.082705	1.2	3.753	5	10	0.90	9.98	1.20	7.0827	0.984796633796776		23	0.424475	0.123302	0.992369		5.510655	1.468332
1561	643643	896374	7.080946	2.6	1.920	5	10	0.90	9.98	2.60	7.0809	0.984804145934295		23	0.424475	0.123271	0.992373		6.106427	3.180613
1562	643646	896365	7.211186	2.3	2.087	5	10	0.90	9.98	2.30	7.2112	0.984242991291397		23	0.424475	0.125527	0.99209		5.978205	2.864283
1563	643645	896355	7.038223	1	4.462	5	10	0.90	9.98	1.00	7.0382	0.984986041102728		23	0.424475	0.122531	0.992465		5.425628	1.216081
1564	643645	896346	6.403994	1.1	4.486	5	10	0.90	9.98	1.10	6.4040	0.987559228611879		23	0.424475	0.111538	0.99376		5.469413	1.219264
1565	643645	896335	5.620648	0.9	6.139	5	10	0.90	9.98	0.90	5.6206	0.990407452965720		23	0.424475	0.097942	0.995192		5.385173	0.877236
1566	643645	896316	8.373613	0.8	4.632	5	10	0.90	9.98	0.80	8.3736	0.978792656414875		23	0.424475	0.145627	0.98934		5.338361	1.1526
1567	643646	896305	10.62118	0.9	3.297	5	10	0.90	9.98	0.90	10.6212	0.966028094814192		23	0.424475	0.184315	0.982867		5.375692	1.630412
1568	643655	896303	7.49442	1	4.195	5	10	0.90	9.98	1.00	7.4944	0.982988110207200		23	0.424475	0.13043	0.991458		5.424764	1.293154
1569	643655	896316	6.087285	1.1	4.716	5	10	0.90	9.98	1.10	6.0873	0.988754795911873		23	0.424475	0.106043	0.994362		5.469982	1.1599
1570	643652	896323	5.806921	1.6	3.529	5	10	0.90	9.98	1.60	5.8069	0.989763321452514		23	0.424475	0.101176	0.994868		5.684307	1.610517
1571	643651	896332	5.620648	1.1	5.102	5	10	0.90	9.98	1.10	5.6206	0.990407452965720		23	0.424475	0.097942	0.995192		5.470767	1.072177
1572	643651	896344	6.403994	2	2.640	5	10	0.90	9.98	2.00	6.4040	0.987559228611879		23	0.424475	0.111538	0.99376		5.853479	2.216844
1573	643652	896353	7.038223	2	2.406	5	10	0.90	9.98	2.00	7.0382	0.984986041102728		23	0.424475	0.122531	0.992465		5.851255	2.432163
1574	643653	896363	7.227486	2.5	1.943	5	10	0.90	9.98	2.50	7.2275	0.984172055869590		23	0.424475	0.125809	0.992054		6.06319	3.120238
1575	643653	896375	7.038826	2.2	2.219	5	10	0.90	9.98	2.20	7.0388	0.984983481305571		23	0.424475	0.122542	0.992463		5.936378	2.675604
1576	643652	896384	7.082705	0.8	5.456	5	10	0.90	9.98	0.80	7.0827	0.984796633796776		23	0.424475	0.123302	0.992369		5.340437	0.978888
1577	643653	896394	7.01207	1	4.478	5	10	0.90	9.98	1.00	7.0121	0.985096856512886		23	0.424475	0.122078	0.99252		5.425675	1.211653
1578	643663	896394	6.760778	0.9	5.117	5	10	0.90	9.98	0.90	6.7608	0.986141012013801		23	0.424475	0.117724	0.993046		5.383514	1.05215
1579	643664	896386	7.011411	1.5	3.103	5	10	0.90	9.98	1.50	7.0114	0.985099643604130		23	0.424475	0.122067	0.992522		5.638515	1.817313
1580	643662	896376	6.940125	1.6	2.960	5	10	0.90	9.98	1.60	6.9401	0.985399615559865		23	0.424475	0.120832	0.992673		5.68129	1.919147
1581	643663	896362	6.996629	2.2	2.232	5	10	0.90	9.98	2.20	6.9966	0.985162093265828		23	0.424475	0.121811	0.992553		5.936548	2.659885
1582	643663	896354	7.130088	2.5	1.969	5	10	0.90	9.98	2.50	7.1301	0.984593588218817		23	0.424475	0.124123	0.992267		6.063645	3.079068
1583	643663	896344	7.029853	1.8	2.637	5	10	0.90	9.98	1.80	7.0299	0.985021550423998		23	0.424475	0.122386	0.992483		5.766157	2.186396
1584	643663	896334	6.886335	2.1	2.358	5	10	0.90	9.98	2.10	6.8863	0.985623974761602		23	0.424475	0.1199	0.992786		5.894397	2.499737
1585	643663	896324	6.680198	2.3	2.251	5	10	0.90	9.98	2.30	6.6802	0.986467917319556		23	0.424475	0.116327	0.993211		5.980416	2.657368
1586	643663	896314	5.812225	2.2	2.680	5	10	0.90	9.98	2.20	5.8122	0.989744676913079		23	0.424475	0.101269	0.994859		5.940905	2.216455
1587	643663	896304	4.644758	1.7	4.176	5	10	0.90	9.98	1.70	4.6448	0.993442635102246		23	0.424475	0.080978	0.996716		5.729779	1.372098
1588	643673	896304	7.747713	1.1	3.720	5	10	0.90	9.98	1.10	7.7477	0.981825892070486		23	0.424475	0.134811	0.990871		5.466688	1.469388
1589	643673	896314	8.038376	2.5	1.750	5	10	0.90	9.98	2.50	8.0384	0.980445798317397		23	0.424475	0.139836	0.990175		6.059164	3.46156
1590	643673	896324	8.032845	0.7	5.468	5	10	0.90	9.98	0.70	8.0328	0.980472522065109		23	0.424475	0.139741	0.990188		5.296574	0.968587
1591	643673	896334	7.816918	1.9	2.268	5	10	0.90	9.98	1.90	7.8169	0.981501794180975		23	0.424475	0.136008	0.990708		5.805832	2.560141
1592	643673	896344	7.301474	1.9	2.425	5	10	0.90	9.98	1.90	7.3015	0.983848099825604		23	0.424475	0.12709	0.991891		5.807758	2.395132
1593	643683	896344	8.676053	1.2	3.077	5	10	0.90	9.98	1.20	8.6761	0.977244982845686		23	0.424475	0.150848	0.988557		5.506739	1.789458
1594	643683	896334	9.686839	1.1	2.994	5	10	0.90	9.98	1.10	9.6868	0.971687577539863		23	0.424475	0.168263	0.985742		5.461869	1.824503
1595	643683	896324	9.751693	0.7	4.530	5	10	0.90	9.98	0.70	9.7517	0.971310881256376		23	0.424475	0.169379	0.985551		5.293803	1.168519
1596	643683	896314	9.622214	1.3	2.589	5	10	0.90	9.98	1.30	9.6222	0.972060539129926		23	0.424475	0.167151	0.985931		5.546055	2.142392
1597	643683	896304	10.01743	1.5	2.191	5	10	0.90	9.98	1.50	10.0174	0.969742177184486		23	0.424475	0.173948	0.984755		5.628561	2.569439
1598	643693	896304	10.76202	1.8	1.742	5	10	0.90	9.98	1.80	10.7620	0.965131855273942		23	0.424475	0.18673	0.982411		5.750687	3.302024
1599	643693	896314	10.4347	1	3.042	5	10	0.90	9.98	1.00	10.4347	0.967197432205459		23	0.424475	0.181115	0.983462		5.417941	1.781195
1600	643693	896324	10.56483	0.4	7.167	5	10	0.90	9.98	0.40	10.5648	0.966383526102512		23	0.424475	0.183348	0.983048		5.167036	0.720959
1601	643693	896334	10.78034	1.8	1.739	5	10	0.90	9.98	1.80	10.7803	0.965014448677869		23	0.424475	0.187044	0.982351		5.750596	3.307378
1602	643703	896334	10.85902	1.1	2.682	5	10	0.90	9.98	1.10	10.8590	0.964508053989775		23	0.424475	0.188393	0.982094		5.458457	2.035216
1603	643703	896324	10.70218	1.1	2.720	5	10	0.90	9.98	1.10	10.7022	0.965514023686695		23	0.424475	0.185704	0.982606		5.458935	2.007212
1604	643703	896314	10.55065	1	3.010	5	10	0.90	9.98	1.00	10.5507	0.966472683258434		23	0.424475	0.183105	0.983093		5.417628	1.80009
1605	643703	896304	10.86678	1.7	1.814	5	10	0.90	9.98	1.70	10.8668	0.964457919735235		23	0.424475	0.188526	0.982068		5.708487	3.147473
1606	643713	896304	9.662321	1.8	1.933	5	10	0.90	9.98	1.80	9.6623	0.971829357667852		23	0.424475	0.167841	0.985814		5.755896	2.978282
1607	643723	896304	6.550362	1.8	2.827	5	10	0.90	9.98	1.80	6.5504	0.986986551596859		23	0.424475	0.114077	0.993472		5.767686	2.039973
1608	643733	896304	5.564457	1.1	5.153	5	10	0.90	9.98	1.10	5.5645	0.990597691946938		23	0.424475	0.096965	0.995288		5.470858	1.061594
1609	643733	896314	3.981544	0.9	8.641	5	10	0.90	9.98	0.90	3.9815	0.995178761773795		23	0.424475	0.069435	0.997586		5.387029	0.623408
1610	643733	896324	1.961865	2	8.568	5	10	0.90	9.98	2.00	1.9619	0.998828011802100		23	0.424475	0.034234	0.999414		5.863218	0.684285
1611	643723	896324	4.609664	2.6	2.937	5	10	0.90	9.98	2.60	4.6097	0.993541137514746		23	0.424475	0.080367	0.996765		6.116243	2.082784
1612	643723	896314	5.29059	0.8	7.274	5	10	0.90	9.98	0.80	5.2906	0.991497859400075		23	0.424475	0.092207	0.99574		5.342753	0.734514
1613	643713	896314	9.539989	0.7	4.627	5	10	0.90	9.98	0.70	9.5400	0.972531600347864		23	0.424475	0.165736	0.98617		5.294172	1.144107
1614	643713	896324	9.737031	1	3.251	5	10	0.90	9.98	1.00	9.7370	0.971396255014144		23	0.424475	0.169126	0.985594		5.419755	1.6669
1615	643713	896334	10.10613	1.9	1.766	5	10	0.90	9.98	1.90	10.1061	0.969209557637922		23	0.424475	0.175472	0.984484		5.79574	3.282241
1616	643723	896334	5.01314	1.6	4.083	5	10	0.90	9.98	1.60	5.0131	0.992364000887151		23	0.424475	0.087384	0.996175		5.686105	1.392799
1617	643733	896334	1.536188	1.9	11.431	5	10	0.90	9.98	1.90	1.5362	0.999281313637727		23	0.424475	0.026808	0.999641		5.820429	0.509175
1618	643733	896344	3.616361	1.9	4.864	5	10	0.90	9.98	1.90	3.6164	0.996021480440646		23	0.424475	0.063076	0.998009		5.817753	1.196048
1619	643733	896354	6.08285	1.2	4.360	5	10	0.90	9.98	1.20	6.0829	0.988771114144195		23	0.424475	0.105966	0.99437		5.512716	1.264438
1622	643723	896394	4.977314	1.6	4.112	5	10	0.90	9.98	1.60	4.9773	0.992472477304044		23	0.424475	0.086761	0.996229		5.68618	1.382946
1623	643733	896384	8.143248	3.1	1.452	5	10	0.90	9.98	3.10	8.1432	0.979935707722902		23	0.424475	0.141648	0.989917		6.31268	4.346828
1624	643733	896394	5.003573	1.7	3.879	5	10	0.90	9.98	1.70	5.0036	0.992393043869357		23	0.424475	0.087218	0.996189		5.729008	1.477054
1625	643723	896384	6.129733	1	5.112	5	10	0.90	9.98	1.00	6.1297	0.988598019322203		23	0.424475	0.10678	0.994283		5.427188	1.061696
1626	643723	896374	7.66858	0.01	378.395	5	10	0.90	9.98	0.01	7.6686	0.982193038476504		23	0.424475	0.133443	0.991057		5.004244	0.013225
1627	643723	896364	8.117294	0.9	4.277	5	10	0.90	9.98	0.90	8.1173	0.980062545449676		23	0.424475	0.1412	0.989981		5.38115	1.258068
1628	643723	896354	7.946809	1.3	3.118	5	10	0.90	9.98	1.30	7.9468	0.980885909527292		23	0.424475	0.138254	0.990397		5.551013	1.780039
1629	643723	896344	6.924824	1.8	2.677	5	10	0.90	9.98	1.80	6.9248	0.985463610538501		23	0.424475	0.120567	0.992705		5.766501	2.154374
1630	643713	896344	11.26253	1.9	1.591	5	10	0.90	9.98	1.90	11.2625	0.961856033127409		23	0.424475	0.195305	0.980743		5.789702	3.639331
1631	643713	896354	10.76565	1.2	2.498	5	10	0.90	9.98	1.20	10.7657	0.965108606958404		23	0.424475	0.186792	0.982399		5.500446	2.202057
1632	643713	896364	7.989052	0.5	7.573	5	10	0.90	9.98	0.50	7.9891	0.980683481284081		23	0.424475	0.138984	0.990295		5.211884	0.688175
1633	643713	896374	6.376232	0.9	5.420	5	10	0.90	9.98	0.90	6.3762	0.987666414266332		23	0.424475	0.111057	0.993814		5.384107	0.993327
1634	643714	896383	5.881874	0.4	12.682	5	10	0.90	9.98	0.40	5.8819	0.989498290448633		23	0.424475	0.102478	0.994735		5.171031	0.407753
1635	643713	896394	5.630295	0.4	13.241	5	10	0.90	9.98	0.40	5.6303	0.990374602517271		23	0.424475	0.098109	0.995176		5.171182	0.390543
1636	643703	896394	5.742864	0.6	8.800	5	10	0.90	9.98	0.60	5.7429	0.989987167727089		23	0.424475	0.100064	0.994981		5.256673	0.597372
1637	643703	896384	5.798414	0.4	12.862	5	10	0.90	9.98	0.40	5.7984	0.989793190071324		23	0.424475	0.101029	0.994884		5.171082	0.402047
1638	643703	896374	6.443722	1.3	3.832	5	10	0.90	9.98	1.30	6.4437	0.987405047302921		23	0.424475	0.112227	0.993683		5.554675	1.449737
1639	643703	896364	7.39362	1	4.251	5	10	0.90	9.98	1.00	7.3936	0.983440126711732		23	0.424475	0.128685	0.991685		5.42496	1.276152
1640	643703	896354	9.364514	1.4	2.487	5	10	0.90	9.98	1.40	9.3645	0.973523861345403		23	0.424475	0.162715	0.986673		5.588944	2.24765
1641	643703	896344	11.08621	1.6	1.877	5	10	0.90	9.98	1.60	11.0862	0.963026177830389		23	0.424475	0.192286	0.981339		5.665821	3.019161
1642	643693	896344	10.17564	1.7	1.932	5	10	0.90	9.98	1.70	10.1756	0.968789024962800		23	0.424475	0.176666	0.984271		5.711669	2.956087
1643	643693	896354	8.023657	1.5	2.718	5	10	0.90	9.98	1.50	8.0237	0.980516875497691		23	0.424475	0.139582	0.990211		5.635545	2.073233
1644	643693	896364	6.946747	1.1	4.141	5	10	0.90	9.98	1.10	6.9467	0.985371876741772		23	0.424475	0.120947	0.992659		5.468374	1.320648
1645	643693	896374	6.642413	1.2	3.998	5	10	0.90	9.98	1.20	6.6424	0.986619882080009		23	0.424475	0.115672	0.993287		5.5116	1.378752
1646	643693	896384	6.138927	0.9	5.627	5	10	0.90	9.98	0.90	6.1389	0.988563921042478		23	0.424475	0.10694	0.994266		5.384456	0.956937
1647	643693	896394	6.236632	0.4	11.970	5	10	0.90	9.98	0.40	6.2366	0.988198449153822		23	0.424475	0.108635	0.994082		5.170806	0.431968
1648	643683	896384	6.631254	0.5	9.090	5	10	0.90	9.98	0.50	6.6313	0.986664599747855		23	0.424475	0.115479	0.99331		5.213176	0.573532
1649	643683	896374	6.901519	1.2	3.850	5	10	0.90	9.98	1.20	6.9015	0.985560815380241		23	0.424475	0.120163	0.992754		5.511051	1.43151
1650	643683	896364	6.901866	1.1	4.167	5	10	0.90	9.98	1.10	6.9019	0.985559370404378		23	0.424475	0.120169	0.992753		5.468463	1.312282
1651	643683	896354	7.347918	1.8	2.525	5	10	0.90	9.98	1.80	7.3479	0.983643096104745		23	0.424475	0.127894	0.991788		5.765085	2.283189
1652	643673	896354	6.986781	1.9	2.532	5	10	0.90	9.98	1.90	6.9868	0.985203626515718		23	0.424475	0.12164	0.992574		5.808871	2.294004
1653	643673	896364	6.912476	1.5	3.146	5	10	0.90	9.98	1.50	6.9125	0.985515153900244		23	0.424475	0.120353	0.992731		5.638784	1.792173
1654	643673	896374	6.912114	0.8	5.588	5	10	0.90	9.98	0.80	6.9121	0.985516663609714		23	0.424475	0.120347	0.992732		5.340686	0.955776
1655	643673	896384	6.819386	1.1	4.217	5	10	0.90	9.98	1.10	6.8194	0.985900828801694		23	0.424475	0.11874	0.992925		5.468625	1.296899
1656	643673	896394	6.514783	0.8	5.923	5	10	0.90	9.98	0.80	6.5148	0.987126927454501		23	0.424475	0.11346	0.993543		5.341242	0.901815
1657	643662	896407	6.493505	0.3	15.212	5	10	0.90	9.98	0.30	6.4935	0.987210520128377		23	0.424475	0.113091	0.993585		5.127977	0.337095
1658	643613	896435	7.196587	1	4.365	5	10	0.90	9.98	1.00	7.1966	0.984306391108328		23	0.424475	0.125274	0.992122		5.425334	1.242872
1659	643253	896085	4.36842	2.4	3.309	5	10	0.90	9.98	2.40	4.3684	0.994198212453433		23	0.424475	0.076169	0.997095		6.03106	1.822756
1660	643234	896067	3.665641	1.9	4.799	5	10	0.90	9.98	1.90	3.6656	0.995912460399168		23	0.424475	0.063934	0.997954		5.817663	1.212258
1661	643220	896054	5.934835	2	2.847	5	10	0.90	9.98	2.00	5.9348	0.989309001953750		23	0.424475	0.103397	0.99464		5.854991	2.056862
1662	643230	896008	4.640004	0.6	10.868	5	10	0.90	9.98	0.60	4.6400	0.993456022071077		23	0.424475	0.080895	0.996723		5.257573	0.483778
1663	643249	896013	4.185264	0.6	12.039	5	10	0.90	9.98	0.60	4.1853	0.994673672387038		23	0.424475	0.072982	0.997333		5.257888	0.436722
1664	643277	896024	3.722805	0.6	13.526	5	10	0.90	9.98	0.60	3.7228	0.995784160570451		23	0.424475	0.064929	0.99789		5.258176	0.388755
1665	643295	895981	5.018011	1.4	4.591	5	10	0.90	9.98	1.40	5.0180	0.992349192672258		23	0.424475	0.087469	0.996167		5.600333	1.219871
1666	643258	895971	5.293887	2	3.188	5	10	0.90	9.98	2.00	5.2939	0.991487289519001		23	0.424475	0.092264	0.995735		5.856874	1.837416
1667	643243	895964	5.638524	1.4	4.090	5	10	0.90	9.98	1.40	5.6385	0.990346536766340		23	0.424475	0.098252	0.995162		5.599122	1.368873
1668	643253	895964	5.293887	1.7	3.668	5	10	0.90	9.98	1.70	5.2939	0.991487289519001		23	0.424475	0.092264	0.995735		5.728343	1.561804
1669	643263	895964	5.063803	1.4	4.550	5	10	0.90	9.98	1.40	5.0638	0.992209285640081		23	0.424475	0.088265	0.996097		5.600248	1.230887
1670	643275	895962	4.941137	1.6	4.141	5	10	0.90	9.98	1.60	4.9411	0.992581234964795		23	0.424475	0.086132	0.996284		5.686255	1.372995
1671	643283	895964	4.812815	2	3.503	5	10	0.90	9.98	2.00	4.8128	0.992960669055927		23	0.424475	0.083901	0.996474		5.858147	1.672098
1672	643293	895964	4.820923	1.7	4.024	5	10	0.90	9.98	1.70	4.8209	0.992936987238181		23	0.424475	0.084042	0.996462		5.729408	1.423655
1673	643304	895963	4.810155	1.7	4.033	5	10	0.90	9.98	1.70	4.8102	0.992968429772336		23	0.424475	0.083854	0.996478		5.729431	1.420505
1674	643313	895964	4.810124	1.9	3.663	5	10	0.90	9.98	1.90	4.8101	0.992968520191722		23	0.424475	0.083854	0.996478		5.815246	1.587613
1675	643323	895964	4.82327	2	3.496	5	10	0.90	9.98	2.00	4.8233	0.992930124759712		23	0.424475	0.084083	0.996459		5.858121	1.675696
1676	643333	895964	4.854751	1.9	3.629	5	10	0.90	9.98	1.90	4.8548	0.992837756527739		23	0.424475	0.08463	0.996412		5.815139	1.602202
1677	643323	895954	4.506287	1.1	6.352	5	10	0.90	9.98	1.10	4.5063	0.993826993031563		23	0.424475	0.078568	0.996909		5.472393	0.861582
1678	643313	895954	4.463577	1	6.998	5	10	0.90	9.98	1.00	4.4636	0.993943216718700		23	0.424475	0.077825	0.996967		5.429498	0.775893
1679	643303	895954	4.428974	1	7.052	5	10	0.90	9.98	1.00	4.4290	0.994036574355441		23	0.424475	0.077223	0.997014		5.429538	0.769926
1680	643293	895954	4.517671	1.1	6.336	5	10	0.90	9.98	1.10	4.5177	0.993795829281531		23	0.424475	0.078767	0.996893		5.472378	0.86374
1681	643283	895954	4.775893	1.2	5.539	5	10	0.90	9.98	1.20	4.7759	0.993068011348723		23	0.424475	0.083259	0.996528		5.514944	0.995634
1682	643273	895954	5.251448	1.4	4.389	5	10	0.90	9.98	1.40	5.2514	0.991622847630797		23	0.424475	0.091527	0.995803		5.599894	1.275997
1683	643263	895954	5.548417	1.6	3.692	5	10	0.90	9.98	1.60	5.5484	0.990651650352162		23	0.424475	0.096687	0.995315		5.684921	1.539742
1684	643253	895954	5.704861	1.5	3.803	5	10	0.90	9.98	1.50	5.7049	0.990118810916365		23	0.424475	0.099404	0.995047		5.641768	1.483678
1685	643243	895954	5.870152	1.5	3.697	5	10	0.90	9.98	1.50	5.8702	0.989539960086741		23	0.424475	0.102274	0.994756		5.641393	1.526071
1686	643244	895942	5.657026	1.7	3.435	5	10	0.90	9.98	1.70	5.6570	0.990283286272556		23	0.424475	0.098573	0.99513		5.727458	1.667586
1687	643253	895944	5.677182	1.5	3.821	5	10	0.90	9.98	1.50	5.6772	0.990214148712495		23	0.424475	0.098923	0.995095		5.64183	1.476574
1688	643263	895944	5.78228	1.5	3.752	5	10	0.90	9.98	1.50	5.7823	0.989849718939831		23	0.424475	0.100749	0.994912		5.641594	1.50354
1689	643273	895944	5.808867	1.1	4.939	5	10	0.90	9.98	1.10	5.8089	0.989756482852952		23	0.424475	0.10121	0.994865		5.470458	1.107596
1690	643283	895944	5.44051	1	5.751	5	10	0.90	9.98	1.00	5.4405	0.991010649617102		23	0.424475	0.094812	0.995495		5.428231	0.943851
1691	643293	895944	4.913603	1.1	5.829	5	10	0.90	9.98	1.10	4.9136	0.992663483046701		23	0.424475	0.085653	0.996325		5.47184	0.938726
1692	643304	895943	4.453434	1.1	6.426	5	10	0.90	9.98	1.10	4.4534	0.993970656829683		23	0.424475	0.077649	0.996981		5.472461	0.851558
1693	643313	895944	4.230746	1	7.380	5	10	0.90	9.98	1.00	4.2307	0.994557490707086		23	0.424475	0.073773	0.997275		5.429764	0.735723
1694	643323	895944	4.186285	1.1	6.834	5	10	0.90	9.98	1.10	4.1863	0.994671077969048		23	0.424475	0.072999	0.997332		5.472794	0.800852
1695	643323	895934	4.323068	1.7	4.485	5	10	0.90	9.98	1.70	4.3231	0.994317825449491		23	0.424475	0.07538	0.997155		5.730422	1.277817
1696	643313	895934	4.751625	1.6	4.305	5	10	0.90	9.98	1.60	4.7516	0.993138118961034		23	0.424475	0.082836	0.996563		5.68664	1.320828
1697	643303	895934	5.275923	1.4	4.368	5	10	0.90	9.98	1.40	5.2759	0.991544801566211		23	0.424475	0.091952	0.995763		5.599846	1.281876
1698	643293	895934	5.750558	1.5	3.773	5	10	0.90	9.98	1.50	5.7506	0.989960410585674		23	0.424475	0.100198	0.994968		5.641666	1.495403
1699	643282	895934	5.99443	1.9	2.945	5	10	0.90	9.98	1.90	5.9944	0.989094003224190		23	0.424475	0.104432	0.994532		5.812065	1.973354

1700	643273	895934	5.99443	1.9	2.945	5	10	0.90	9.98	1.90	5.9944	0.989094003224190		23	0.424475	0.104432	0.994532		5.812065	1.973354
1701	643263	895934	5.77838	2	2.923	5	10	0.90	9.98	2.00	5.7784	0.989863360094872		23	0.424475	0.100681	0.994919		5.85547	2.003386
1702	643253	895934	5.629973	2.4	2.572	5	10	0.90	9.98	2.40	5.6300	0.990375699904900		23	0.424475	0.098104	0.995176		6.027096	2.343127
1703	643243	895934	5.657026	2.1	2.863	5	10	0.90	9.98	2.10	5.6570	0.990283286272556		23	0.424475	0.098573	0.99513		5.898625	2.05996
1704	643243	895924	5.767445	1.8	3.206	5	10	0.90	9.98	1.80	5.7674	0.989901559380709		23	0.424475	0.100491	0.994938		5.769953	1.799682
1705	643253	895924	5.723649	1.5	3.790	5	10	0.90	9.98	1.50	5.7236	0.990053836672894		23	0.424475	0.09973	0.995014		5.641726	1.488499
1706	643263	895924	5.817722	1.4	3.966	5	10	0.90	9.98	1.40	5.8177	0.989725336227890		23	0.424475	0.101364	0.994849		5.598746	1.411787
1707	643273	895924	5.997439	1.6	3.419	5	10	0.90	9.98	1.60	5.9974	0.989083091624901		23	0.424475	0.104484	0.994527		5.683837	1.662594
1708	643283	895924	6.05804	1.6	3.385	5	10	0.90	9.98	1.60	6.0580	0.988862184512070		23	0.424475	0.105536	0.994415		5.683684	1.679144
1709	643293	895924	6.05804	1.3	4.072	5	10	0.90	9.98	1.30	6.0580	0.988862184512070		23	0.424475	0.105536	0.994415		5.555493	1.364304
1710	643303	895924	5.937476	1	5.275	5	10	0.90	9.98	1.00	5.9375	0.989299518946054		23	0.424475	0.103443	0.994635		5.427492	1.028882
1711	643313	895924	5.641094	1.2	4.697	5	10	0.90	9.98	1.20	5.6411	0.990337763257158		23	0.424475	0.098297	0.995157		5.513528	1.173848
1712	643323	895924	5.063044	1.4	4.550	5	10	0.90	9.98	1.40	5.0630	0.992211614842402		23	0.424475	0.088252	0.996098		5.60025	1.230705
1713	643323	895914	5.91814	1	5.292	5	10	0.90	9.98	1.00	5.9181	0.989368852258628		23	0.424475	0.103107	0.99467		5.427521	1.025579
1714	643313	895914	6.108978	1	5.129	5	10	0.90	9.98	1.00	6.1090	0.988674809466073		23	0.424475	0.10642	0.994321		5.427222	1.058155
1715	643303	895914	6.202421	1	5.053	5	10	0.90	9.98	1.00	6.2024	0.988327063906350		23	0.424475	0.108041	0.994146		5.427071	1.074089
1716	643293	895914	6.058116	1.1	4.738	5	10	0.90	9.98	1.10	6.0581	0.988861906097773		23	0.424475	0.105537	0.994415		5.470033	1.154426
1717	643283	895914	5.890338	1	5.317	5	10	0.90	9.98	1.00	5.8903	0.989468151472194		23	0.424475	0.102625	0.99472		5.427564	1.02083
1718	643274	895913	5.960963	1.5	3.641	5	10	0.90	9.98	1.50	5.9610	0.989215001526718		23	0.424475	0.103851	0.994593		5.641182	1.54934
1719	643262	895914	6.033009	1.3	4.089	5	10	0.90	9.98	1.30	6.0330	0.988953694541010		23	0.424475	0.105101	0.994462		5.555545	1.358751
1720	643253	895914	6.033009	1.6	3.399	5	10	0.90	9.98	1.60	6.0330	0.988953694541010		23	0.424475	0.105101	0.994462		5.683747	1.672309
1721	643243	895914	6.085686	1.5	3.567	5	10	0.90	9.98	1.50	6.0857	0.988760680656440		23	0.424475	0.106016	0.994364		5.640888	1.581273
1722	643243	895904	6.244589	2.4	2.322	5	10	0.90	9.98	2.40	6.2446	0.988168435358844		23	0.424475	0.108773	0.994067		6.024807	2.595062
1723	643253	895904	6.201144	2.2	2.514	5	10	0.90	9.98	2.20	6.2011	0.988331851250501		23	0.424475	0.108019	0.994149		5.939561	2.362518
1724	643263	895904	6.176929	2.3	2.431	5	10	0.90	9.98	2.30	6.1769	0.988422447182608		23	0.424475	0.107599	0.994194		5.982359	2.46041
1725	643273	895904	6.059516	2.2	2.572	5	10	0.90	9.98	2.20	6.0595	0.988856776797919		23	0.424475	0.105561	0.994413		5.94006	2.309377
1726	643283	895904	5.631141	1.7	3.450	5	10	0.90	9.98	1.70	5.6311	0.990371719023512		23	0.424475	0.098124	0.995174		5.727523	1.660055
1727	643293	895904	5.471838	1.5	3.963	5	10	0.90	9.98	1.50	5.4718	0.990907140921575		23	0.424475	0.095356	0.995443		5.642279	1.423829
1728	643303	895904	5.794512	1.1	4.951	5	10	0.90	9.98	1.10	5.7945	0.989806875793543		23	0.424475	0.100961	0.99489		5.470482	1.104896
1729	643313	895904	6.145233	1.5	3.533	5	10	0.90	9.98	1.50	6.1452	0.988540504549444		23	0.424475	0.107049	0.994254		5.640745	1.596509
1730	643323	895904	6.714685	1.5	3.238	5	10	0.90	9.98	1.50	6.7147	0.986328477846543		23	0.424475	0.116925	0.993141		5.639312	1.741849
1731	643323	895894	7.546037	1.9	2.348	5	10	0.90	9.98	1.90	7.5460	0.982754329239707		23	0.424475	0.131323	0.99134		5.80686	2.473524
1732	643313	895894	5.83675	2	2.894	5	10	0.90	9.98	2.00	5.8368	0.989658248745271		23	0.424475	0.101694	0.994816		5.855293	2.023344
1733	643303	895894	4.980342	2	3.387	5	10	0.90	9.98	2.00	4.9803	0.992463338712677		23	0.424475	0.086814	0.996225		5.857717	1.729724
1734	643293	895894	5.380045	2	3.137	5	10	0.90	9.98	2.00	5.3800	0.991208767457326		23	0.424475	0.093762	0.995595		5.856633	1.86697
1735	643283	895894	5.964728	1.8	3.101	5	10	0.90	9.98	1.80	5.9647	0.989201422680199		23	0.424475	0.103916	0.994586		5.769408	1.860365
1736	643273	895894	6.269859	1.9	2.817	5	10	0.90	9.98	1.90	6.2699	0.988072867240106		23	0.424475	0.109211	0.994019		5.811227	2.062605
1737	643263	895894	6.223598	1.9	2.838	5	10	0.90	9.98	1.90	6.2236	0.988247532010798		23	0.424475	0.108409	0.994106		5.81137	2.047628
1738	643253	895894	6.154696	1.9	2.869	5	10	0.90	9.98	1.90	6.1547	0.988505320542942		23	0.424475	0.107213	0.994236		5.811582	2.02531
1739	643253	895884	6.145352	1.4	3.757	5	10	0.90	9.98	1.40	6.1454	0.988540062431188		23	0.424475	0.107051	0.994254		5.598029	1.490103
1740	643263	895884	6.228909	1.6	3.293	5	10	0.90	9.98	1.60	6.2289	0.988227544283615		23	0.424475	0.108501	0.994096		5.683245	1.725766
1741	643273	895884	6.32955	1.6	3.241	5	10	0.90	9.98	1.60	6.3296	0.987845615161531		23	0.424475	0.110247	0.993904		5.682981	1.753198
1742	643283	895883	6.273063	1.6	3.270	5	10	0.90	9.98	1.60	6.2731	0.988060722966089		23	0.424475	0.109267	0.994012		5.68313	1.737804
1743	643293	895884	5.893319	1.5	3.682	5	10	0.90	9.98	1.50	5.8933	0.989457526424734		23	0.424475	0.102677	0.994715		5.64134	1.532008
1744	643313	895884	5.894141	1.7	3.298	5	10	0.90	9.98	1.70	5.8941	0.989454595674032		23	0.424475	0.102691	0.994713		5.72685	1.736515
1745	643323	895884	6.83615	1.3	3.615	5	10	0.90	9.98	1.30	6.8362	0.985831753661962		23	0.424475	0.11903	0.992891		5.553791	1.536395
1746	643323	895874	5.037071	1.1	5.687	5	10	0.90	9.98	1.10	5.0371	0.992291111991804		23	0.424475	0.0878	0.996138		5.471663	0.962073
1747	643313	895875	6.373535	1.9	2.772	5	10	0.90	9.98	1.90	6.3735	0.987676802645544		23	0.424475	0.11101	0.993819		5.810902	2.096152
1748	643303	895874	6.291295	1.8	2.942	5	10	0.90	9.98	1.80	6.2913	0.987991501143254		23	0.424475	0.109583	0.993978		5.768467	1.96062
1749	643293	895874	6.464898	1.4	3.574	5	10	0.90	9.98	1.40	6.4649	0.987322481888823		23	0.424475	0.112594	0.993641		5.597292	1.566299
1750	643282	895874	6.607145	1.7	2.946	5	10	0.90	9.98	1.70	6.6071	0.986760960081179		23	0.424475	0.115061	0.993358		5.724871	1.943046
1751	643273	895874	6.607145	1.8	2.803	5	10	0.90	9.98	1.80	6.6071	0.986760960081179		23	0.424475	0.115061	0.993358		5.76751	2.057343
1752	643263	895874	6.229716	1.6	3.293	5	10	0.90	9.98	1.60	6.2297	0.988224505704173		23	0.424475	0.108515	0.994095		5.683243	1.725986
1753	643253	895874	6.140281	1.6	3.340	5	10	0.90	9.98	1.60	6.1403	0.988558895139111		23	0.424475	0.106963	0.994263		5.683474	1.701591
1754	643075	896067	6.908601	1.1	4.163	5	10	0.90	9.98	1.10	6.9086	0.985531310437686		23	0.424475	0.120286	0.992739		5.46845	1.313538
1755	643071	896088	6.166477	1.2	4.301	5	10	0.90	9.98	1.20	6.1665	0.988461443587015		23	0.424475	0.107418	0.994214		5.512555	1.281554
1756	643069	896110	6.274524	1	4.995	5	10	0.90	9.98	1.00	6.2745	0.988055183241531		23	0.424475	0.109292	0.99401		5.426954	1.086376
1757	643069	896125	6.993107	0.8	5.524	5	10	0.90	9.98	0.80	6.9931	0.985176953639796		23	0.424475	0.12175	0.992561		5.340568	0.966754
1758	643068	896146	7.068001	0.3	13.997	5	10	0.90	9.98	0.30	7.0680	0.984859373749229		23	0.424475	0.123047	0.992401		5.127672	0.366337
1759	643124	896147	6.820962	1	4.601	5	10	0.90	9.98	1.00	6.8210	0.985894342065835		23	0.424475	0.118767	0.992922		5.42602	1.179266
1760	643128	896119	7.607123	1.4	3.045	5	10	0.90	9.98	1.40	7.6071	0.982475637014825		23	0.424475	0.13238	0.991199		5.59436	1.837004
1761	643138	896094	9.502842	1.1	3.050	5	10	0.90	9.98	1.10	9.5028	0.972743136557967		23	0.424475	0.165097	0.986277		5.462371	1.791141
1762	643183	896120	4.677602	0.6	10.781	5	10	0.90	9.98	0.60	4.6776	0.993349777228112		23	0.424475	0.081549	0.996669		5.257545	0.487664
1763	643179	896135	6.590798	1.2	4.028	5	10	0.90	9.98	1.20	6.5908	0.986826100660081		23	0.424475	0.114778	0.993391		5.511707	1.368229
1764	643171	896156	7.595098	0.9	4.565	5	10	0.90	9.98	0.90	7.5951	0.982530672040122		23	0.424475	0.132172	0.991227		5.38211	1.179108
1765	643210	896181	7.837638	1.2	3.398	5	10	0.90	9.98	1.20	7.8376	0.981404212500194		23	0.424475	0.136366	0.990658		5.508896	1.62111
1766	643227	896157	6.830081	1.2	3.889	5	10	0.90	9.98	1.20	6.8301	0.985856779855640		23	0.424475	0.118925	0.992903		5.511205	1.416975
1767	643247	896139	7.416908	1.5	2.936	5	10	0.90	9.98	1.50	7.4169	0.983336227999478		23	0.424475	0.129088	0.991633		5.637372	1.920122
1768	643299	896168	6.370131	1.3	3.875	5	10	0.90	9.98	1.30	6.3701	0.987689908096587		23	0.424475	0.110951	0.993826		5.554835	1.433456
1769	643291	896184	8.336884	0.01	348.822	5	10	0.90	9.98	0.01	8.3369	0.978976979046094		23	0.424475	0.144993	0.989433		5.00423	0.014346
1770	643280	896206	7.617484	1.8	2.437	5	10	0.90	9.98	1.80	7.6175	0.982428149469662		23	0.424475	0.132559	0.991175		5.76414	2.365003
1771	643323	896227	4.173962	0.4	17.812	5	10	0.90	9.98	0.40	4.1740	0.994702349425652		23	0.424475	0.072785	0.997348		5.17193	0.290368
1772	643348	896212	9.933823	1.1	2.922	5	10	0.90	9.98	1.10	9.9338	0.970240091956582		23	0.424475	0.172511	0.985008		5.461181	1.869167
1773	643401	896224	6.462321	1	4.852	5	10	0.90	9.98	1.00	6.4623	0.987332543865869		23	0.424475	0.11255	0.993646		5.426642	1.118347
1774	643391	896235	8.105723	0.7	5.420	5	10	0.90	9.98	0.70	8.1057	0.980118966177259		23	0.424475	0.141	0.99001		5.296467	0.97714
1775	643379	896255	7.67307	1	4.099	5	10	0.90	9.98	1.00	7.6731	0.982172305048625		23	0.424475	0.13352	0.991046		5.424412	1.323249
1776	643412	896290	5.574935	0.3	17.680	5	10	0.90	9.98	0.30	5.5749	0.990562361006948		23	0.424475	0.097148	0.99527		5.128411	0.290064
1777	643428	896279	5.203997	0.5	11.545	5	10	0.90	9.98	0.50	5.2040	0.991773137458284		23	0.424475	0.090702	0.995878		5.21428	0.451641
1778	643440	896268	4.849509	0.5	12.381	5	10	0.90	9.98	0.50	4.8495	0.992853178353003		23	0.424475	0.084539	0.99642		5.214514	0.421181
1779	643469	896311	5.951791	0.4	12.535	5	10	0.90	9.98	0.40	5.9518	0.989248045889715		23	0.424475	0.103692	0.994609		5.170988	0.412531
1780	643444	896332	6.034549	0.6	8.380	5	10	0.90	9.98	0.60	6.0345	0.988948075280184		23	0.424475	0.105128	0.994459		5.256404	0.627274
1781	643457	896364	6.018421	0.6	8.402	5	10	0.90	9.98	0.60	6.0184	0.989006854178424		23	0.424475	0.104848	0.994488		5.256419	0.625622
1782	643473	896415	7.860148	0.3	12.616	5	10	0.90	9.98	0.30	7.8601	0.981297915342553		23	0.424475	0.136756	0.990605		5.12721	0.406412
1783	643491	896459	4.023321	0.9	8.552	5	10	0.90	9.98	0.90	4.0233	0.995077222935752		23	0.424475	0.070163	0.997536		5.386989	0.629906
1784	643526	896452	5.035118	0.6	10.022	5	10	0.90	9.98	0.60	5.0351	0.992297073301618		23	0.424475	0.087766	0.996141		5.257272	0.524566
1785	643541	896505	5.595714	0.2	26.203	5	10	0.90	9.98	0.20	5.5957	0.990492101849429		23	0.424475	0.097508	0.995235		5.085601	0.194088
1786	643523	896521	4.201878	1.5	5.150	5	10	0.90	9.98	1.50	4.2019	0.994631377213852		23	0.424475	0.073271	0.997312		5.644693	1.096109
1787	641905	897192	6.043749	0.1	48.162	5	10	0.90	9.98	0.10	6.0437	0.988914476237274		23	0.424475	0.105288	0.994442		5.042733	0.104703
1788	641879	897214	6.386802	0.1	45.615	5	10	0.90	9.98	0.10	6.3868	0.987625658785325		23	0.424475	0.11124	0.993794		5.042677	0.11055
1789	641855	897224	6.867705	0.6	7.378	5	10	0.90	9.98	0.60	6.8677	0.985701281748301		23	0.424475	0.119577	0.992825		5.255562	0.712316
1790	641839	897223	7.038811	0.1	41.462	5	10	0.90	9.98	0.10	7.0388	0.984983544984723		23	0.424475	0.122542	0.992463		5.042563	0.121618
1791	641823	897223	7.497403	0.5	8.058	5	10	0.90	9.98	0.50	7.4974	0.982974642444034		23	0.424475	0.130481	0.991451		5.212379	0.646829
1792	641851	897201	7.9394	0.01	365.802	5	10	0.90	9.98	0.01	7.9394	0.980921305654163		23	0.424475	0.138126	0.990415		5.004239	0.01368
1793	641862	897189	8.656916	0.4	8.684	5	10	0.90	9.98	0.40	8.6569	0.977344490620396		23	0.424475	0.150517	0.988607		5.16893	0.595211
1794	641880	897169	6.695939	0.1	43.544	5	10	0.90	9.98	0.10	6.6959	0.986404360004146		23	0.424475	0.1166	0.993179		5.042624	0.115805
1795	641854	897142	2.06321	2.1	7.817	5	10	0.90	9.98	2.10	2.0632	0.998703854137754		23	0.424475	0.036002	0.999352		5.906266	0.755552
1796	641610	896672	7.825442	1.5	2.786	5	10	0.90	9.98	1.50	7.8254	0.981461680550224		23	0.424475	0.136155	0.990687		5.636157	2.023313
1797	641598	896669	7.947608	1.6	2.592	5	10	0.90	9.98	1.60	7.9476	0.980882090423350		23	0.424475	0.138268	0.990395		5.678167	2.191031
1798	641580	896665	4.917405	1	6.357	5	10	0.90	9.98	1.00	4.9174	0.992652152997403		23	0.424475	0.08572	0.996319		5.42894	0.854041
1799	641584	896616	7.532238	1	4.174	5	10	0.90	9.98	1.00	7.5322	0.982816980448947		23	0.424475	0.131084	0.991371		5.42469	1.299529
1800	641606	896614	8.355837	1.1	3.456	5	10	0.90	9.98	1.10	8.3558	0.978881962666956		23	0.424475	0.14532	0.989385		5.465289	1.581556
1801	641620	896617	8.393511	0.6	6.064	5	10	0.90	9.98	0.60	8.3935	0.978692470613762		23	0.424475	0.145971	0.989289		5.253745	0.866445
1802	641650	896567	9.486866	1.6	2.181	5	10	0.90	9.98	1.60	9.4869	0.972833868603494		23	0.424475	0.164822	0.986323		5.672602	2.601077
1803	641632	896565	8.974667	0.7	4.909	5	10	0.90	9.98	0.70	8.9747	0.975664702296396		23	0.424475	0.155998	0.987757		5.29512	1.078616
1804	641617	896565	8.358008	0.5	7.248	5	10	0.90	9.98	0.50	8.3580	0.978871065491782		23	0.424475	0.145358	0.989379		5.211493	0.719071
1805	641600	896562	8.164455	1.5	2.672	5	10	0.90	9.98	1.50	8.1645	0.979831776241677		23	0.424475	0.142015	0.989865		5.635101	2.108632
1806	641689	896549	10.12763	1	3.130	5	10	0.90	9.98	1.00	10.1276	0.969079778464188		23	0.424475	0.175841	0.984418		5.418754	1.731016
1807	641688	896537	10.21712	1.1	2.844	5	10	0.90	9.98	1.10	10.2171	0.968536757614062		23	0.424475	0.177379	0.984143		5.460372	1.920227
1808	641688	896527	10.61688	1.1	2.741	5	10	0.90	9.98	1.10	10.6169	0.966055280906823		23	0.424475	0.184241	0.982881		5.459192	1.991956
1809	641689	896519	10.89146	1	2.919	5	10	0.90	9.98	1.00	10.8915	0.964298245603300		23	0.424475	0.188949	0.981987		5.416688	1.855455
1810	641688	896509	10.88679	1.1	2.675	5	10	0.90	9.98	1.10	10.8868	0.964328485905183		23	0.424475	0.188869	0.982002		5.458371	2.040168
1811	641687	896498	10.91133	0.3	9.191	5	10	0.90	9.98	0.30	10.9113	0.964169440704102		23	0.424475	0.18929	0.981921		5.12499	0.557603
1812	641688	896488	10.8121	0.9	3.241	5	10	0.90	9.98	0.90	10.8121	0.964810459154731		23	0.424475	0.187589	0.982248		5.375218	1.658328
1813	641688	896477	10.56693	0.5	5.779	5	10	0.90	9.98	0.50	10.5669	0.966370312577791		23	0.424475	0.183384	0.983041		5.208792	0.90137
1814	641689	896467	10.42053	0.9	3.358	5	10	0.90	9.98	0.90	10.4205	0.967285477646006		23	0.424475	0.180872	0.983507		5.376181	1.600996
1815	641689	896458	10.41197	0.6	4.923	5	10	0.90	9.98	0.60	10.4120	0.967338609904179		23	0.424475	0.180725	0.983534		5.250801	1.066493
1816	641679	896459	10.03462	0.6	5.101	5	10	0.90	9.98	0.60	10.0346	0.969639307511038		23	0.424475	0.174243	0.984703		5.251398	1.029466
1817	641680	896469	10.16585	0.3	9.835	5	10	0.90	9.98	0.30	10.1659	0.968848421102067		23	0.424475	0.176498	0.984301		5.125596	0.521182
1818	641679	896479	10.46977	0.6	4.897	5	10	0.90	9.98	0.60	10.4698	0.966979032928351		23	0.424475	0.181717	0.983351		5.250708	1.072148
1819	641680	896490	10.70436	0.6	4.795	5	10	0.90	9.98	0.60	10.7044	0.965500136746495		23	0.424475	0.185741	0.982599		5.250324	1.095055
1820	641680	896498	10.75187	0.4	7.048	5	10	0.90	9.98	0.40	10.7519	0.965196821258592		23	0.424475	0.186556	0.982444		5.166831	0.733124
1821	641679	896509	10.71416	0.9	3.270	5	10	0.90	9.98	0.90	10.7142	0.965437675922666		23	0.424475	0.185909	0.982567		5.375462	1.644016
1822	641679	896519	10.67539	0.8	3.663	5	10	0.90	9.98	0.80	10.6754	0.965684460033263		23	0.424475	0.185245	0.982692		5.33383	1.456307
1823	641679	896529	10.45627	0.9	3.347	5	10	0.90	9.98	0.90	10.4563	0.967063187369212		23	0.424475	0.181485	0.983394		5.376095	1.606241
1824	641680	896538	10.1964	1.5	2.153	5	10	0.90	9.98	1.50	10.1964	0.968662892473309		23	0.424475	0.177023	0.984207		5.627861	2.613407
1825	641679	896547	10.18747	1	3.113	5	10	0.90	9.98	1.00	10.1875	0.968717179053533		23	0.424475	0.17687	0.984234		5.418598	1.74081
1826	641669	896549	10.45956	1.4	2.235	5	10	0.90	9.98	1.40	10.4596	0.967042688177907		23	0.424475	0.181541	0.983383		5.585024	2.499348
1827	641667	896538	10.4831	0.9	3.339	5	10	0.90	9.98	0.90	10.4831	0.966895836460351		23	0.424475	0.181945	0.983309		5.376029	1.610177
1828	641667	896528	10.58667	1	3.000	5	10	0.90	9.98	1.00	10.5867	0.966245982960962		23	0.424475	0.183723	0.982978		5.41753	1.805954
1829	641668	896517	10.55504	0.4	7.173	5	10	0.90	9.98	0.40	10.5550	0.966445093220753		23	0.424475	0.18318	0.983079		5.167046	0.720322
1830	641667	896507	10.36696	1	3.061	5	10	0.90	9.98	1.00	10.3670	0.967617302131438		23	0.424475	0.179952	0.983675		5.418122	1.770143
1831	641667	896497	10.291	0.4	7.349	5	10	0.90	9.98	0.40	10.2910	0.968085011929127		23	0.424475	0.178648	0.983913		5.16733	0.703095
1832	641667	896489	10.27228	0.2	14.486	5	10	0.90	9.98	0.20	10.2723	0.968199771585020		23	0.424475	0.178326	0.983971		5.083675	0.350936
1833	641669	896478	10.01177	0.7	4.417	5	10	0.90	9.98	0.70	10.0118	0.969776011165880		23	0.424475	0.17385	0.984772		5.293339	1.198422
1834	641669	896469	9.359331	0.5	6.494	5	10	0.90	9.98	0.50	9.3593	0.973552899786939		23	0.424475	0.162626	0.986688		5.210344	0.802304
1835	641667	896459	9.075693	0.3	10.970	5	10	0.90	9.98	0.30	9.0757	0.975118358858587		23	0.424475	0.157739	0.987481		5.126409	0.467293
1836	641659	896459	8.334007	0.8	4.653	5	10	0.90	9.98	0.80	8.3340	0.978991383878540		23	0.424475	0.144943	0.98944		5.33843	1.147303
1837	641660	896468	9.149857	0.1	32.117	5	10	0.90	9.98	0.10	9.1499	0.974713522483950		23	0.424475	0.159017	0.987276		5.042119	0.156994
1838	641659	896479	9.91997	0.4	7.613	5	10	0.90	9.98	0.40	9.9200	0.970322205709450		23	0.424475	0.172272	0.985049		5.167716	0.678787

1839	641658	896489	9.959347	0.4	7.584	5	10	0.90	9.98	0.40	9.9593	0.970088510349159		23	0.424475	0.172949	0.984931		5.167676	0.681373
1840	641659	896500	10.02839	0.3	9.964	5	10	0.90	9.98	0.30	10.0284	0.969676609077775		23	0.424475	0.174136	0.984722		5.125704	0.514427
1841	641657	896510	10.23094	1.4	2.283	5	10	0.90	9.98	1.40	10.2309	0.968452490862909		23	0.424475	0.177616	0.9841		5.585876	2.447089
1842	641659	896519	10.54188	0.4	7.182	5	10	0.90	9.98	0.40	10.5419	0.966527767686246		23	0.424475	0.182954	0.983121		5.167061	0.719465
1843	641659	896529	10.69559	1.3	2.338	5	10	0.90	9.98	1.30	10.6956	0.965555986623880		23	0.424475	0.185591	0.982627		5.542401	2.370767
1844	641658	896538	10.69805	1.4	2.187	5	10	0.90	9.98	1.40	10.6981	0.965540325040244		23	0.424475	0.185633	0.982619		5.584115	2.553694
1845	641659	896548	10.49949	0.5	5.814	5	10	0.90	9.98	0.50	10.4995	0.966793403071965		23	0.424475	0.182227	0.983257		5.208883	0.895878
1846	641649	896550	9.986809	1.9	1.786	5	10	0.90	9.98	1.90	9.9868	0.969925002642572		23	0.424475	0.173421	0.984848		5.796327	3.245081
1847	641648	896537	10.52215	1	3.017	5	10	0.90	9.98	1.00	10.5222	0.966651532117332		23	0.424475	0.182616	0.983184		5.417705	1.795448
1848	641649	896528	10.6935	0.5	5.713	5	10	0.90	9.98	0.50	10.6935	0.965569289906271		23	0.424475	0.185555	0.982634		5.208619	0.911664
1849	641649	896517	10.63261	0.5	5.745	5	10	0.90	9.98	0.50	10.6326	0.965955779341032		23	0.424475	0.184511	0.98283		5.208702	0.906714
1850	641649	896509	10.41783	1	3.046	5	10	0.90	9.98	1.00	10.4178	0.967302241157209		23	0.424475	0.180825	0.983515		5.417986	1.778444
1851	641647	896498	10.12589	0.5	6.020	5	10	0.90	9.98	0.50	10.1259	0.969090291349673		23	0.424475	0.175812	0.984424		5.209379	0.865366
1852	641648	896488	9.993762	0.6	5.121	5	10	0.90	9.98	0.60	9.9938	0.969883536231569		23	0.424475	0.173541	0.984827		5.251461	1.025447
1853	641649	896477	10.20354	1	3.108	5	10	0.90	9.98	1.00	10.2035	0.968619454764205		23	0.424475	0.177146	0.984185		5.418555	1.743439
1854	641649	896468	9.754726	0.9	3.578	5	10	0.90	9.98	0.90	9.7547	0.971293205320892		23	0.424475	0.169431	0.985542		5.37774	1.502831
1855	641648	896458	8.393061	0.9	4.140	5	10	0.90	9.98	0.90	8.3931	0.978694738902004		23	0.424475	0.145963	0.98929		5.380618	1.2996
1856	641639	896460	9.105761	0.5	6.669	5	10	0.90	9.98	0.50	9.1058	0.974954611376328		23	0.424475	0.158257	0.987398		5.210646	0.781315
1857	641639	896469	10.24062	1	3.097	5	10	0.90	9.98	1.00	10.2406	0.968393402628999		23	0.424475	0.177782	0.98407		5.418458	1.749503
1858	641639	896481	10.31511	0.9	3.391	5	10	0.90	9.98	0.90	10.3151	0.967936915357241		23	0.424475	0.179062	0.983838		5.376434	1.585509
1859	641639	896490	10.15989	0.5	6.001	5	10	0.90	9.98	0.50	10.1599	0.968884553736995		23	0.424475	0.176396	0.984319		5.209335	0.868149
1860	641640	896499	10.32482	1.4	2.263	5	10	0.90	9.98	1.40	10.3248	0.967877177695942		23	0.424475	0.179228	0.983807		5.585528	2.468568
1861	641637	896518	10.66413	1.5	2.062	5	10	0.90	9.98	1.50	10.6641	0.965755973921238		23	0.424475	0.185051	0.982729		5.625977	2.72783
1862	641639	896529	10.52492	0.5	5.801	5	10	0.90	9.98	0.50	10.5249	0.966634169523173		23	0.424475	0.182663	0.983176		5.208849	0.89795
1863	641638	896537	10.01449	0.4	7.544	5	10	0.90	9.98	0.40	10.0145	0.969759754014692		23	0.424475	0.173897	0.984764		5.167619	0.684991
1864	641639	896549	9.479984	1.1	3.057	5	10	0.90	9.98	1.10	9.4800	0.972872908037908		23	0.424475	0.164703	0.986343		5.462433	1.786991
1865	641630	896549	8.95907	0.9	3.886	5	10	0.90	9.98	0.90	8.9591	0.975748523122649		23	0.424475	0.155729	0.9878		5.379472	1.38446
1866	641629	896539	9.218678	0.9	3.779	5	10	0.90	9.98	0.90	9.2187	0.974335005741863		23	0.424475	0.160203	0.987084		5.378923	1.423204
1867	641627	896529	9.732738	0.7	4.539	5	10	0.90	9.98	0.70	9.7327	0.971421228885941		23	0.424475	0.169053	0.985607		5.293836	1.166336
1868	641629	896519	10.0058	1.2	2.680	5	10	0.90	9.98	1.20	10.0058	0.969811678373717		23	0.424475	0.173748	0.98479		5.502885	2.053262
1869	641629	896509	9.970716	1.4	2.340	5	10	0.90	9.98	1.40	9.9707	0.970020872144786		23	0.424475	0.173145	0.984896		5.586825	2.387416
1870	641628	896498	9.817577	0.6	5.210	5	10	0.90	9.98	0.60	9.8176	0.970925729075276		23	0.424475	0.170512	0.985356		5.251731	1.008089
1871	641628	896488	9.727332	1.4	2.397	5	10	0.90	9.98	1.40	9.7273	0.971452662406147		23	0.424475	0.16896	0.985623		5.587691	2.331426
1872	641628	896477	9.831853	1	3.221	5	10	0.90	9.98	1.00	9.8319	0.970841944417381		23	0.424475	0.170757	0.985313		5.419516	1.682494
1873	641628	896468	9.818479	0.1	30.006	5	10	0.90	9.98	0.10	9.8185	0.970920438773027		23	0.424475	0.170527	0.985353		5.041955	0.16803
1874	641628	896459	9.195148	0.2	16.115	5	10	0.90	9.98	0.20	9.1951	0.974464729243331		23	0.424475	0.159798	0.98715		5.084216	0.315488
1875	641618	896460	8.443747	2.2	1.856	5	10	0.90	9.98	2.20	8.4437	0.978438506543645		23	0.424475	0.146838	0.989161		5.930156	3.195427
1876	641619	896470	8.73102	0.2	16.944	5	10	0.90	9.98	0.20	8.7310	0.976957983563439		23	0.424475	0.151796	0.988412		5.084432	0.300074
1877	641620	896479	8.677429	0.8	4.474	5	10	0.90	9.98	0.80	8.6774	0.977237819770929		23	0.424475	0.150871	0.988553		5.337824	1.193156
1878	641619	896490	8.358509	1.4	2.777	5	10	0.90	9.98	1.40	8.3585	0.978868550368497		23	0.424475	0.145367	0.989378		5.592178	2.013515
1879	641619	896500	8.204325	1.8	2.266	5	10	0.90	9.98	1.80	8.2043	0.979635669120623		23	0.424475	0.142704	0.989765		5.761968	2.542377
1880	641620	896510	8.339197	0.4	9.006	5	10	0.90	9.98	0.40	8.3392	0.978965394598527		23	0.424475	0.145033	0.989427		5.16921	0.573999
1881	641619	896518	8.684934	1	3.633	5	10	0.90	9.98	1.00	8.6849	0.977198731441709		23	0.424475	0.151001	0.988534		5.422263	1.492695
1882	641619	896529	8.710486	1.1	3.319	5	10	0.90	9.98	1.10	8.7105	0.977065403279501		23	0.424475	0.151442	0.988466		5.464425	1.646645
1883	641619	896539	8.485672	0.8	4.572	5	10	0.90	9.98	0.80	8.4857	0.978225431794432		23	0.424475	0.147562	0.989053		5.338165	1.167574
1884	641619	896550	8.401284	0.8	4.617	5	10	0.90	9.98	0.80	8.4013	0.978653271074716		23	0.424475	0.146105	0.989269		5.338313	1.156299
1885	641608	896547	8.171441	1.2	3.262	5	10	0.90	9.98	1.20	8.1714	0.979797481602776		23	0.424475	0.142136	0.989847		5.508063	1.68831
1886	641609	896539	8.207942	0.7	5.355	5	10	0.90	9.98	0.70	8.2079	0.979617832345823		23	0.424475	0.142766	0.989756		5.296316	0.989126
1887	641608	896530	8.516704	1.1	3.392	5	10	0.90	9.98	1.10	8.5167	0.978067058716983		23	0.424475	0.148098	0.988973		5.464902	1.611111
1888	641608	896518	8.445765	0.6	6.027	5	10	0.90	9.98	0.60	8.4458	0.978428273964920		23	0.424475	0.146873	0.989155		5.253676	0.871682
1889	641608	896510	7.598029	0.6	6.682	5	10	0.90	9.98	0.60	7.5980	0.982517265517150		23	0.424475	0.132222	0.99122		5.254736	0.786368
1890	641607	896498	7.322002	0.5	8.247	5	10	0.90	9.98	0.50	7.3220	0.983757646066264		23	0.424475	0.127445	0.991846		5.212548	0.632031
1891	641608	896487	7.556304	1.6	2.723	5	10	0.90	9.98	1.60	7.5563	0.982707641598780		23	0.424475	0.1315	0.991316		5.679429	2.085736
1892	641608	896478	7.979783	0.8	4.854	5	10	0.90	9.98	0.80	7.9798	0.980727987805968		23	0.424475	0.138824	0.990317		5.33903	1.099836
1893	641607	896468	8.247963	0.4	9.103	5	10	0.90	9.98	0.40	8.2480	0.979419963637058		23	0.424475	0.143457	0.989656		5.169289	0.567894
1894	641608	896458	8.049556	0.6	6.316	5	10	0.90	9.98	0.60	8.0496	0.980391726004972		23	0.424475	0.14003	0.990147		5.254185	0.831899
1895	641599	896459	7.963717	1	3.953	5	10	0.90	9.98	1.00	7.9637	0.980805011950736		23	0.424475	0.138546	0.990356		5.423821	1.372098
1896	641599	896469	8.054625	0.6	6.312	5	10	0.90	9.98	0.60	8.0546	0.980367185569840		23	0.424475	0.140117	0.990135		5.254179	0.832409
1897	641599	896478	7.791034	0.2	18.930	5	10	0.90	9.98	0.20	7.7910	0.981623342058686		23	0.424475	0.135561	0.990769		5.084835	0.268618
1898	641598	896489	7.517689	2	2.255	5	10	0.90	9.98	2.00	7.5177	0.982882915544355		23	0.424475	0.130832	0.991405		5.849438	2.594154
1899	641600	896499	7.453352	1.5	2.922	5	10	0.90	9.98	1.50	7.4534	0.983172993201087		23	0.424475	0.129719	0.991551		5.637266	1.929344
1900	641599	896510	8.02966	0.6	6.331	5	10	0.90	9.98	0.60	8.0297	0.980487902681922		23	0.424475	0.139686	0.990196		5.25421	0.829897
1901	641598	896520	9.011066	0.7	4.890	5	10	0.90	9.98	0.70	9.0111	0.975468539706444		23	0.424475	0.156625	0.987658		5.29506	1.082845
1902	641599	896530	8.662486	1.3	2.867	5	10	0.90	9.98	1.30	8.6625	0.977315549941014		23	0.424475	0.150614	0.988593		5.549007	1.935641
1903	641599	896539	8.137118	1	3.871	5	10	0.90	9.98	1.00	8.1371	0.979965700693656		23	0.424475	0.141543	0.989932		5.423458	1.401175
1904	641598	896548	8.118014	0.7	5.412	5	10	0.90	9.98	0.70	8.1180	0.980059032108276		23	0.424475	0.141212	0.989979		5.296449	0.978582
1905	642878	896649	8.219466	1.1	3.512	5	10	0.90	9.98	1.10	8.2195	0.979560952224561		23	0.424475	0.142965	0.989728		5.465612	1.556463
1906	642888	896649	9.926682	1.2	2.701	5	10	0.90	9.98	1.20	9.9267	0.970282434015872		23	0.424475	0.172388	0.985029		5.503129	2.037685
1907	642898	896649	12.07573	0.9	2.918	5	10	0.90	9.98	0.90	12.0757	0.956233534279628		23	0.424475	0.209204	0.977872		5.371883	1.841176
1908	642909	896646	12.02578	1.3	2.090	5	10	0.90	9.98	1.30	12.0258	0.956589534420281		23	0.424475	0.208352	0.978054		5.537364	2.649131
1909	642919	896649	11.44731	1.3	2.191	5	10	0.90	9.98	1.30	11.4473	0.960610969871523		23	0.424475	0.198467	0.980108		5.539623	2.528743
1910	642928	896649	10.6612	1.1	2.730	5	10	0.90	9.98	1.10	10.6612	0.965774570977718		23	0.424475	0.185001	0.982738		5.459059	1.999885
1911	642938	896649	9.399369	0.9	3.709	5	10	0.90	9.98	0.90	9.3994	0.973328179064022		23	0.424475	0.163315	0.986574		5.378531	1.450102
1912	642948	896649	8.395747	1.3	2.955	5	10	0.90	9.98	1.30	8.3957	0.978681197989991		23	0.424475	0.14601	0.989283		5.549774	1.877783
1913	642958	896649	8.123063	2.1	2.005	5	10	0.90	9.98	2.10	8.1231	0.980034386282906		23	0.424475	0.1413	0.989967		5.889325	2.937523
1914	642968	896649	8.156468	1.8	2.279	5	10	0.90	9.98	1.80	8.1565	0.979870949882161		23	0.424475	0.141877	0.989884		5.762151	2.527951
1915	642968	896659	8.079947	1.8	2.300	5	10	0.90	9.98	1.80	8.0799	0.980244369541952		23	0.424475	0.140555	0.990073		5.762442	2.50487
1916	642958	896659	8.229476	2.2	1.903	5	10	0.90	9.98	2.20	8.2295	0.979511481921411		23	0.424475	0.143138	0.989703		5.931176	3.116612
1917	642948	896659	8.484564	1.4	2.737	5	10	0.90	9.98	1.40	8.4846	0.978231076143361		23	0.424475	0.147543	0.989056		5.591792	2.042995
1918	642938	896659	9.032009	0.9	3.855	5	10	0.90	9.98	0.90	9.0320	0.975355325167086		23	0.424475	0.156986	0.987601		5.379319	1.395357
1919	642928	896659	9.574659	0.9	3.643	5	10	0.90	9.98	0.90	9.5747	0.972333452783979		23	0.424475	0.166333	0.98607		5.378144	1.47614
1920	642918	896659	10.05066	1.6	2.062	5	10	0.90	9.98	1.60	10.0507	0.969543167247248		23	0.424475	0.174519	0.984654		5.670327	2.749451
1921	642908	896659	11.01461	1.9	1.625	5	10	0.90	9.98	1.90	11.0146	0.963496345090278		23	0.424475	0.191059	0.981578		5.791049	3.563254
1922	642898	896659	11.89068	1.9	1.510	5	10	0.90	9.98	1.90	11.8907	0.957545452283138		23	0.424475	0.206045	0.978543		5.786163	3.830852
1923	642888	896659	10.56724	1.6	1.965	5	10	0.90	9.98	1.60	10.5672	0.966368361797581		23	0.424475	0.183389	0.98304		5.668132	2.884465
1924	642878	896659	8.775098	1.9	2.025	5	10	0.90	9.98	1.90	8.7751	0.976726570399350		23	0.424475	0.152556	0.988295		5.801911	2.864642
1925	642878	896669	8.596372	1.4	2.702	5	10	0.90	9.98	1.40	8.5964	0.977657901625909		23	0.424475	0.149473	0.988766		5.591445	2.069109
1926	642878	896679	8.825465	1	3.576	5	10	0.90	9.98	1.00	8.8255	0.976460757904882		23	0.424475	0.153425	0.98816		5.421944	1.516085
1927	642878	896689	8.822631	0.8	4.402	5	10	0.90	9.98	0.80	8.8226	0.976475753486975		23	0.424475	0.153376	0.988168		5.33756	1.212491
1928	642878	896699	8.960084	0.3	11.107	5	10	0.90	9.98	0.30	8.9601	0.975743078006662		23	0.424475	0.155746	0.987797		5.12649	0.461537
1929	642878	896709	9.11612	0.6	5.596	5	10	0.90	9.98	0.60	9.1161	0.974898076054934		23	0.424475	0.158436	0.987369		5.252761	0.938608
1930	642878	896719	9.171589	0.8	4.240	5	10	0.90	9.98	0.80	9.1716	0.974594291950089		23	0.424475	0.159392	0.987215		5.33691	1.258831
1931	642878	896729	9.41207	0.5	6.459	5	10	0.90	9.98	0.50	9.4121	0.973256699158109		23	0.424475	0.163534	0.986538		5.21028	0.806661
1932	642878	896739	9.980163	0.4	7.569	5	10	0.90	9.98	0.40	9.9802	0.969964612287156		23	0.424475	0.173307	0.984868		5.167655	0.682739
1933	642888	896739	10.14743	0.4	7.449	5	10	0.90	9.98	0.40	10.1474	0.968960027204316		23	0.424475	0.176182	0.984358		5.167481	0.693703
1934	642888	896729	9.895404	0.2	15.015	5	10	0.90	9.98	0.20	9.8954	0.970467550397776		23	0.424475	0.17185	0.985123		5.083871	0.338587
1935	642888	896719	9.847742	0.3	10.140	5	10	0.90	9.98	0.30	9.8477	0.970748555711017		23	0.424475	0.171031	0.985266		5.125843	0.505532
1936	642888	896709	9.837577	0.2	15.100	5	10	0.90	9.98	0.20	9.8376	0.970808317896818		23	0.424475	0.170856	0.985296		5.0839	0.336687
1937	642888	896699	9.560658	0.4	7.889	5	10	0.90	9.98	0.40	9.5607	0.972413555228039		23	0.424475	0.166092	0.98611		5.168078	0.655139
1938	642888	896689	9.136007	1.1	3.168	5	10	0.90	9.98	1.10	9.1360	0.974789366658261		23	0.424475	0.158779	0.987314		5.463344	1.724408
1939	642888	896679	8.951897	1	3.527	5	10	0.90	9.98	1.00	8.9519	0.975787024658324		23	0.424475	0.155605	0.987819		5.421653	1.537098
1940	642888	896669	9.376095	0.8	4.150	5	10	0.90	9.98	0.80	9.3761	0.973458921257862		23	0.424475	0.162914	0.98664		5.336517	1.285903
1941	642899	896669	9.84034	1	3.218	5	10	0.90	9.98	1.00	9.8403	0.970792079501109		23	0.424475	0.170903	0.985288		5.419494	1.683889
1942	642898	896678	9.055584	1	3.488	5	10	0.90	9.98	1.00	9.0556	0.975227578514042		23	0.424475	0.157393	0.987536		5.421411	1.554308
1943	642898	896689	9.373463	0.4	8.041	5	10	0.90	9.98	0.40	9.3735	0.973473686908193		23	0.424475	0.162869	0.986648		5.168261	0.642777
1944	642898	896699	9.985478	1	3.173	5	10	0.90	9.98	1.00	9.9855	0.969932937324742		23	0.424475	0.173399	0.984852		5.419123	1.707719
1945	642898	896709	10.29286	0.1	28.679	5	10	0.90	9.98	0.10	10.2929	0.968073598610509		23	0.424475	0.17868	0.983907		5.041832	0.175804
1946	642898	896719	10.23566	0.5	5.958	5	10	0.90	9.98	0.50	10.2357	0.968423685925804		23	0.424475	0.177697	0.984085		5.209235	0.874346
1947	642898	896729	10.1062	0.5	6.031	5	10	0.90	9.98	0.50	10.1062	0.969209135529855		23	0.424475	0.175473	0.984484		5.209405	0.863753
1948	642898	896739	10.1894	0.4	7.420	5	10	0.90	9.98	0.40	10.1894	0.968705450201305		23	0.424475	0.176903	0.984228		5.167437	0.69645
1949	642908	896739	10.13381	0.6	5.053	5	10	0.90	9.98	0.60	10.1338	0.969042425607657		23	0.424475	0.175948	0.9844		5.251243	1.039217
1950	642908	896729	10.01301	0.5	6.085	5	10	0.90	9.98	0.50	10.0130	0.969768600342777		23	0.424475	0.173872	0.984768		5.209526	0.856117
1951	642908	896719	10.16103	0.5	6.000	5	10	0.90	9.98	0.50	10.1610	0.968877644030788		23	0.424475	0.176415	0.984316		5.209333	0.868242
1952	642908	896709	10.29209	0.3	9.719	5	10	0.90	9.98	0.30	10.2921	0.968078323718312		23	0.424475	0.178666	0.98391		5.125496	0.527375
1953	642908	896699	10.15942	0.3	9.841	5	10	0.90	9.98	0.30	10.1594	0.968887402259361		23	0.424475	0.176388	0.984321		5.125601	0.520866
1954	642908	896689	9.582636	0.4	7.871	5	10	0.90	9.98	0.40	9.5826	0.972287764364299		23	0.424475	0.16647	0.986047		5.168056	0.656588
1955	642908	896679	9.132053	1.4	2.548	5	10	0.90	9.98	1.40	9.1321	0.974810998849565		23	0.424475	0.15871	0.987325		5.589723	2.193783
1956	642908	896669	9.405248	1	3.362	5	10	0.90	9.98	1.00	9.4052	0.973295104228577		23	0.424475	0.163416	0.986557		5.420576	1.612196
1957	642918	896669	9.068452	0.1	32.395	5	10	0.90	9.98	0.10	9.0685	0.975157714467539		23	0.424475	0.157614	0.987501		5.042138	0.155644
1958	642918	896679	9.277095	0.9	3.756	5	10	0.90	9.98	0.90	9.2771	0.974011563142741		23	0.424475	0.161209	0.98692		5.378797	1.431906
1959	642918	896689	9.898709	0.9	3.528	5	10	0.90	9.98	0.90	9.8987	0.970448016510209		23	0.424475	0.171907	0.985113		5.377411	1.52413
1960	642918	896699	10.3482	0.6	4.953	5	10	0.90	9.98	0.60	10.3482	0.967733119231405		23	0.424475	0.17963	0.983734		5.250903	1.060248
1961	642918	896709	10.25248	0.5	5.948	5	10	0.90	9.98	0.50	10.2525	0.968320934435113		23	0.424475	0.177986	0.984033		5.209213	0.875721
1962	642918	896719	10.04813	0.3	9.945	5	10	0.90	9.98	0.30	10.0481	0.969558341294249		23	0.424475	0.174475	0.984662		5.125688	0.515398
1963	642918	896729	9.941915	0.3	10.047	5	10	0.90	9.98	0.30	9.9419	0.970192075695648		23	0.424475	0.17265	0.984983		5.12577	0.510171
1964	642918	896739	9.981727	0.5	6.103	5	10	0.90	9.98	0.50	9.9817	0.969955293244103		23	0.424475	0.173334	0.984863		5.209566	0.853552
1965	642928	896739	9.726432	0.3	10.261	5	10	0.90	9.98	0.30	9.7264	0.971457893881531		23	0.424475	0.168944	0.985626		5.125935	0.499547
1966	642928	896729	9.859994	0.6	5.188	5	10	0.90	9.98	0.60	9.8600	0.970676444841793		23	0.424475	0.171241	0.985229		5.251667	1.012271
1967	642928	896719	9.965816	0.5	6.113	5	10	0.90	9.98	0.50	9.9658	0.970050033056318		23	0.424475	0.173061	0.984911		5.209587	0.852247
1968	642928	896709	10.20295	0.5	5.976	5	10	0.90	9.98	0.50	10.2030	0.968623045258082		23	0.424475	0.177135	0.984186		5.209278	0.871671
1969	642928	896689	10.09605	0.8	3.864	5	10	0.90	9.98	0.80	10.0961	0.969270311951611		23	0.424475	0.175299	0.984515		5.335069	1.380675
1970	642928	896679	9.38746	1.1	3.086	5	10	0.90	9.98	1.10	9.3875	0.973395117161602		23	0.424475	0.16311	0.986608		5.462681	1.770182
1971	642928	896669	9.04316	0.2	16.377	5	10	0.90	9.98	0.20	9.0432	0.975294940981047		23	0.424475	0.157178	0.98757		5.084288	0.310449
1972	642938	896669	8.939925	0.9	3.894	5	10	0.90	9.98	0.90	8.9399	0.975851218693399		23	0.424475	0.155399	0.987852		5.379512	1.381599
1973	642938	896679	9.338042	1	3.386	5	10	0.90	9.98	1.00	9.3380	0.973672011618243		23	0.424475	0.162259	0.986748		5.420739	1.601088
1974	642938	896689	9.91567	0.5	6.143	5	10	0.90	9.98	0.50	9.9157	0.970347671623499		23	0.424475	0.172199	0.985062		5.209651	0.848131
1975	642938	896699	10.04623	0.2	14.798	5	10	0.90	9.98	0.20	10.0462	0.969569734415761		23	0.424475	0.174443	0.984667		5.083793	0.343536
1976	642938	896709	9.795232	0.4	7.706	5	10	0.90	9.98	0.40	9.7952	0.971056635243151		23	0.424475	0.170127	0.985422		5.167843	0.67059
1977	642938	896719	9.630913	0.4	7.833	5	10	0.90	9.98	0.40	9.6309	0.972010475632258		23	0.424475	0.167301	0.985906		5.168008	0.659771

1978	642938	896729	9.552979	0.6	5.349	5	10	0.90	9.98	0.60	9.5530	0.972457440366805		23	0.424475	0.16596	0.986133		5.252128	0.981948
1979	642938	896739	9.434199	0.6	5.414	5	10	0.90	9.98	0.60	9.4342	0.973131937230936		23	0.424475	0.163915	0.986474		5.252303	0.970187
1980	642948	896739	9.257656	0.8	4.201	5	10	0.90	9.98	0.80	9.2577	0.974119411659225		23	0.424475	0.160874	0.986975		5.336746	1.270232
1981	642948	896729	9.189846	0.4	8.196	5	10	0.90	9.98	0.40	9.1898	0.974493915573011		23	0.424475	0.159706	0.987165		5.168438	0.630625
1982	642948	896719	9.111876	0.7	4.838	5	10	0.90	9.98	0.70	9.1119	0.974921245635934		23	0.424475	0.158363	0.987381		5.294895	1.09455
1983	642948	896709	9.126132	0.7	4.830	5	10	0.90	9.98	0.70	9.1261	0.974843375513093		23	0.424475	0.158608	0.987342		5.294871	1.096205
1984	642948	896699	9.364894	0.4	8.048	5	10	0.90	9.98	0.40	9.3649	0.973521731735395		23	0.424475	0.162721	0.986672		5.168269	0.642211
1985	642948	896689	9.428554	0.3	10.573	5	10	0.90	9.98	0.30	9.4286	0.973163790215333		23	0.424475	0.163818	0.986491		5.126156	0.484814
1986	642948	896679	9.066437	1.3	2.742	5	10	0.90	9.98	1.30	9.0664	0.975168660808925		23	0.424475	0.15758	0.987506		5.547801	2.022941
1987	642948	896669	8.686447	1	3.632	5	10	0.90	9.98	1.00	8.6864	0.977190847309383		23	0.424475	0.151027	0.98853		5.422259	1.492947
1988	642958	896669	8.552707	1.2	3.121	5	10	0.90	9.98	1.20	8.5527	0.977882613017987		23	0.424475	0.148719	0.988879		5.50707	1.764784
1989	642958	896679	8.906281	0.9	3.908	5	10	0.90	9.98	0.90	8.9063	0.976031173347222		23	0.424475	0.154819	0.987943		5.379582	1.376568
1990	642958	896689	9.18076	0.6	5.558	5	10	0.90	9.98	0.60	9.1808	0.974543894188738		23	0.424475	0.15955	0.98719		5.252669	0.945035
1991	642958	896699	9.055602	0.6	5.633	5	10	0.90	9.98	0.60	9.0556	0.975227480853866		23	0.424475	0.157393	0.987536		5.252846	0.932587
1992	642958	896709	8.866717	0.7	4.967	5	10	0.90	9.98	0.70	8.8667	0.976241952813694		23	0.424475	0.154136	0.98805		5.295294	1.066061
1993	642958	896719	8.92858	0.1	32.886	5	10	0.90	9.98	0.10	8.9286	0.975911974056694		23	0.424475	0.155203	0.987883		5.042171	0.153323
1994	642958	896729	9.092786	0.8	4.275	5	10	0.90	9.98	0.80	9.0928	0.975025336183394		23	0.424475	0.158034	0.987434		5.337059	1.248383
1995	642958	896739	9.254485	0.6	5.515	5	10	0.90	9.98	0.60	9.2545	0.974136983813124		23	0.424475	0.16082	0.986984		5.252564	0.952359
1996	642968	896739	9.263942	0.4	8.132	5	10	0.90	9.98	0.40	9.2639	0.974084560505465		23	0.424475	0.160983	0.986957		5.168367	0.635532
1997	642968	896729	9.04484	1	3.492	5	10	0.90	9.98	1.00	9.0448	0.975285837309751		23	0.424475	0.157207	0.987566		5.421436	1.552526
1998	642968	896719	8.835292	0.9	3.938	5	10	0.90	9.98	0.90	8.8353	0.976408724053222		23	0.424475	0.153595	0.988134		5.379729	1.365948
1999	642968	896709	8.831251	0.4	8.518	5	10	0.90	9.98	0.40	8.8313	0.976430127888243		23	0.424475	0.153525	0.988145		5.168772	0.606819
2000	642968	896699	9.031701	0.7	4.879	5	10	0.90	9.98	0.70	9.0317	0.975356992007024		23	0.424475	0.156981	0.987602		5.295027	1.085242
2001	642968	896689	9.180685	1.2	2.913	5	10	0.90	9.98	1.20	9.1807	0.974544306536460		23	0.424475	0.159548	0.98719		5.505339	1.890055
2002	642968	896679	8.94555	1.6	2.309	5	10	0.90	9.98	1.60	8.9456	0.975821067712493		23	0.424475	0.155496	0.987837		5.674668	2.45767
2003	642968	896669	8.471661	1.3	2.930	5	10	0.90	9.98	1.30	8.4717	0.978296753644156		23	0.424475	0.14732	0.989089		5.549558	1.894266
2004	642926	896764	9.649646	0.5	6.306	5	10	0.90	9.98	0.50	9.6496	0.971902517827376		23	0.424475	0.167623	0.985851		5.209987	0.826257
2005	642960	896775	9.563794	0.8	4.071	5	10	0.90	9.98	0.80	9.5638	0.972395623367913		23	0.424475	0.166146	0.986101		5.33615	1.310691
2006	642969	896771	9.518297	0.6	5.367	5	10	0.90	9.98	0.60	9.5183	0.972655223506466		23	0.424475	0.165363	0.986233		5.25218	0.978516
2007	642982	896764	9.52675	0.8	4.087	5	10	0.90	9.98	0.80	9.5268	0.972607081905144		23	0.424475	0.165508	0.986208		5.336223	1.305804
2008	643005	896805	8.981118	0.8	4.327	5	10	0.90	9.98	0.80	8.9811	0.975629992349481		23	0.424475	0.156109	0.98774		5.337268	1.23356
2009	642987	896812	9.230356	0.4	8.161	5	10	0.90	9.98	0.40	9.2304	0.974270504809011		23	0.424475	0.160404	0.987051		5.168399	0.633309
2010	642973	896819	8.983205	0.3	11.080	5	10	0.90	9.98	0.30	8.9832	0.975618757972081		23	0.424475	0.156145	0.987734		5.126474	0.462689
2011	643000	896852	9.971352	0.1	29.564	5	10	0.90	9.98	0.10	9.9714	0.970017086169256		23	0.424475	0.173156	0.984894		5.041916	0.17054
2012	643012	896846	10.60584	0.1	27.869	5	10	0.90	9.98	0.10	10.6058	0.966125031531831		23	0.424475	0.184052	0.982917		5.041748	0.180907
2013	643024	896837	10.46862	0.3	9.562	5	10	0.90	9.98	0.30	10.4686	0.966986205680853		23	0.424475	0.181697	0.983355		5.125355	0.536018
2014	643063	896871	6.483029	1.1	4.432	5	10	0.90	9.98	1.10	6.4830	0.987251577366471		23	0.424475	0.112909	0.993605		5.469267	1.234056
2015	643045	896882	5.206188	0.3	18.918	5	10	0.90	9.98	0.30	5.2062	0.991766227690727		23	0.424475	0.09074	0.995875		5.128567	0.271097
2016	643058	896919	5.226867	0.6	9.658	5	10	0.90	9.98	0.60	5.2269	0.991700870541584		23	0.424475	0.0911	0.995842		5.257118	0.544324
2017	643146	896877	3.671772	0.7	11.850	5	10	0.90	9.98	0.70	3.6718	0.995898794402741		23	0.424475	0.064041	0.997947		5.30124	0.447364
2018	643197	896840	2.670007	3.5	3.997	5	10	0.90	9.98	3.50	2.6700	0.997829972981084		23	0.424475	0.046584	0.998914		6.509122	1.628654
2019	643228	896823	3.895369	2	4.323	5	10	0.90	9.98	2.00	3.8954	0.995384883136926		23	0.424475	0.067935	0.99769		5.860242	1.355554
2020	643255	896869	3.304312	2.9	3.745	5	10	0.90	9.98	2.90	3.3043	0.996677727165181		23	0.424475	0.057639	0.998337		6.248971	1.668757
2021	643286	896916	4.080899	1	7.649	5	10	0.90	9.98	1.00	4.0809	0.994935554416847		23	0.424475	0.071165	0.997465		5.429927	0.709845
2022	643245	896935	3.511133	1.6	5.817	5	10	0.90	9.98	1.60	3.5111	0.996249358219145		23	0.424475	0.061242	0.998123		5.688791	0.97804
2023	643215	896889	3.096667	1.2	8.523	5	10	0.90	9.98	1.20	3.0967	0.997081761141484		23	0.424475	0.054021	0.99854		5.517025	0.647302
2024	643158	896924	3.59762	0.9	9.558	5	10	0.90	9.98	0.90	3.5976	0.996062555142023		23	0.424475	0.062749	0.998029		5.387373	0.563629
2025	643196	896957	1.907179	1.7	10.140	5	10	0.90	9.98	1.70	1.9072	0.998892414547951		23	0.424475	0.03328	0.999446		5.733782	0.565454
2026	643167	896975	2.212544	0.7	19.634	5	10	0.90	9.98	0.70	2.2125	0.998509531911644		23	0.424475	0.038607	0.999254		5.30203	0.270045
2027	643042	896962	9.128923	0.3	10.909	5	10	0.90	9.98	0.30	9.1289	0.974828116552636		23	0.424475	0.158656	0.987334		5.126371	0.469941
2028	643170	897017	3.802457	0.7	11.445	5	10	0.90	9.98	0.70	3.8025	0.995602096786643		23	0.424475	0.066317	0.997799		5.30115	0.463195
2029	643149	897028	2.085922	0.1	138.647	5	10	0.90	9.98	0.10	2.0859	0.998675173572297		23	0.424475	0.036398	0.999337		5.043154	0.036374
2030	643129	897040	0.907344	0.1	318.515	5	10	0.90	9.98	0.10	0.9073	0.999749237625432		23	0.424475	0.015835	0.999875		5.043201	0.015833
2031	643111	897053	2.723986	0.01	1054.185	5	10	0.90	9.98	0.01	2.7240	0.997741410825848		23	0.424475	0.047525	0.99887		5.004311	0.004747
2032	643088	897064	6.602971	0.1	44.146	5	10	0.90	9.98	0.10	6.6030	0.986777607973995		23	0.424475	0.114989	0.993367		5.04264	0.114226
2033	643141	897085	6.386504	0.1	45.617	5	10	0.90	9.98	0.10	6.3865	0.987626808713963		23	0.424475	0.111235	0.993794		5.042677	0.110545
2034	643153	897078	5.091114	0.1	57.053	5	10	0.90	9.98	0.10	5.0911	0.992125244376248		23	0.424475	0.08874	0.996055		5.042871	0.08839
2035	643163	897065	5.110924	0.4	14.571	5	10	0.90	9.98	0.40	5.1109	0.992064005273385		23	0.424475	0.089084	0.996024		5.171474	0.35492
2036	643195	897097	6.035341	0.01	478.607	5	10	0.90	9.98	0.01	6.0353	0.988945184824440		23	0.424475	0.105142	0.994457		5.004273	0.010456
2037	643180	897109	5.908443	0.01	488.736	5	10	0.90	9.98	0.01	5.9084	0.989403538966112		23	0.424475	0.102939	0.994688		5.004275	0.010239
2038	643168	897120	8.39283	0.01	346.563	5	10	0.90	9.98	0.01	8.3928	0.978695903244091		23	0.424475	0.145959	0.989291		5.004229	0.01444
2039	643198	897148	7.132825	0.4	10.491	5	10	0.90	9.98	0.40	7.1328	0.984581819124809		23	0.424475	0.12417	0.992261		5.170181	0.492836
2040	643209	897139	8.035444	0.1	36.430	5	10	0.90	9.98	0.10	8.0354	0.980459966888262		23	0.424475	0.139786	0.990182		5.042367	0.138413
2041	643223	897126	6.595746	0.01	438.574	5	10	0.90	9.98	0.01	6.5957	0.986806400278315		23	0.424475	0.114863	0.993381		5.004264	0.01141
2042	643243	897120	5.506799	0.01	523.893	5	10	0.90	9.98	0.01	5.5068	0.990790935564197		23	0.424475	0.095964	0.995385		5.004281	0.009552
2043	643268	897136	6.305445	0.01	458.416	5	10	0.90	9.98	0.01	6.3054	0.987937641310258		23	0.424475	0.109829	0.993951		5.004269	0.010916
2044	643269	897147	5.77467	0.2	25.401	5	10	0.90	9.98	0.20	5.7747	0.989876328254888		23	0.424475	0.100616	0.994925		5.085548	0.200212
2045	643270	897160	5.356825	0.01	538.382	5	10	0.90	9.98	0.01	5.3568	0.991284267959618		23	0.424475	0.093358	0.995633		5.004283	0.009295
2046	643268	897168	4.825296	0.1	60.164	5	10	0.90	9.98	0.10	4.8253	0.992924198204132		23	0.424475	0.084118	0.996456		5.042906	0.08382
2047	643268	897178	4.612269	0.4	16.131	5	10	0.90	9.98	0.40	4.6123	0.993533851204288		23	0.424475	0.080412	0.996762		5.171728	0.320608
2048	643268	897188	5.042779	0.1	57.594	5	10	0.90	9.98	0.10	5.0428	0.992273675857509		23	0.424475	0.0879	0.996129		5.042878	0.087559
2049	643270	897198	4.849922	1	6.444	5	10	0.90	9.98	1.00	4.8499	0.992851963916765		23	0.424475	0.084546	0.99642		5.429027	0.842433
2050	643267	897207	4.575737	1	6.827	5	10	0.90	9.98	1.00	4.5757	0.993635660273489		23	0.424475	0.079777	0.996813		5.429365	0.795225
2051	643270	897217	4.846557	0.9	7.109	5	10	0.90	9.98	0.90	4.8466	0.992861855795932		23	0.424475	0.084488	0.996425		5.386128	0.757669
2052	643271	897227	5.055171	1.5	4.286	5	10	0.90	9.98	1.50	5.0552	0.992235754950170		23	0.424475	0.088115	0.99611		5.64314	1.316583
2053	643319	897184	5.46222	2	3.090	5	10	0.90	9.98	2.00	5.4622	0.990938981550730		23	0.424475	0.095189	0.995459		5.8564	1.895143
2054	643307	897182	5.500416	1.8	3.360	5	10	0.90	9.98	1.80	5.5004	0.990812206290077		23	0.424475	0.095853	0.995396		5.770661	1.717409
2055	643296	897183	5.439166	0.01	530.328	5	10	0.90	9.98	0.01	5.4392	0.991015077100557		23	0.424475	0.094789	0.995497		5.004282	0.009436
2056	643294	897176	5.523686	0.5	10.884	5	10	0.90	9.98	0.50	5.5237	0.990734543786155		23	0.424475	0.096257	0.995356		5.214056	0.479051
2057	643286	897184	5.329217	0.1	54.531	5	10	0.90	9.98	0.10	5.3292	0.991373616160869		23	0.424475	0.092878	0.995677		5.042839	0.092477
2058	643278	897184	5.226476	0.1	55.591	5	10	0.90	9.98	0.10	5.2265	0.991702108695610		23	0.424475	0.091093	0.995842		5.042853	0.090714
2059	643267	897184	5.042779	0.01	571.531	5	10	0.90	9.98	0.01	5.0428	0.992273675857509		23	0.424475	0.0879	0.996129		5.004288	0.008756
2060	643257	897183	4.664438	0.01	617.428	5	10	0.90	9.98	0.01	4.6644	0.993387072890613		23	0.424475	0.08132	0.996688		5.004293	0.008105
2061	643248	897184	4.151988	0.5	14.443	5	10	0.90	9.98	0.50	4.1520	0.994757884595092		23	0.424475	0.072402	0.997375		5.214925	0.361062
2062	643239	897185	3.826292	1.1	7.473	5	10	0.90	9.98	1.10	3.8263	0.995546871338912		23	0.424475	0.066732	0.997771		5.47321	0.732413
2063	643229	897184	4.115367	1.8	4.481	5	10	0.90	9.98	1.80	4.1154	0.994849790500421		23	0.424475	0.071765	0.997422		5.773802	1.288439
2064	643218	897183	4.675095	2.3	3.205	5	10	0.90	9.98	2.30	4.6751	0.993356887980106		23	0.424475	0.081505	0.996673		5.987263	1.868385
2065	643217	897146	6.89187	0.01	420.071	5	10	0.90	9.98	0.01	6.8919	0.985600967170222		23	0.424475	0.119996	0.992774		5.004259	0.011913
2066	643856	897100	1.767652	0.01	1623.104	5	10	0.90	9.98	0.01	1.7677	0.999048496301457		23	0.424475	0.030846	0.999524		5.004317	0.003083
2067	643847	897100	2.634872	0.01	1089.733	5	10	0.90	9.98	0.01	2.6349	0.997886668596682		23	0.424475	0.045971	0.998943		5.004312	0.004592
2068	643838	897099	3.284958	0.2	44.453	5	10	0.90	9.98	0.20	3.2850	0.996716489061276		23	0.424475	0.057302	0.998357		5.086139	0.114416
2069	643827	897099	4.050307	0.1	71.577	5	10	0.90	9.98	0.10	4.0503	0.995011073858397		23	0.424475	0.070632	0.997502		5.042996	0.070456
2070	643817	897099	5.287537	0.1	54.956	5	10	0.90	9.98	0.10	5.2875	0.991507641234361		23	0.424475	0.092154	0.995745		5.042845	0.091762
2071	643808	897099	6.147942	0.2	23.880	5	10	0.90	9.98	0.20	6.1479	0.988530437769105		23	0.424475	0.107096	0.994249		5.085432	0.21296
2072	643797	897100	6.228166	0.01	464.013	5	10	0.90	9.98	0.01	6.2282	0.988230341542705		23	0.424475	0.108488	0.994098		5.00427	0.010785
2073	643790	897099	4.89785	1	6.382	5	10	0.90	9.98	1.00	4.8979	0.992710334893976		23	0.424475	0.08538	0.996349		5.428965	0.850678
2074	643838	897078	4.380883	2.9	2.828	5	10	0.90	9.98	2.90	4.3809	0.994165125131541		23	0.424475	0.076386	0.997078		6.245823	2.208732
2075	643837	897088	4.157773	2.5	3.360	5	10	0.90	9.98	2.50	4.1578	0.994743292319093		23	0.424475	0.072503	0.997368		6.07461	1.807809
2076	643839	897110	2.512409	0.01	1142.704	5	10	0.90	9.98	0.01	2.5124	0.998078426310629		23	0.424475	0.043836	0.999039		5.004313	0.004379
2077	643838	897120	1.436049	0.2	101.511	5	10	0.90	9.98	0.20	1.4360	0.999371938299424		23	0.424475	0.025061	0.999686		5.086369	0.050107
2078	643837	897129	1.324165	0.3	74.011	5	10	0.90	9.98	0.30	1.3242	0.999465974960194		23	0.424475	0.023109	0.999733		5.129565	0.069308
2079	643839	897139	1.626593	1.1	17.541	5	10	0.90	9.98	1.10	1.6266	0.999194258271949		23	0.424475	0.028386	0.999597		5.474944	0.312116
2080	643838	897148	1.901149	1.9	9.239	5	10	0.90	9.98	1.90	1.9011	0.998899404699015		23	0.424475	0.033175	0.99945		5.820116	0.629982
2081	643871	897158	4.151694	2.7	3.160	5	10	0.90	9.98	2.70	4.1517	0.994758625651743		23	0.424475	0.072397	0.997376		6.160596	1.949599
2082	643882	897140	3.438827	0.9	9.998	5	10	0.90	9.98	0.90	3.4388	0.996402060573172		23	0.424475	0.059983	0.998199		5.387505	0.538873
2083	643894	897131	3.331033	0.5	17.982	5	10	0.90	9.98	0.50	3.3310	0.996623838213630		23	0.424475	0.058105	0.99831		5.215328	0.290033
2084	643933	897153	4.378036	0.9	7.863	5	10	0.90	9.98	0.90	4.3780	0.994172691715007		23	0.424475	0.076337	0.997082		5.386638	0.685027
2085	643928	897165	4.231995	0.7	10.290	5	10	0.90	9.98	0.70	4.2320	0.994554282606532		23	0.424475	0.073795	0.997273		5.300834	0.515157
2086	643919	897179	5.264482	0.7	8.287	5	10	0.90	9.98	0.70	5.2645	0.991581329373768		23	0.424475	0.091753	0.995782		5.299934	0.639564
2087	643957	897196	4.957207	0.5	12.114	5	10	0.90	9.98	0.50	4.9572	0.992533021238092		23	0.424475	0.086412	0.99626		5.214444	0.430442
2088	643965	897183	4.774372	1	6.546	5	10	0.90	9.98	1.00	4.7744	0.993072415745899		23	0.424475	0.083232	0.99653		5.429122	0.829433
2089	643974	897171	5.411807	2.6	2.504	5	10	0.90	9.98	2.60	5.4118	0.991104969792826		23	0.424475	0.094313	0.995543		6.113506	2.44122
2090	644013	897177	5.990527	0.9	5.764	5	10	0.90	9.98	0.90	5.9905	0.989108148715678		23	0.424475	0.104364	0.994539		5.384668	0.934147
2091	644005	897192	5.581191	0.4	13.356	5	10	0.90	9.98	0.40	5.5812	0.990541235009845		23	0.424475	0.097256	0.995259		5.171211	0.387181
2092	643999	897213	4.981199	0.8	7.721	5	10	0.90	9.98	0.80	4.9812	0.992460751263026		23	0.424475	0.086829	0.996223		5.343086	0.692007
2093	644033	897229	6.495042	0.5	9.277	5	10	0.90	9.98	0.50	6.4950	0.987204490881440		23	0.424475	0.113117	0.993582		5.213293	0.561956
2094	644037	897214	7.457785	0.6	6.805	5	10	0.90	9.98	0.60	7.4578	0.983153084189274		23	0.424475	0.129796	0.991541		5.254901	0.772186
2095	644042	897197	8.397248	0.9	4.138	5	10	0.90	9.98	0.90	8.3972	0.978673629176943		23	0.424475	0.146036	0.989279		5.38061	1.300229
2096	644056	897223	6.752175	0.1	43.188	5	10	0.90	9.98	0.10	6.7522	0.986176096998897		23	0.424475	0.117575	0.993064		5.042614	0.11676
2097	644056	897237	6.191856	0.4	12.056	5	10	0.90	9.98	0.40	6.1919	0.988366641830885		23	0.424475	0.107858	0.994166		5.170835	0.428915
2098	644059	897204	8.753087	0.1	33.524	5	10	0.90	9.98	0.10	8.7531	0.976842271084136		23	0.424475	0.152177	0.988353		5.042211	0.150404
2099	644153	896813	7.564568	0.9	4.583	5	10	0.90	9.98	0.90	7.5646	0.982670017263505		23	0.424475	0.131643	0.991297		5.382164	1.174479
2100	644109	896746	7.59128	0.7	5.779	5	10	0.90	9.98	0.70	7.5913	0.982548128165061		23	0.424475	0.132106	0.991236		5.297202	0.916634
2101	644120	896748	7.418451	0.9	4.671	5	10	0.90	9.98	0.90	7.4185	0.983329332668375		23	0.424475	0.129115	0.99163		5.382421	1.152308
2102	644129	896746	7.254754	0.8	5.329	5	10	0.90	9.98	0.80	7.2548	0.984053038755708		23	0.424475	0.126281	0.991994		5.34018	1.002163
2103	644138	896749	7.353292	1.4	3.148	5	10	0.90	9.98	1.40	7.3533	0.983619293217701		23	0.424475	0.127987	0.991776		5.595052	1.777084
2104	644148	896748	7.682562	0.7	5.712	5	10	0.90	9.98	0.70	7.6826	0.982128434949755		23	0.424475	0.133685	0.991024		5.297075	0.927392
2105	644159	896748	7.541575	0.9	4.596	5	10	0.90	9.98	0.90	7.5416	0.982774600185903		23	0.424475	0.131246	0.99135		5.382205	1.170993
2106	644134	896740	8.03798	0.7	5.465	5	10	0.90	9.98	0.70	8.0380	0.980447712238248		23	0.424475	0.139829	0.990176		5.296567	0.96919
2107	644176	896748	7.90829	0.01	367.205	5	10	0.90	9.98	0.01	7.9083	0.981069580993021		23	0.424475	0.137588	0.99049		5.004239	0.013628
2108	644158	896700	5.458646	0.9	6.319	5	10	0.90	9.98	0.90	5.4586	0.990950799265268		23	0.424475	0.095127	0.995465		5.385385	0.852263
2109	644156	896708	4.98568	0.9	6.912	5	10	0.90	9.98	0.90	4.9857	0.992447215076257		23	0.424475	0.086907	0.996216		5.385967	0.779201
2110	644158	896720	6.494895	0.8	5.941	5	10	0.90	9.98	0.80	6.4949	0.987205067584445		23	0.424475	0.113115	0.993582		5.341269	0.89911
2111	644158	896729	8.022552	0.5	7.543	5	10	0.90	9.98	0.50	8.0226	0.980522206358713		23	0.424475	0.139563	0.990213		5.211849	0.690985
2112	644159	896740	8.192554	0.6	6.208	5	10	0.90	9.98	0.60	8.1926	0.979693663377601		23	0.424475	0.1425	0.989795		5.254004	0.846276
2113	644157	896757	6.545528	0.9	5.282	5	10	0.90	9.98	0.90	6.5455	0.987005668095349		23	0.424475	0.113993	0.993482		5.38385	1.019247
2114	644159	896769	6.020256	0.8	6.402	5	10	0.90	9.98	0.80	6.0203	0.989000174288553		23	0.424475	0.10488	0.994485		5.34189	0.834413
2115	644158	896777	5.919542	0.8	6.509	5	10	0.90	9.98	0.80	5.9195	0.989363832587375		23	0.424475	0.103132	0.994668		5.342015	0.820655
2116	644158	896788	6.288273	1	4.985	5	10	0.90	9.98	1.00	6.2883	0.988002988501138		23	0.424475	0.109531	0.993983		5.426931	1.088719

2117	644159	896799	7.096363	0.9	4.879	5	10	0.90	9.98	0.90	7.0964	0.984738242571461		23	0.424475	0.123538	0.99234		5.382968	1.103329
2118	644189	896747	9.281023	0.9	3.755	5	10	0.90	9.98	0.90	9.2810	0.973989743900047		23	0.424475	0.161277	0.986909		5.378788	1.432491
2119	644200	896748	7.30366	0.8	5.294	5	10	0.90	9.98	0.80	7.3037	0.983838479340964		23	0.424475	0.127128	0.991886		5.340105	1.008772
2120	644210	896748	6.374612	1	4.918	5	10	0.90	9.98	1.00	6.3746	0.987672654745523		23	0.424475	0.111029	0.993817		5.426789	1.103421
2121	644208	896797	6.831363	0.4	10.945	5	10	0.90	9.98	0.40	6.8314	0.985851495203151		23	0.424475	0.118947	0.992901		5.170401	0.472412
2122	644191	896805	9.014744	0.5	6.734	5	10	0.90	9.98	0.50	9.0147	0.975448675413913		23	0.424475	0.156689	0.987648		5.210753	0.773766
2123	644180	896806	8.041334	1	3.916	5	10	0.90	9.98	1.00	8.0413	0.980431499004686		23	0.424475	0.139887	0.990167		5.42366	1.38512
2124	644187	896852	7.596767	0.6	6.683	5	10	0.90	9.98	0.60	7.5968	0.982523038579864		23	0.424475	0.1322	0.991223		5.254738	0.786241
2125	644200	896850	6.969748	0.9	4.966	5	10	0.90	9.98	0.90	6.9697	0.985275326650825		23	0.424475	0.121345	0.99261		5.383177	1.084037
2126	644212	896848	7.214201	0.7	6.075	5	10	0.90	9.98	0.70	7.2142	0.984229882230332		23	0.424475	0.125579	0.992084		5.297711	0.872095
2127	644222	896888	5.892491	1.1	4.870	5	10	0.90	9.98	1.10	5.8925	0.989460478160384		23	0.424475	0.102662	0.994716		5.470317	1.123317
2128	644209	896894	5.886546	1	5.320	5	10	0.90	9.98	1.00	5.8865	0.989481659472580		23	0.424475	0.102559	0.994727		5.42757	1.020182
2129	644194	896897	7.255232	0.8	5.328	5	10	0.90	9.98	0.80	7.2552	0.984050948509315		23	0.424475	0.12629	0.991993		5.340179	1.002227
2130	644196	896925	7.364634	0.9	4.704	5	10	0.90	9.98	0.90	7.3646	0.983569000598139		23	0.424475	0.128183	0.99175		5.382514	1.144134
2131	644217	896924	5.098366	1	6.133	5	10	0.90	9.98	1.00	5.0984	0.992102853407195		23	0.424475	0.088866	0.996044		5.428703	0.885143
2132	644236	896919	4.422262	0.4	16.819	5	10	0.90	9.98	0.40	4.4223	0.994054599626964		23	0.424475	0.077106	0.997023		5.171819	0.307507
2133	643888	897118	3.03268	0.1	95.456	5	10	0.90	9.98	0.10	3.0327	0.997201003877380		23	0.424475	0.052906	0.9986		5.043091	0.052831
2134	643878	897108	3.041185	0.1	95.190	5	10	0.90	9.98	0.10	3.0412	0.997185297339882		23	0.424475	0.053054	0.998592		5.04309	0.052979
2135	643888	897108	3.237125	0.1	89.451	5	10	0.90	9.98	0.10	3.2371	0.996811315690284		23	0.424475	0.056468	0.998404		5.043074	0.056378
2136	643887	897098	3.520058	0.1	82.292	5	10	0.90	9.98	0.10	3.5201	0.996230290389722		23	0.424475	0.061398	0.998113		5.043049	0.061282
2137	643878	897098	3.375816	0.1	85.791	5	10	0.90	9.98	0.10	3.3758	0.996532554321741		23	0.424475	0.058885	0.998265		5.043062	0.058783
2138	643868	897098	2.647408	0.1	109.300	5	10	0.90	9.98	0.10	2.6474	0.997866525801402		23	0.424475	0.04619	0.998933		5.043119	0.04614
2139	643858	897090	3.785723	0.1	76.547	5	10	0.90	9.98	0.10	3.7857	0.995640664313101		23	0.424475	0.066025	0.997818		5.043023	0.065881
2140	643868	897088	2.648482	0.01	1084.149	5	10	0.90	9.98	0.01	2.6485	0.997864795668754		23	0.424475	0.046208	0.998932		5.004312	0.004616
2141	643878	897088	3.372375	0.1	85.879	5	10	0.90	9.98	0.10	3.3724	0.996539611356273		23	0.424475	0.058825	0.998268		5.043062	0.058723
2142	643888	897088	3.685781	0.1	78.611	5	10	0.90	9.98	0.10	3.6858	0.995867483108443		23	0.424475	0.064285	0.997932		5.043033	0.064152
2143	643888	897078	3.827329	0.1	75.720	5	10	0.90	9.98	0.10	3.8273	0.995544460833594		23	0.424475	0.06675	0.99777		5.043019	0.066601
2144	643888	897068	3.940854	0.1	73.552	5	10	0.90	9.98	0.10	3.9409	0.995276646351918		23	0.424475	0.068727	0.997636		5.043007	0.068564
2145	643878	897068	4.673192	0.1	62.104	5	10	0.90	9.98	0.10	4.6732	0.993362283048817		23	0.424475	0.081472	0.996676		5.042925	0.081201
2146	643878	897078	3.264212	0.1	88.711	5	10	0.90	9.98	0.10	3.2642	0.996757787081793		23	0.424475	0.05694	0.998378		5.043071	0.056848
2147	643868	897078	4.158804	0.1	69.722	5	10	0.90	9.98	0.10	4.1588	0.994740689572326		23	0.424475	0.072521	0.997367		5.042984	0.07233
2148	643868	897068	5.8412	0.1	49.808	5	10	0.90	9.98	0.10	5.8412	0.989642528103615		23	0.424475	0.101772	0.994808		5.042764	0.101243
2149	643858	897068	5.194321	0.7	8.398	5	10	0.90	9.98	0.70	5.1943	0.991803618304673		23	0.424475	0.090534	0.995893		5.300002	0.631135
2150	643858	897079	5.378151	0.2	27.250	5	10	0.90	9.98	0.20	5.3782	0.991214937941438		23	0.424475	0.093729	0.995598		5.085664	0.186632
2151	643818	897048	1.534	0.1	188.456	5	10	0.90	9.98	0.10	1.5340	0.999283358947851		23	0.424475	0.02677	0.999642		5.043181	0.026761
2152	643828	897049	3.316598	0.1	87.316	5	10	0.90	9.98	0.10	3.3166	0.996653003323766		23	0.424475	0.057853	0.998325		5.043067	0.057756
2153	643838	897048	5.922053	0.1	49.138	5	10	0.90	9.98	0.10	5.9221	0.989354839362360		23	0.424475	0.103175	0.994663		5.042752	0.102625
2154	643848	897048	6.400175	0.1	45.521	5	10	0.90	9.98	0.10	6.4002	0.987574000462306		23	0.424475	0.111472	0.993768		5.042675	0.110777
2155	643858	897048	5.370923	1.7	3.616	5	10	0.90	9.98	1.70	5.3709	0.991238466392800		23	0.424475	0.093603	0.99561		5.72816	1.584266
2156	643868	897048	4.436831	1.7	4.370	5	10	0.90	9.98	1.70	4.4368	0.994015439699875		23	0.424475	0.07736	0.997003		5.7302	1.311178
2157	643879	897049	6.652079	0.1	43.826	5	10	0.90	9.98	0.10	6.6521	0.986581087661617		23	0.424475	0.11584	0.993268		5.042632	0.11506
2158	643888	897048	8.125322	0.1	36.037	5	10	0.90	9.98	0.10	8.1253	0.980023354534723		23	0.424475	0.141339	0.989961		5.042348	0.13992
2159	643888	897058	6.120803	0.1	47.565	5	10	0.90	9.98	0.10	6.1208	0.988631090313791		23	0.424475	0.106625	0.994299		5.04272	0.106017
2160	643877	897058	7.098903	0.1	41.118	5	10	0.90	9.98	0.10	7.0989	0.984727371311644		23	0.424475	0.123582	0.992334		5.042552	0.122635
2161	643868	897059	5.931093	0.1	49.064	5	10	0.90	9.98	0.10	5.9311	0.989322431188931		23	0.424475	0.103332	0.994647		5.04275	0.102779
2162	643858	897058	3.251616	2	5.175	5	10	0.90	9.98	2.00	3.2516	0.996782734205527		23	0.424475	0.056721	0.99839		5.86145	1.132593
2163	643848	897058	4.223551	0.1	68.660	5	10	0.90	9.98	0.10	4.2236	0.994575953012720		23	0.424475	0.073648	0.997284		5.042977	0.073448
2164	643838	897058	5.791812	0.1	50.227	5	10	0.90	9.98	0.10	5.7918	0.989816340348747		23	0.424475	0.100914	0.994895		5.042771	0.100399
2165	643838	897068	2.372733	2.3	6.298	5	10	0.90	9.98	2.30	2.3727	0.998286026129132		23	0.424475	0.0414	0.999143		5.992162	0.951387
2166	643847	897078	5.338453	2	3.161	5	10	0.90	9.98	2.00	5.3385	0.991343776342695		23	0.424475	0.093039	0.995662		5.85675	1.852705
2167	643828	897058	5.469553	0.3	18.017	5	10	0.90	9.98	0.30	5.4696	0.990914710482582		23	0.424475	0.095317	0.995447		5.128457	0.284648
2168	643818	897058	4.50545	0.1	64.396	5	10	0.90	9.98	0.10	4.5055	0.993829281245346		23	0.424475	0.078554	0.99691		5.042945	0.078311
2169	643809	897068	1.991268	0.01	1441.078	5	10	0.90	9.98	0.01	1.9913	0.998792632996506		23	0.424475	0.034747	0.999396		5.004316	0.003473
2170	643808	897058	3.375104	2.4	4.278	5	10	0.90	9.98	2.40	3.3751	0.996534015127075		23	0.424475	0.058873	0.998266		6.033482	1.410492
2171	643808	897048	1.038173	2.4	13.885	5	10	0.90	9.98	2.40	1.0382	0.999671718306149		23	0.424475	0.018119	0.999836		6.036736	0.434774
2172	643798	897048	0.970731	2.3	15.384	5	10	0.90	9.98	2.30	0.9707	0.999712980781014		23	0.424475	0.016942	0.999856		5.99358	0.389602
2173	643788	897048	1.044111	1.5	20.667	5	10	0.90	9.98	1.50	1.0441	0.999667952661945		23	0.424475	0.018222	0.999834		5.647958	0.273287
2174	643789	897059	1.55273	1.6	13.131	5	10	0.90	9.98	1.60	1.5527	0.999265756176525		23	0.424475	0.027097	0.999633		5.690877	0.433392
2175	643798	897058	2.322594	2.7	5.639	5	10	0.90	9.98	2.70	2.3226	0.998357658609461		23	0.424475	0.040526	0.999178		6.164795	1.093298
2176	643798	897068	1.55603	2.3	9.599	5	10	0.90	9.98	2.30	1.5560	0.999262632667539		23	0.424475	0.027155	0.999631		5.993132	0.624323
2177	643788	897068	2.041584	2.1	7.900	5	10	0.90	9.98	2.10	2.0416	0.998730871983434		23	0.424475	0.035625	0.999365		5.906291	0.747646
2178	643788	897078	5.207185	2.5	2.687	5	10	0.90	9.98	2.50	5.2072	0.991763082494621		23	0.424475	0.090757	0.995873		6.07139	2.259573
2179	643788	897088	5.556247	1.5	3.903	5	10	0.90	9.98	1.50	5.5562	0.990625329522666		23	0.424475	0.096823	0.995302		5.642097	1.44552
2180	643799	897088	6.455077	0.6	7.842	5	10	0.90	9.98	0.60	6.4551	0.987360807167571		23	0.424475	0.112424	0.99366		5.255992	0.670269
2181	643798	897078	5.133507	3	2.351	5	10	0.90	9.98	3.00	5.1335	0.991993906934191		23	0.424475	0.089477	0.995989		6.285967	2.673536
2182	643808	897079	4.022782	2.9	3.078	5	10	0.90	9.98	2.90	4.0228	0.995078539677802		23	0.424475	0.070153	0.997536		6.246967	2.029428
2183	643808	897089	5.84517	1.4	3.947	5	10	0.90	9.98	1.40	5.8452	0.989628493199972		23	0.424475	0.101841	0.994801		5.598687	1.418355
2184	643818	897088	4.621837	1.1	6.194	5	10	0.90	9.98	1.10	4.6218	0.993507054027599		23	0.424475	0.080579	0.996748		5.472241	0.883485
2185	643818	897078	3.322249	3.1	3.532	5	10	0.90	9.98	3.10	3.3222	0.996641600813422		23	0.424475	0.057952	0.998319		6.335059	1.793483
2186	643818	897068	2.4628	1.5	8.769	5	10	0.90	9.98	1.50	2.4628	0.998153516046187		23	0.424475	0.042971	0.999076		5.646976	0.643966
2187	643828	897068	2.754701	2.4	5.238	5	10	0.90	9.98	2.40	2.7547	0.997690228537340		23	0.424475	0.04806	0.998844		6.034681	1.152109
2188	643828	897078	3.428706	3.4	3.185	5	10	0.90	9.98	3.40	3.4287	0.996423182742494		23	0.424475	0.059806	0.99821		6.463937	2.029781
2189	643828	897089	3.777032	2	4.458	5	10	0.90	9.98	2.00	3.7770	0.995660628089017		23	0.424475	0.065874	0.997828		5.860481	1.314617
2190	643848	897088	4.448972	0.1	65.207	5	10	0.90	9.98	0.10	4.4490	0.993982708378040		23	0.424475	0.077571	0.996987		5.042952	0.077337
2191	643849	897108	1.394793	0.1	207.248	5	10	0.90	9.98	0.10	1.3948	0.999407499854105		23	0.424475	0.024341	0.999704		5.043186	0.024334
2192	643828	897109	3.536772	0.1	81.905	5	10	0.90	9.98	0.10	3.5368	0.996194452187608		23	0.424475	0.061689	0.998095		5.043047	0.061572
2193	643818	897108	4.244189	0.1	68.329	5	10	0.90	9.98	0.10	4.2442	0.994522912498135		23	0.424475	0.074007	0.997258		5.042975	0.073804
2194	643807	897109	4.260066	0.1	68.076	5	10	0.90	9.98	0.10	4.2601	0.994481933282241		23	0.424475	0.074284	0.997237		5.042973	0.074078
2195	643798	897108	3.710583	0.2	39.377	5	10	0.90	9.98	0.20	3.7106	0.995811757756991		23	0.424475	0.064717	0.997904		5.086061	0.129162
2196	643788	897109	0.875028	0.1	330.274	5	10	0.90	9.98	0.10	0.8750	0.999766780494185		23	0.424475	0.015272	0.999883		5.043201	0.01527
2197	643788	897118	2.701919	0.2	54.008	5	10	0.90	9.98	0.20	2.7019	0.997777829227400		23	0.424475	0.04714	0.998888		5.086231	0.094175
2198	643788	897128	1.352285	0.6	37.152	5	10	0.90	9.98	0.60	1.3523	0.999443057250590		23	0.424475	0.0236	0.999721		5.259125	0.141558
2199	643788	897138	2.23964	0.8	17.110	5	10	0.90	9.98	0.80	2.2396	0.998472820941099		23	0.424475	0.039079	0.999236		5.345164	0.312394
2200	643788	897148	2.267635	0.8	16.899	5	10	0.90	9.98	0.80	2.2676	0.998434423594182		23	0.424475	0.039567	0.999217		5.345151	0.316291
2201	643798	897148	2.263933	0.6	22.205	5	10	0.90	9.98	0.60	2.2639	0.998439528488771		23	0.424475	0.039503	0.999219		5.258865	0.236832
2202	643798	897138	2.112067	0.4	35.112	5	10	0.90	9.98	0.40	2.1121	0.998641769760973		23	0.424475	0.036854	0.999321		5.172611	0.147317
2203	643798	897128	1.496409	0.2	97.420	5	10	0.90	9.98	0.20	1.4964	0.999318043598735		23	0.424475	0.026114	0.999659		5.086364	0.052211
2204	643798	897118	3.078157	0.3	31.886	5	10	0.90	9.98	0.30	3.0782	0.997116510333594		23	0.424475	0.053698	0.998557		5.129261	0.160862
2205	643808	897118	2.190819	0.1	132.020	5	10	0.90	9.98	0.10	2.1908	0.998538643868183		23	0.424475	0.038228	0.999269		5.043148	0.0382
2206	643808	897128	1.34968	0.3	72.613	5	10	0.90	9.98	0.30	1.3497	0.999445200541879		23	0.424475	0.023554	0.999723		5.129563	0.070643
2207	643808	897138	1.900736	0.8	20.156	5	10	0.90	9.98	0.80	1.9007	0.998899882651819		23	0.424475	0.033168	0.99945		5.345312	0.265198
2208	643808	897148	2.253175	0.9	15.240	5	10	0.90	9.98	0.90	2.2532	0.998454316056988		23	0.424475	0.039315	0.999227		5.388303	0.353563
2209	643818	897148	2.086526	0.9	16.455	5	10	0.90	9.98	0.90	2.0865	0.998674406566438		23	0.424475	0.036409	0.999337		5.388388	0.327461
2210	643818	897138	1.79437	0.8	21.349	5	10	0.90	9.98	0.80	1.7944	0.999019524502067		23	0.424475	0.031313	0.99951		5.345353	0.250378
2211	643818	897128	1.693498	0.1	170.724	5	10	0.90	9.98	0.10	1.6935	0.999126631271329		23	0.424475	0.029553	0.999563		5.043174	0.02954
2212	643818	897118	2.32596	0.2	62.715	5	10	0.90	9.98	0.20	2.3260	0.998352897478083		23	0.424475	0.040585	0.999176		5.086281	0.081102
2213	643828	897119	2.00172	0.2	72.853	5	10	0.90	9.98	0.20	2.0017	0.998779930165085		23	0.424475	0.034929	0.99939		5.086318	0.069816
2214	643829	897128	1.584823	0.1	182.418	5	10	0.90	9.98	0.10	1.5848	0.999235098515181		23	0.424475	0.027657	0.999617		5.043178	0.027646
2215	643828	897138	1.683657	0.9	20.387	5	10	0.90	9.98	0.90	1.6837	0.999136749242960		23	0.424475	0.029381	0.999568		5.388568	0.264316
2216	643828	897148	1.850787	1.1	15.419	5	10	0.90	9.98	1.10	1.8508	0.998956922548726		23	0.424475	0.032297	0.999478		5.474831	0.355078
2217	643848	897148	2.626782	2.7	4.987	5	10	0.90	9.98	2.70	2.6268	0.997899616962022		23	0.424475	0.04583	0.998949		6.164261	1.236108
2218	643848	897138	2.196604	0.9	15.632	5	10	0.90	9.98	0.90	2.1966	0.998530919853483		23	0.424475	0.038329	0.999265		5.388332	0.344704
2219	643848	897128	1.655844	0.1	174.602	5	10	0.90	9.98	0.10	1.6558	0.999165026560463		23	0.424475	0.028896	0.999582		5.043175	0.028884
2220	643848	897118	1.231593	0.1	234.690	5	10	0.90	9.98	0.10	1.2316	0.999538020963017		23	0.424475	0.021494	0.999769		5.043192	0.021489
2221	643859	897108	1.629339	0.1	177.439	5	10	0.90	9.98	0.10	1.6293	0.999191536217388		23	0.424475	0.028433	0.999596		5.043177	0.028422
2222	643868	897108	2.845462	0.1	101.714	5	10	0.90	9.98	0.10	2.8455	0.997535645164732		23	0.424475	0.049642	0.998767		5.043105	0.049581
2223	643878	897118	2.955564	0.1	97.938	5	10	0.90	9.98	0.10	2.9556	0.997341416982690		23	0.424475	0.051561	0.99867		5.043097	0.051493
2224	643868	897119	2.900017	0.1	99.807	5	10	0.90	9.98	0.10	2.9000	0.997440324430300		23	0.424475	0.050593	0.998719		5.043101	0.050528
2225	643858	897118	2.072746	0.1	139.527	5	10	0.90	9.98	0.10	2.0727	0.998691850312963		23	0.424475	0.036168	0.999346		5.043155	0.036145
2226	643858	897129	2.569856	0.01	1117.226	5	10	0.90	9.98	0.01	2.5699	0.997989606537036		23	0.424475	0.044837	0.998994		5.004312	0.004479
2227	643858	897139	3.242198	0.7	13.413	5	10	0.90	9.98	0.70	3.2422	0.996801324363077		23	0.424475	0.056557	0.998399		5.301513	0.395264
2228	643858	897148	3.599134	0.9	9.554	5	10	0.90	9.98	0.90	3.5991	0.996059244786181		23	0.424475	0.062775	0.998028		5.387371	0.563865
2229	643868	897148	3.968671	0.7	10.968	5	10	0.90	9.98	0.70	3.9687	0.995209837326029		23	0.424475	0.069211	0.997602		5.301032	0.483315
2230	643868	897138	3.568044	0.6	14.109	5	10	0.90	9.98	0.60	3.5680	0.996126945058435		23	0.424475	0.062234	0.998062		5.258265	0.372679
2231	643868	897128	3.141277	0.2	46.478	5	10	0.90	9.98	0.20	3.1413	0.996997161196692		23	0.424475	0.054798	0.998497		5.086164	0.109432
2232	643878	897128	3.164011	0.1	91.509	5	10	0.90	9.98	0.10	3.1640	0.996953584073007		23	0.424475	0.055194	0.998476		5.04308	0.05511
2233	643878	897138	3.438827	0.8	11.158	5	10	0.90	9.98	0.80	3.4388	0.996402060573172		23	0.424475	0.059983	0.998199		5.344449	0.478999
2234	643878	897149	3.69641	0.6	13.622	5	10	0.90	9.98	0.60	3.6964	0.995843647285211		23	0.424475	0.06447	0.99792		5.258192	0.386014
2235	643888	897148	3.490415	1.1	8.188	5	10	0.90	9.98	1.10	3.4904	0.996293435542161		23	0.424475	0.060882	0.998145		5.473565	0.668455
2236	643889	897139	3.376335	0.3	29.081	5	10	0.90	9.98	0.30	3.3763	0.996531489299866		23	0.424475	0.058894	0.998264		5.129185	0.176376
2237	643888	897128	3.198551	0.1	90.525	5	10	0.90	9.98	0.10	3.1986	0.996886777974035		23	0.424475	0.055796	0.998442		5.043077	0.055709
2238	644178	896799	7.412449	0.2	19.874	5	10	0.90	9.98	0.20	7.4124	0.983356146418974		23	0.424475	0.129011	0.991643		5.084985	0.255866
2239	644178	896789	7.162603	0.1	40.760	5	10	0.90	9.98	0.10	7.1626	0.984453487967535		23	0.424475	0.124686	0.992196		5.04254	0.123713
2240	644178	896779	7.421637	0.1	39.367	5	10	0.90	9.98	0.10	7.4216	0.983315090691435		23	0.424475	0.12917	0.991622		5.042491	0.128088
2241	644178	896769	7.90336	0.01	367.428	5	10	0.90	9.98	0.01	7.9034	0.981093026107958		23	0.424475	0.137503	0.990501		5.004239	0.01362
2242	644178	896759	7.961798	0.01	364.800	5	10	0.90	9.98	0.01	7.9618	0.980814201974306		23	0.424475	0.138513	0.990361		5.004238	0.013718
2243	644178	896749	7.90829	0.01	367.205	5	10	0.90	9.98	0.01	7.9083	0.981069580993021		23	0.424475	0.137588	0.99049		5.004239	0.013628
2244	644178	896739	8.02478	0.01	362.011	5	10	0.90	9.98	0.01	8.0248	0.980511457066646		23	0.424475	0.139601	0.990208		5.004237	0.013823
2245	644178	896729	7.820721	0.01	371.212	5	10	0.90	9.98	0.01	7.8207	0.981483902669274		23	0.424475	0.136074	0.990699		5.004241	0.013481
2246	644178	896719	7.50015	0.01	386.691	5	10	0.90	9.98	0.01	7.5002	0.982962235551238		23	0.424475	0.130529	0.991445		5.004248	0.012941
2247	644178	896709	7.408558	0.01	391.363	5	10	0.90	9.98	0.01	7.4086	0.983373518006490		23	0.424475	0.128944	0.991652		5.004249	0.012787
2248	644178	896699	7.533648	0.1	38.795	5	10	0.90	9.98	0.10	7.5336	0.982810583803937		23	0.424475	0.131108	0.991368		5.042469	0.129977
2249	644168	896699	6.003997	0.01	481.069	5	10	0.90	9.98	0.01	6.0040	0.989059291518724		23	0.424475	0.104598	0.994515		5.004274	0.010402
2250	644148	896699	6.448045	0.9	5.361	5	10	0.90	9.98	0.90	6.4480	0.987388213519663		23	0.424475	0.112302	0.993674		5.383999	1.004326
2251	644138	896699	6.764407	0.8	5.708	5	10	0.90	9.98	0.80	6.7644	0.986126198981444		23	0.424475	0.117787	0.993039		5.340896	0.935737
2252	644128	896699	6.935394	1.1	4.147	5	10	0.90	9.98	1.10	6.9354	0.985419417306778		23	0.424475	0.12075	0.992683		5.468396	1.318532
2253	644118	896699	7.178037	1.1	4.010	5	10	0.90	9.98	1.10	7.1780	0.984386767696744		23	0.424475	0.124953	0.992163		5.467906	1.36371
2254	644108	896699	7.477606	1.2	3.558	5	10	0.90	9.98	1.20	7.4776	0.983063924749965		23	0.424475	0.130139	0.991496		5.509756	1.548383
2255	644108	896709	7.389606	1.2	3.600	5	10	0.90	9.98	1.20	7.3896	0.983458002776581		23	0.424475	0.128616	0.991695		5.509961	1.53057

2256	644118	896709	7.129797	1.3	3.468	5	10	0.90	9.98	1.30	7.1298	0.984594839258040	23	0.424475	0.124118	0.992268	5.553096	1.601051
2257	644128	896709	6.745537	1.2	3.937	5	10	0.90	9.98	1.20	6.7455	0.986203138302492	23	0.424475	0.11746	0.993078	5.511384	1.399763
2258	644138	896709	6.446942	0.9	5.362	5	10	0.90	9.98	0.90	6.4469	0.987392509661710	23	0.424475	0.112283	0.993676	5.384001	1.004157
2259	644148	896709	6.283156	0.7	6.959	5	10	0.90	9.98	0.70	6.2832	0.988022427082025	23	0.424475	0.109442	0.993993	5.298858	0.761493
2260	644168	896709	5.571346	0.01	517.899	5	10	0.90	9.98	0.01	5.5713	0.990574470204519	23	0.424475	0.097085	0.995276	5.00428	0.009663
2261	644168	896719	7.002891	0.4	10.682	5	10	0.90	9.98	0.40	7.0029	0.985135653901219	23	0.424475	0.121919	0.99254	5.170277	0.48404
2262	644148	896719	7.26001	0.5	8.316	5	10	0.90	9.98	0.50	7.2600	0.984030047385395	23	0.424475	0.126372	0.991983	5.212607	0.626796
2263	644138	896719	7.120191	0.6	7.121	5	10	0.90	9.98	0.60	7.1202	0.984636108381034	23	0.424475	0.123951	0.992288	5.255286	0.737972
2264	644128	896719	7.042694	1.1	4.085	5	10	0.90	9.98	1.10	7.0427	0.984967056137117	23	0.424475	0.122609	0.992455	5.468181	1.338522
2265	644118	896719	7.21841	1.3	3.427	5	10	0.90	9.98	1.30	7.2184	0.984211572750231	23	0.424475	0.125652	0.992074	5.552881	1.62053
2266	644108	896719	7.419621	1.3	3.335	5	10	0.90	9.98	1.30	7.4196	0.983324103258391	23	0.424475	0.129135	0.991627	5.552382	1.664701
2267	644108	896729	7.504603	1.7	2.599	5	10	0.90	9.98	1.70	7.5046	0.982942114033976	23	0.424475	0.130606	0.991434	5.722065	2.201281
2268	644118	896729	7.432904	1.1	3.875	5	10	0.90	9.98	1.10	7.4329	0.983264677283861	23	0.424475	0.129365	0.991597	5.467372	1.411058
2269	644128	896729	7.66623	0.9	4.523	5	10	0.90	9.98	0.90	7.6662	0.982203885325881	23	0.424475	0.133402	0.991062	5.381983	1.189888
2270	644138	896729	8.230466	0.3	12.062	5	10	0.90	9.98	0.30	8.2305	0.979506586072617	23	0.424475	0.143155	0.9897	5.126978	0.425042
2271	644148	896729	8.595869	0.3	11.563	5	10	0.90	9.98	0.30	8.5959	0.977660496512985	23	0.424475	0.149464	0.988767	5.126739	0.443355
2272	644168	896729	8.011945	0.4	9.364	5	10	0.90	9.98	0.40	8.0119	0.980573341430863	23	0.424475	0.13938	0.990239	5.169488	0.552076
2273	644168	896739	8.149759	0.7	5.392	5	10	0.90	9.98	0.70	8.1498	0.979903826523131	23	0.424475	0.141761	0.989901	5.296402	0.982305
2274	644148	896739	8.525487	0.2	17.340	5	10	0.90	9.98	0.20	8.5255	0.978022132459756	23	0.424475	0.148249	0.98895	5.084524	0.293222
2275	644138	896739	8.03798	0.3	12.344	5	10	0.90	9.98	0.30	8.0380	0.980447712238248	23	0.424475	0.139829	0.990176	5.1271	0.415367
2276	644128	896739	7.561544	0.9	4.584	5	10	0.90	9.98	0.90	7.5615	0.982683789589029	23	0.424475	0.131591	0.991304	5.382169	1.174021
2277	644118	896739	7.475589	0.9	4.636	5	10	0.90	9.98	0.90	7.4756	0.983073008251367	23	0.424475	0.130104	0.9915	5.382321	1.160981
2278	644108	896739	7.57316	1	4.152	5	10	0.90	9.98	1.00	7.5732	0.982630857022362	23	0.424475	0.131792	0.991277	5.42461	1.306425
2279	644108	896759	7.3308	1.3	3.375	5	10	0.90	9.98	1.30	7.3308	0.983718802866464	23	0.424475	0.127598	0.991826	5.552604	1.645213
2280	644118	896759	7.285359	0.8	5.307	5	10	0.90	9.98	0.80	7.2854	0.983918934253866	23	0.424475	0.126811	0.991927	5.340133	1.006299
2281	644128	896759	7.019517	0.9	4.931	5	10	0.90	9.98	0.90	7.0195	0.985065343273141	23	0.424475	0.122207	0.992505	5.383096	1.091623
2282	644138	896759	6.820123	0.9	5.073	5	10	0.90	9.98	0.90	6.8201	0.985897795530217	23	0.424475	0.118753	0.992924	5.383419	1.061212
2283	644148	896759	6.824845	1.1	4.213	5	10	0.90	9.98	1.10	6.8248	0.985878353560426	23	0.424475	0.118835	0.992914	5.468615	1.297917
2284	644168	896759	6.991439	0.8	5.526	5	10	0.90	9.98	0.80	6.9914	0.985183988873039	23	0.424475	0.121721	0.992564	5.340571	0.966528
2285	644168	896769	6.520517	0.7	6.709	5	10	0.90	9.98	0.70	6.5205	0.987104354914423	23	0.424475	0.113559	0.993531	5.29858	0.789771
2286	644148	896769	6.508424	1.7	2.990	5	10	0.90	9.98	1.70	6.5084	0.987151937555997	23	0.424475	0.113349	0.993555	5.725158	1.914519
2287	644138	896769	6.694108	1.4	3.453	5	10	0.90	9.98	1.40	6.6941	0.986411760566626	23	0.424475	0.116569	0.993183	5.596741	1.620835
2288	644127	896768	7.174525	1.3	3.447	5	10	0.90	9.98	1.30	7.1745	0.984401962222173	23	0.424475	0.124892	0.99217	5.552988	1.610885
2289	644118	896769	7.416499	0.8	5.215	5	10	0.90	9.98	0.80	7.4165	0.983338055496352	23	0.424475	0.129081	0.991634	5.339932	1.02401
2290	644108	896769	7.228064	0.6	7.017	5	10	0.90	9.98	0.60	7.2281	0.984169537613074	23	0.424475	0.125819	0.992053	5.255165	0.748916
2291	644108	896779	7.456595	0.9	4.648	5	10	0.90	9.98	0.90	7.4566	0.983158429724997	23	0.424475	0.129775	0.991543	5.382354	1.158099
2292	644118	896779	7.694067	0.9	4.507	5	10	0.90	9.98	0.90	7.6941	0.982075190217248	23	0.424475	0.133884	0.990997	5.381933	1.194104
2293	644128	896779	7.730027	1.3	3.204	5	10	0.90	9.98	1.30	7.7300	0.981908267356015	23	0.424475	0.134506	0.990913	5.551587	1.732682
2294	644138	896779	7.271545	1.6	2.828	5	10	0.90	9.98	1.60	7.2715	0.983979532612177	23	0.424475	0.126572	0.991957	5.680308	2.008864
2295	644148	896779	6.784856	1.5	3.205	5	10	0.90	9.98	1.50	6.7849	0.986042583421879	23	0.424475	0.118142	0.992997	5.639126	1.759712
2296	644168	896779	6.168393	1	5.080	5	10	0.90	9.98	1.00	6.1684	0.988454299859294	23	0.424475	0.107451	0.99421	5.427126	1.068288
2297	644168	896789	6.190023	1.1	4.639	5	10	0.90	9.98	1.10	6.1900	0.988373501736396	23	0.424475	0.107826	0.99417	5.469801	1.179173
2298	644148	896789	7.395625	1.3	3.346	5	10	0.90	9.98	1.30	7.3956	0.983431194031746	23	0.424475	0.12872	0.991681	5.552442	1.659438
2299	644138	896789	7.781663	1.5	2.801	5	10	0.90	9.98	1.50	7.7817	0.981667250114834	23	0.424475	0.135398	0.990791	5.63629	2.012274
2300	644128	896789	7.913695	1.6	2.602	5	10	0.90	9.98	1.60	7.9137	0.981043860595550	23	0.424475	0.137681	0.990477	5.678279	2.181922
2301	644118	896789	7.713223	0.8	5.018	5	10	0.90	9.98	0.80	7.7132	0.981986364431342	23	0.424475	0.134215	0.990952	5.339465	1.064004
2302	644108	896789	7.520643	1.1	3.830	5	10	0.90	9.98	1.10	7.5206	0.982869538289732	23	0.424475	0.130883	0.991398	5.467184	1.427333
2303	644108	896799	7.365163	1	4.267	5	10	0.90	9.98	1.00	7.3652	0.983566653059801	23	0.424475	0.128193	0.991749	5.425014	1.271349
2304	644118	896799	7.516965	1.4	3.081	5	10	0.90	9.98	1.40	7.5170	0.982886193411056	23	0.424475	0.13082	0.991406	5.594608	1.815737
2305	644128	896799	7.947128	1.7	2.457	5	10	0.90	9.98	1.70	7.9471	0.980884384798488	23	0.424475	0.138259	0.990396	5.720554	2.327834
2306	644138	896799	8.202705	1.7	2.383	5	10	0.90	9.98	1.70	8.2027	0.979643655465201	23	0.424475	0.142676	0.989769	5.719642	2.400672
2307	644148	896799	8.134677	1.3	3.048	5	10	0.90	9.98	1.30	8.1347	0.979977637943257	23	0.424475	0.1415	0.989938	5.550502	1.820996
2308	644168	896799	6.613924	0.9	5.228	5	10	0.90	9.98	0.90	6.6139	0.986733900193209	23	0.424475	0.115179	0.993345	5.383745	1.029708
2309	644188	896699	7.813664	0.7	5.618	5	10	0.90	9.98	0.70	7.8137	0.981517096142858	23	0.424475	0.135952	0.990715	5.29689	0.942827
2310	644198	896699	7.105679	0.5	8.493	5	10	0.90	9.98	0.50	7.1057	0.984698351230619	23	0.424475	0.1237	0.99232	5.212752	0.613749
2311	644208	896699	6.709024	1	4.677	5	10	0.90	9.98	1.00	6.7090	0.986351415024947	23	0.424475	0.116827	0.993152	5.426218	1.160272
2312	644208	896709	6.897066	0.9	5.017	5	10	0.90	9.98	0.90	6.8971	0.985579352220050	23	0.424475	0.120086	0.992763	5.383296	1.072953
2313	644198	896709	7.351379	0.6	6.902	5	10	0.90	9.98	0.60	7.3514	0.983627768358483	23	0.424475	0.127954	0.99178	5.255024	0.761414
2314	644188	896709	8.3778	0.5	7.231	5	10	0.90	9.98	0.50	8.3778	0.978771594188999	23	0.424475	0.1457	0.989329	5.211471	0.720725
2315	644188	896719	8.523662	0.5	7.110	5	10	0.90	9.98	0.50	8.5237	0.978031471284893	23	0.424475	0.148218	0.988955	5.211311	0.732904
2316	644198	896719	7.288441	0.6	6.960	5	10	0.90	9.98	0.60	7.2884	0.983905398983555	23	0.424475	0.126864	0.99192	5.255096	0.755037
2317	644208	896719	6.90098	0.7	6.345	5	10	0.90	9.98	0.70	6.9010	0.985563059740382	23	0.424475	0.120154	0.992755	5.298114	0.834983
2318	644208	896729	6.667712	0.8	5.789	5	10	0.90	9.98	0.80	6.6677	0.986518227492821	23	0.424475	0.116111	0.993236	5.341032	0.922606
2319	644198	896729	7.313195	0.7	5.994	5	10	0.90	9.98	0.70	7.3132	0.983796483305260	23	0.424475	0.127293	0.991865	5.29758	0.883803
2320	644188	896729	8.962228	0.8	4.336	5	10	0.90	9.98	0.80	8.9622	0.975731562899589	23	0.424475	0.155783	0.987791	5.337303	1.231051
2321	644188	896739	9.246106	0.8	4.206	5	10	0.90	9.98	0.80	9.2461	0.974183388237520	23	0.424475	0.160675	0.987007	5.336768	1.268703
2322	644198	896739	7.291343	0.7	6.012	5	10	0.90	9.98	0.70	7.2913	0.983892649102636	23	0.424475	0.126915	0.991914	5.297609	0.881219
2323	644208	896739	6.284256	1.1	4.570	5	10	0.90	9.98	1.10	6.2843	0.988018249689700	23	0.424475	0.109461	0.993991	5.469632	1.196838
2324	644208	896759	6.657762	1.1	4.317	5	10	0.90	9.98	1.10	6.6578	0.986558253125358	23	0.424475	0.115939	0.993256	5.468938	1.266724
2325	644198	896759	7.41256	0.8	5.217	5	10	0.90	9.98	0.80	7.4126	0.983355650722440	23	0.424475	0.129013	0.991643	5.339938	1.023478
2326	644188	896759	9.496524	0.5	6.404	5	10	0.90	9.98	0.50	9.4965	0.972779035772722	23	0.424475	0.164988	0.986296	5.210176	0.813634
2327	644188	896769	9.715414	0.6	5.262	5	10	0.90	9.98	0.60	9.7154	0.971521901047453	23	0.424475	0.168755	0.985658	5.251886	0.998006
2328	644198	896769	7.515633	0.5	8.039	5	10	0.90	9.98	0.50	7.5156	0.982892223155724	23	0.424475	0.130797	0.991409	5.212361	0.648365
2329	644208	896769	6.81392	0.8	5.667	5	10	0.90	9.98	0.80	6.8139	0.985923315185047	23	0.424475	0.118645	0.992937	5.340826	0.942457
2330	644208	896779	6.91762	0.8	5.583	5	10	0.90	9.98	0.80	6.9176	0.985493692634499	23	0.424475	0.120442	0.99272	5.340678	0.956523
2331	644198	896779	7.476663	0.8	5.174	5	10	0.90	9.98	0.80	7.4767	0.983068171821367	23	0.424475	0.130122	0.991498	5.339839	1.032128
2332	644188	896779	9.575302	0.5	6.353	5	10	0.90	9.98	0.50	9.5753	0.972329771346182	23	0.424475	0.166344	0.986068	5.210079	0.820131
2333	644188	896789	9.248763	0.8	4.205	5	10	0.90	9.98	0.80	9.2488	0.974168677680659	23	0.424475	0.160721	0.987	5.336763	1.269055
2334	644198	896789	7.345103	0.8	5.264	5	10	0.90	9.98	0.80	7.3451	0.983655557702310	23	0.424475	0.127845	0.991794	5.340042	1.01437
2335	644208	896789	6.84934	0.8	5.638	5	10	0.90	9.98	0.80	6.8493	0.985777288049499	23	0.424475	0.119259	0.992863	5.340776	0.947263
2336	644208	896799	6.831363	0.6	7.417	5	10	0.90	9.98	0.60	6.8314	0.985851495203151	23	0.424475	0.118947	0.992901	5.255601	0.708618
2337	644198	896799	7.280963	0.6	6.967	5	10	0.90	9.98	0.60	7.2810	0.983938230547932	23	0.424475	0.126735	0.991937	5.255105	0.754279
2338	644188	896799	9.043325	0.8	4.298	5	10	0.90	9.98	0.80	9.0433	0.975294046942857	23	0.424475	0.157181	0.98757	5.337152	1.24182
2339	643219	897139	7.576132	0.01	382.902	5	10	0.90	9.98	0.01	7.5761	0.982617301265327	23	0.424475	0.131843	0.991271	5.004246	0.013069
2340	643218	897159	6.172103	0.01	468.161	5	10	0.90	9.98	0.01	6.1721	0.988440461064598	23	0.424475	0.107515	0.994203	5.004271	0.010689
2341	643228	897168	4.817391	0.01	598.001	5	10	0.90	9.98	0.01	4.8174	0.992947308345221	23	0.424475	0.08398	0.996467	5.004291	0.008368
2342	643228	897158	6.220202	0.4	12.001	5	10	0.90	9.98	0.40	6.2202	0.988260303919816	23	0.424475	0.10835	0.994113	5.170817	0.430848
2343	643228	897148	6.644765	0.01	435.396	5	10	0.90	9.98	0.01	6.6448	0.986610447445469	23	0.424475	0.115713	0.993283	5.004263	0.011494
2344	643228	897138	6.983449	0.5	8.639	5	10	0.90	9.98	0.50	6.9834	0.985217666010840	23	0.424475	0.121583	0.992581	5.212864	0.603403
2345	643238	897138	6.632293	0.2	22.163	5	10	0.90	9.98	0.20	6.6323	0.986660439261292	23	0.424475	0.115497	0.993308	5.08527	0.229448
2346	643239	897149	6.64183	0.7	6.588	5	10	0.90	9.98	0.70	6.6418	0.986622220174742	23	0.424475	0.115662	0.993289	5.298434	0.804203
2347	643238	897158	6.111515	0.01	472.731	5	10	0.90	9.98	0.01	6.1115	0.988665436735738	23	0.424475	0.106464	0.994317	5.004272	0.010586
2348	643238	897168	4.97783	0.01	578.912	5	10	0.90	9.98	0.01	4.9778	0.992470920390051	23	0.424475	0.08677	0.996228	5.004289	0.008644
2349	643238	897179	4.117484	0.8	9.327	5	10	0.90	9.98	0.80	4.1175	0.994844499590776	23	0.424475	0.071802	0.997419	5.34391	0.572932
2350	643228	897178	3.953285	0.8	9.712	5	10	0.90	9.98	0.80	3.9533	0.995246848108510	23	0.424475	0.068943	0.997621	5.344049	0.550233
2351	643218	897178	4.39143	0.4	16.936	5	10	0.90	9.98	0.40	4.3914	0.994137051426852	23	0.424475	0.07657	0.997064	5.171833	0.30538
2352	643248	897178	4.262841	0.01	675.104	5	10	0.90	9.98	0.01	4.2628	0.994474755295448	23	0.424475	0.074332	0.997234	5.004297	0.007413
2353	643248	897168	4.826798	0.01	596.847	5	10	0.90	9.98	0.01	4.8268	0.992919802887971	23	0.424475	0.084144	0.996454	5.004291	0.008385
2354	643249	897157	5.861602	0.5	10.264	5	10	0.90	9.98	0.50	5.8616	0.989570302132447	23	0.424475	0.102126	0.994771	5.213804	0.50796
2355	643248	897148	6.541289	0.01	442.161	5	10	0.90	9.98	0.01	6.5413	0.987022420200278	23	0.424475	0.113919	0.99349	5.004265	0.011318
2356	643248	897138	6.572376	0.01	440.106	5	10	0.90	9.98	0.01	6.5724	0.986899319860504	23	0.424475	0.114458	0.993428	5.004265	0.011371
2357	643258	897138	6.514985	0.01	443.915	5	10	0.90	9.98	0.01	6.5150	0.987126132590265	23	0.424475	0.113463	0.993542	5.004266	0.011273
2358	643258	897148	6.190617	0.01	466.783	5	10	0.90	9.98	0.01	6.1906	0.988371278941800	23	0.424475	0.107837	0.994169	5.004271	0.010721
2359	643259	897159	5.53686	0.2	26.478	5	10	0.90	9.98	0.20	5.5369	0.990690432651854	23	0.424475	0.096486	0.995334	5.085619	0.192072
2360	643259	897169	4.773719	0.7	9.130	5	10	0.90	9.98	0.70	4.7737	0.993074306227639	23	0.424475	0.083221	0.996531	5.300386	0.580525
2361	643258	897178	4.417856	0.3	22.260	5	10	0.90	9.98	0.30	4.4179	0.994066417323846	23	0.424475	0.07703	0.997029	5.128865	0.230403
2362	643258	897188	4.664438	0.1	62.219	5	10	0.90	9.98	0.10	4.6644	0.993387072890613	23	0.424475	0.08132	0.996688	5.042926	0.081051
2363	643248	897188	4.151988	1	7.519	5	10	0.90	9.98	1.00	4.1520	0.994757884595092	23	0.424475	0.072402	0.997375	5.42985	0.722124
2364	643238	897188	3.826292	1	8.156	5	10	0.90	9.98	1.00	3.8263	0.995546871338912	23	0.424475	0.066732	0.997771	5.430191	0.66583
2365	643229	897188	4.115367	1.7	4.710	5	10	0.90	9.98	1.70	4.1154	0.994849790500421	23	0.424475	0.071765	0.997422	5.730813	1.216859
2366	643218	897188	4.675095	1.5	4.632	5	10	0.90	9.98	1.50	4.6751	0.993356887980106	23	0.424475	0.081505	0.996673	5.643867	1.218512
2367	643218	897198	4.565743	1	6.842	5	10	0.90	9.98	1.00	4.5657	0.993663372184071	23	0.424475	0.079603	0.996827	5.429377	0.793503
2368	643218	897168	4.697624	1.8	3.929	5	10	0.90	9.98	1.80	4.6976	0.993292852074978	23	0.424475	0.081897	0.996641	5.772591	1.469197
2369	643228	897198	4.152919	1.1	6.888	5	10	0.90	9.98	1.10	4.1529	0.994755537571934	23	0.424475	0.072419	0.997374	5.472834	0.794514
2370	643228	897208	4.254324	0.9	8.090	5	10	0.90	9.98	0.90	4.2543	0.994496771162049	23	0.424475	0.074184	0.997245	5.386764	0.665814
2371	643218	897208	4.52238	0.9	7.614	5	10	0.90	9.98	0.90	4.5224	0.993782915574995	23	0.424475	0.078848	0.996887	5.386486	0.707427
2372	643218	897218	4.921504	0.9	7.001	5	10	0.90	9.98	0.90	4.9215	0.992639928160714	23	0.424475	0.085791	0.996313	5.386041	0.769271
2373	643218	897228	5.180293	1	6.037	5	10	0.90	9.98	1.00	5.1803	0.991847708969832	23	0.424475	0.09029	0.995916	5.428593	0.899212
2374	643228	897228	4.653653	0.5	12.897	5	10	0.90	9.98	0.50	4.6537	0.993417550836885	23	0.424475	0.081132	0.996703	5.214635	0.404324
2375	643228	897218	4.630381	0.5	12.961	5	10	0.90	9.98	0.50	4.6304	0.993483078249010	23	0.424475	0.080727	0.996736	5.21465	0.40232
2376	643238	897228	4.658542	0.6	10.825	5	10	0.90	9.98	0.60	4.6585	0.993403743398006	23	0.424475	0.081217	0.996696	5.257559	0.485694
2377	643238	897218	4.551991	0.7	9.571	5	10	0.90	9.98	0.70	4.5520	0.993701406268517	23	0.424475	0.079364	0.996846	5.300576	0.553793
2378	643238	897208	4.120782	1.2	6.413	5	10	0.90	9.98	1.20	4.1208	0.994836251684376	23	0.424475	0.071859	0.997415	5.515861	0.860081
2379	643238	897198	3.860056	1.4	5.958	5	10	0.90	9.98	1.40	3.8601	0.995468053374903	23	0.424475	0.06732	0.997731	5.60222	0.940338
2380	643248	897198	4.174606	1.2	6.331	5	10	0.90	9.98	1.20	4.1746	0.994700717446065	23	0.424475	0.072796	0.997347	5.515791	0.871236
2381	643248	897208	4.370677	1.2	6.049	5	10	0.90	9.98	1.20	4.3707	0.994192227405564	23	0.424475	0.076209	0.997092	5.515527	0.911845
2382	643248	897218	4.731746	0.9	7.280	5	10	0.90	9.98	0.90	4.7317	0.993195283569109	23	0.424475	0.082491	0.996592	5.386257	0.739886
2383	643248	897228	4.869672	0.9	7.075	5	10	0.90	9.98	0.90	4.8697	0.992793769010350	23	0.424475	0.08489	0.99639	5.386101	0.761248
2384	643258	897228	4.965882	1.4	4.639	5	10	0.90	9.98	1.40	4.9659	0.992506929811835	23	0.424475	0.086563	0.996246	5.600428	1.207326
2385	643258	897218	4.810498	0.9	7.162	5	10	0.90	9.98	0.90	4.8105	0.992967429287061	23	0.424475	0.08386	0.996478	5.386169	0.752085
2386	643258	897208	4.520865	1.4	5.092	5	10	0.90	9.98	1.40	4.5209	0.993787071684640	23	0.424475	0.078822	0.996889	5.601203	1.100076
2387	643278	897198	5.074399	1	6.162	5	10	0.90	9.98	1.00	5.0744	0.992176732791891	23	0.424475	0.088449	0.996081	5.428735	0.881026
2388	643278	897208	4.769516	1.5	4.541	5	10	0.90	9.98	1.50	4.7695	0.993086468082383	23	0.424475	0.083148	0.996537	5.643692	1.242896
2389	643278	897218	4.881368	1.1	5.867	5	10	0.90	9.98	1.10	4.8814	0.992759195416407	23	0.424475	0.085093	0.996373	5.471885	0.932627
2390	643278	897228	5.074422	0.9	6.792	5	10	0.90	9.98	0.90	5.0744	0.992176662058452	23	0.424475	0.08845	0.996081	5.385861	0.792927
2391	643288	897228	5.050587	0.8	7.616	5	10	0.90	9.98	0.80	5.0506	0.992249793237270	23	0.424475	0.088035	0.996117	5.343013	0.701548
2392	643288	897218	4.92948	1.4	4.673	5	10	0.90	9.98	1.40	4.9295	0.992616111673321	23	0.424475	0.08593	0.996301	5.600495	1.198564
2393	643288	897208	5.022597	1.1	5.704	5	10	0.90	9.98	1.10	5.0226	0.992335237870248	23	0.424475	0.087549	0.99616	5.471684	0.959337
2394	643289	897200	5.296151	0.01	544.479	5	10	0.90	9.98	0.01	5.2962	0.991480027571764	23	0.424475	0.092304	0.995731	5.004284	0.009191

2395	643298	897198	5.419056	1.5	4.001	5	10	0.90	9.98	1.50	5.4191	0.991081195571590		23	0.424475	0.094439	0.995531		5.642392	1.41026
2396	643308	897198	5.434885	1.4	4.242	5	10	0.90	9.98	1.40	5.4349	0.991029172617684		23	0.424475	0.094714	0.995504		5.599535	1.320041
2397	643298	897208	5.217896	1.1	5.492	5	10	0.90	9.98	1.10	5.2179	0.991729255360164		23	0.424475	0.090944	0.995856		5.471396	0.996234
2398	643297	897217	5.000181	1.6	4.093	5	10	0.90	9.98	1.60	5.0002	0.992403327933704		23	0.424475	0.087159	0.996194		5.686132	1.389235
2399	643298	897228	4.9612	1.8	3.722	5	10	0.90	9.98	1.80	4.9612	0.992521017272571		23	0.424475	0.086481	0.996253		5.77199	1.550828
2400	643308	897228	4.932604	1.9	3.573	5	10	0.90	9.98	1.90	4.9326	0.992606772942879		23	0.424475	0.085984	0.996297		5.814949	1.627643
2401	643318	897228	4.988486	2.2	3.119	5	10	0.90	9.98	2.20	4.9885	0.992438732588204		23	0.424475	0.086956	0.996212		5.943466	1.905776
2402	643318	897218	5.123593	1.7	3.789	5	10	0.90	9.98	1.70	5.1236	0.992024717950689		23	0.424475	0.089304	0.996004		5.728738	1.512109
2403	643308	897218	5.074131	1.7	3.825	5	10	0.90	9.98	1.70	5.0741	0.992177556966841		23	0.424475	0.088445	0.996081		5.72885	1.497665
2404	643309	897209	5.278028	1.4	4.367	5	10	0.90	9.98	1.40	5.2780	0.991538072370119		23	0.424475	0.091989	0.99576		5.599842	1.282382
2405	643318	897208	5.231663	1.3	4.708	5	10	0.90	9.98	1.30	5.2317	0.991685675911236		23	0.424475	0.091183	0.995834		5.557079	1.18044
2406	643318	897198	5.352726	2.1	3.025	5	10	0.90	9.98	2.10	5.3527	0.991297562461583		23	0.424475	0.093287	0.995639		5.899545	1.950481
2407	643318	897188	5.46222	1.7	3.556	5	10	0.90	9.98	1.70	5.4622	0.990938981550730		23	0.424475	0.095189	0.995459		5.72794	1.610871
2408	643308	897188	5.500416	1.9	3.207	5	10	0.90	9.98	1.90	5.5004	0.990812206290077		23	0.424475	0.095853	0.995396		5.813476	1.812821
2409	643298	897188	5.439166	0.01	530.328	5	10	0.90	9.98	0.01	5.4392	0.991015077100557		23	0.424475	0.094789	0.995497		5.004282	0.009436
2410	643288	897188	5.329217	0.01	541.139	5	10	0.90	9.98	0.01	5.3292	0.991373616160869		23	0.424475	0.092878	0.995677		5.004284	0.009248
2411	643278	897188	5.226476	0.3	18.845	5	10	0.90	9.98	0.30	5.2265	0.991702108695610		23	0.424475	0.091093	0.995842		5.128559	0.272142
2412	643279	897179	4.878137	0.01	590.625	5	10	0.90	9.98	0.01	4.8781	0.992768754523619		23	0.424475	0.085037	0.996378		5.00429	0.008473
2413	643288	897178	5.190143	0.01	555.474	5	10	0.90	9.98	0.01	5.1901	0.991816762286579		23	0.424475	0.090461	0.9959		5.004286	0.009009
2414	643298	897178	5.523686	0.01	522.312	5	10	0.90	9.98	0.01	5.5237	0.990734543786155		23	0.424475	0.096257	0.995356		5.004281	0.009581
2415	643308	897178	5.731227	1	5.463	5	10	0.90	9.98	1.00	5.7312	0.990027570141360		23	0.424475	0.099862	0.995001		5.427806	0.993629
2416	643318	897178	5.770727	0.9	5.981	5	10	0.90	9.98	0.90	5.7707	0.989890101851339		23	0.424475	0.100548	0.994932		5.384972	0.900346
2417	643318	897168	6.23505	0.8	6.184	5	10	0.90	9.98	0.80	6.2351	0.988204411967713		23	0.424475	0.108607	0.994085		5.341615	0.86372
2418	643318	897158	6.144233	0.2	23.894	5	10	0.90	9.98	0.20	6.1442	0.988544219495845		23	0.424475	0.107032	0.994256		5.085433	0.212834
2419	643318	897148	5.621094	1	5.568	5	10	0.90	9.98	1.00	5.6211	0.990405935450173		23	0.424475	0.097949	0.995191		5.42797	0.974783
2420	643318	897138	5.293518	0.9	6.514	5	10	0.90	9.98	0.90	5.2935	0.991488472822839		23	0.424475	0.092258	0.995735		5.385594	0.82678
2421	643308	897138	5.313845	1	5.887	5	10	0.90	9.98	1.00	5.3138	0.991423167024675		23	0.424475	0.092611	0.995702		5.428409	0.922132
2422	643298	897138	5.381392	0.8	7.152	5	10	0.90	9.98	0.80	5.3814	0.991204377744262		23	0.424475	0.093785	0.995592		5.342652	0.746973
2423	643298	897148	5.363352	0.8	7.176	5	10	0.90	9.98	0.80	5.3634	0.991263077839114		23	0.424475	0.093472	0.995622		5.342672	0.744498
2424	643308	897148	5.433303	1	5.759	5	10	0.90	9.98	1.00	5.4333	0.991034378697948		23	0.424475	0.094687	0.995507		5.428241	0.942615
2425	643309	897158	5.758426	1.3	4.281	5	10	0.90	9.98	1.30	5.7584	0.989933011781861		23	0.424475	0.100334	0.994954		5.556095	1.297765
2426	643308	897168	5.992572	0.9	5.762	5	10	0.90	9.98	0.90	5.9926	0.989100738233709		23	0.424475	0.1044	0.994535		5.384665	0.934461
2427	643298	897168	5.5787	0.3	17.668	5	10	0.90	9.98	0.30	5.5787	0.990549649714725		23	0.424475	0.097213	0.995264		5.12841	0.290257
2428	643288	897168	5.185383	0.01	555.978	5	10	0.90	9.98	0.01	5.1854	0.991831724491816		23	0.424475	0.090379	0.995907		5.004286	0.009001
2429	643278	897168	4.947448	0.5	12.138	5	10	0.90	9.98	0.50	4.9474	0.992562318983137		23	0.424475	0.086242	0.996274		5.214451	0.429603
2430	643278	897158	5.309355	0.01	543.140	5	10	0.90	9.98	0.01	5.3094	0.991437613613106		23	0.424475	0.092533	0.99571		5.004284	0.009214
2431	643288	897158	5.325047	0.01	541.558	5	10	0.90	9.98	0.01	5.3250	0.991387071929260		23	0.424475	0.092806	0.995684		5.004284	0.009241
2432	643298	897158	5.456769	1.1	5.254	5	10	0.90	9.98	1.10	5.4568	0.990957002654395		23	0.424475	0.095095	0.995468		5.471029	1.041301
2433	643288	897148	5.334167	0.01	540.643	5	10	0.90	9.98	0.01	5.3342	0.991357629971788		23	0.424475	0.092964	0.995669		5.004284	0.009256
2434	643278	897148	5.449359	0.01	529.348	5	10	0.90	9.98	0.01	5.4494	0.990981471742028		23	0.424475	0.094966	0.995481		5.004282	0.009454
2435	643278	897138	5.930884	0.01	486.913	5	10	0.90	9.98	0.01	5.9309	0.989323180998925		23	0.424475	0.103329	0.994647		5.004275	0.010278
2436	643288	897138	5.569181	0.01	518.098	5	10	0.90	9.98	0.01	5.5692	0.990581771137979		23	0.424475	0.097048	0.99528		5.00428	0.009659

APPENDIX E – HAZARD RANK ASSESSMENT RECORDS

06 September 2023

ID	X	Y	Z	SLOPE	Slope Co-efficient	PEAT DEPTH	Peat Level	Peat Co-efficient	Gen Substrate	Substrate Co-eff.	Risk Rating Coefficient	Risk Rating Normalisation	Receptor	Receptor Co-eff.	Z Receptor	Distance	Receptor Dist Co-eff.	Z Difference (remove =/-)	Receptor elevation Co-eff	Impact Rating	Impact Rating Normalisation	Hazard Ranking
1	641943	895792	402.7522	1.468866	1	1.5	401.2522	3	Not Proven	2	6	2	Minor Watercourse	6	393.043	182.350148	3	9.7092	1	18	2	4
2	641943	895592	382.1763	10.58043	6	2	380.1763	3	Not Proven	2	36	4	Minor Watercourse	6	370.5984	193.428758	3	11.5779	2	36	4	16
3	641943	895392	341.5203	6.66178	4	2	339.5203	3	Not Proven	2	24	3	Minor Watercourse	6	323.5867	170.743247	3	17.9336	2	36	4	12
4	641943	895192	317.8838	6.0358	4	0.4	317.4838	1	Not Proven	2	8	2	Minor Watercourse	6	301.2086	182.350148	3	16.6752	2	36	4	8
5	642243	897791	216.8998	6.021505	4	0	216.8998	1	Not Proven	2	8	2	Minor Watercourse	6	213.9383	87.403759	3	2.9615	1	18	2	4
6	642143	895792	393.6563	1.938245	1	3.2	390.4563	8	Not Proven	2	16	3	Minor Watercourse	6	393.043	23.39522	3	0.6133	1	18	2	6
7	642143	895592	366.8158	12.06006	6	0.9	365.9158	2	Not Proven	2	24	3	Minor Watercourse	6	364.5855	4.973359	4	2.2303	1	24	3	9
8	642143	895392	328.7111	7.3015	4	1.6	327.1111	3	Not Proven	2	24	3	Minor Watercourse	6	329.0095	51.969167	3	-0.2984	1	18	2	6
9	642143	895192	306.3084	5.619205	4	0	306.3084	1	Not Proven	2	8	2	Minor Watercourse	6	304.8383	9.461623	4	1.4701	1	24	3	6
10	642143	894992	283.3542	10.1931	6	0.8	282.5542	2	Not Proven	2	24	3	Minor Watercourse	6	280.5166	9.461623	4	2.8376	1	24	3	9
11	642143	894792	266.5851	6.702015	4	1.6	264.9851	3	Not Proven	2	24	3	Minor Watercourse	6	270.9416	95.704035	3	-4.3565	1	18	2	6
12	642143	894592	249.6502	6.595573	4	1.2	248.4502	3	Not Proven	2	24	3	Minor Watercourse	6	270.9416	295.463606	3	-21.2914	1	18	2	6
13	642243	897591	236.1411	7.048215	4	0.6	235.5411	2	Not Proven	2	16	3	Minor Watercourse	6	213.8605	110.031909	3	22.2806	2	36	4	12
14	642243	897392	252.4044	2.992048	2	0.7	251.7044	2	Not Proven	2	8	2	Site Infrastructure	3	264.4178	157.284637	3	-12.0134	1	9	1	2
15	642243	897192	268.5463	10.13187	6	0.7	267.8463	2	Not Proven	2	24	3	Site Infrastructure	3	265.2044	76.621466	3	3.3419	1	9	1	3
16	642243	896992	296.4498	7.188188	4	0	296.4498	1	Not Proven	2	8	2	Site Infrastructure	3	296.4498	5.630728	4	0	1	12	2	4
17	642243	896792	322.8304	8.806339	6	1.1	321.7304	3	Not Proven	2	36	4	Site Infrastructure	3	324.5394	22.252216	3	-1.709	1	9	1	4
18	642243	896592	349.5514	9.746704	6	2	347.5514	3	Not Proven	2	36	4	Site Infrastructure	3	353.0278	32.099425	3	-3.4764	1	9	1	4
19	642339	895785	385.0036	9.615618	6	2.2	382.8036	3	Not Proven	2	36	4	Sensitive Habitat	8	385.0036	0	4	0	1	32	4	16
20	642343	895592	364.3763	9.858289	6	0.8	363.5763	2	Not Proven	2	24	3	Sensitive Habitat	8	377.0535	176.506556	3	-12.6772	1	24	3	9
21	642343	895392	336.8108	5.464155	4	2.1	334.7108	3	Not Proven	2	24	3	Minor Watercourse	6	329.0095	148.312354	3	7.8013	1	18	2	6
22	642343	895192	318.6599	6.013287	4	1.1	317.5599	3	Not Proven	2	24	3	Minor Watercourse	6	300.8337	183.74717	3	17.8262	2	36	4	12
23	642343	894992	297.0523	6.591835	4	0.4	296.6523	1	Not Proven	2	8	2	Minor Watercourse	6	280.5166	208.29134	3	16.5357	2	36	4	8
24	642343	894792	274.8431	6.906829	4	0.2	274.6431	1	Not Proven	2	8	2	Minor Watercourse	6	270.9416	229.030614	3	3.9015	1	18	2	4
25	642343	894592	256.4428	7.226383	4	0.4	256.0428	1	Not Proven	2	8	2	Minor Watercourse	6	270.9416	361.378614	3	-14.4988	1	18	2	4
26	642343	894392	235.5816	5.554377	4	0.4	235.1816	1	Not Proven	2	8	2	Minor Watercourse	6	270.9416	537.339727	3	-35.36	1	18	2	4
27	643442	897591	218.0977	8.143805	6	1	217.0977	2	Not Proven	2	24	3	Minor Watercourse	6	209.7119	122.801991	3	8.3858	1	18	2	6
28	642443	897392	251.2908	3.234829	2	1.9	249.3908	3	Not Proven	2	12	2	Site Infrastructure	3	266.6241	178.054231	3	-15.3333	1	9	1	2
29	642443	897192	269.9706	7.700577	4	1	268.9706	2	Not Proven	2	16	3	Site Infrastructure	3	273.162	54.173251	3	-3.1914	1	9	1	3
30	642443	896992	296.318	10.98938	6	0.5	295.818	1	Not Proven	2	12	2	Site Infrastructure	3	302.2012	44.701198	3	-5.8832	1	9	1	2
31	642443	896792	325.4953	8.734171	6	1.8	323.6953	3	Not Proven	2	36	4	Site Infrastructure	3	314.774	81.76868	3	10.7213	2	18	2	8
32	642443	896592	352.3747	4.039472	4	1.6	350.7747	3	Slip Material	5	60	5	Sensitive Habitat	8	352.7474	0	4	-0.3727	1	32	4	20
33	642443	896392	357.681	10.00435	6	0.5	357.181	1	Not Proven	2	12	2	Sensitive Habitat	8	351.4564	44.491913	3	6.2246	1	24	3	6
34	642443	896192	356.7408	14.8102	6	0.8	355.9408	2	Not Proven	2	24	3	Site Infrastructure	3	361.5639	74.672058	3	-4.8231	1	9	1	3
35	642643	895992	337.2812	5.621185	4	2.1	335.1812	3	Not Proven	2	24	3	Site Infrastructure	3	337.7554	17.420399	3	-0.4742	1	9	1	3
36	642543	895392	337.8592	3.521754	2	2.6	335.2592	3	Not Proven	2	12	2	Minor Watercourse	6	303.894	250.945262	3	33.9652	2	36	4	8
37	642543	895192	313.9485	9.639692	6	0.5	313.4485	1	Not Proven	2	12	2	Minor Watercourse	6	290.8684	173.520576	3	23.0801	2	36	4	8
38	642543	894992	285.4242	9.084085	6	0.1	285.3242	1	Not Proven	2	12	2	Minor Watercourse	6	262.154	187.164778	3	23.2702	2	36	4	8
39	642543	894792	263.9524	7.168806	4	0.2	263.7524	1	Not Proven	2	8	2	Minor Watercourse	6	257.657	210.083946	3	6.2954	1	18	2	4
40	642543	894592	247.5464	4.408835	4	0.8	246.7464	2	Not Proven	2	16	3	Minor Watercourse	6	257.9947	352.140572	3	-10.4483	1	18	2	6
41	642543	894392	229.4528	5.580917	4	0.7	228.7528	2	Not Proven	2	16	3	Minor Watercourse	6	257.9947	531.170841	3	-28.5419	1	18	2	6
42	642643	897591	230.7973	8.311022	6	0.4	230.3973	1	Not Proven	2	12	2	Minor Watercourse	6	210.0096	212.307647	3	20.7877	2	36	4	8
43	642643	897392	241.9751	3.731026	2	0.3	241.6751	1	Not Proven	2	4	1	Minor Watercourse	6	230.2736	252.186576	3	11.7015	2	36	4	4
44	642643	897192	264.191	7.213224	4	0	264.191	1	Not Proven	2	8	2	Site Infrastructure	3	273.162	249.46042	3	-8.971	1	9	1	2
45	642643	896992	286.3877	11.41519	6	1.5	284.8877	3	Not Proven	2	36	4	Site Infrastructure	3	301.6794	108.140025	3	-15.2917	1	9	1	4
46	642643	896792	315.2092	12.39431	6	0.6	314.6092	2	Not Proven	2	24	3	Sensitive Habitat	8	330.6351	97.431684	3	-15.4259	1	24	3	9
47	642643	896592	329.4685	5.731616	4	2.1	327.3685	3	Not Proven	2	24	3	Sensitive Habitat	8	329.7231	0	4	-0.2546	1	32	4	12
48	642643	896392	329.8937	5.760217	4	2.4	327.4937	3	Not Proven	2	24	3	Sensitive Habitat	8	329.9623	0	4	-0.0686	1	32	4	12
49	642643	896192	333.0584	6.130432	4	2.3	330.7584	3	Not Proven	2	24	3	Sensitive Habitat	8	326.7992	168.3714	3	6.2592	1	24	3	9
50	642843	895992	317.5513	6.858306	4	1.3	316.2513	3	Not Proven	2	24	3	Site Infrastructure	3	313.8969	35.274896	3	3.6544	1	9	1	3
51	642843	895792	328.5028	4.898921	4	2.3	326.2028	3	Not Proven	2	24	3	Site Infrastructure	3	312.7902	211.771689	3	15.7126	2	18	2	6
52	647708	895392	223.3499	12.18707	6	1	222.3499	2	Not Proven	2	24	3	Minor Watercourse	6	236.5724	2244.652148	3	-13.2225	1	18	2	6
53	642736	895192	294.8588	8.883017	6	0.4	294.4588	1	Not Proven	2	12	2	Minor Watercourse	6	292.3683	19.328598	3	2.4905	1	18	2	4
54	642743	894992	270.043	9.933337	6	0.1	269.943	1	Not Proven	2	12	2	Minor Watercourse	6	266.8927	9.461623	4	3.1503	1	24	3	6
55	642743	894792	251.6266	6.499018	4	0	251.6266	1	Not Proven	2	8	2	Minor Watercourse	6	257.9947	95.704035	3	-6.3681	1	18	2	4
56	642743	894592	239.8057	6.502338	4	0	239.8057	1	Not Proven	2	8	2	Minor Watercourse	6	257.9947	295.463606	3	-18.189	1	18	2	4
57	642743	894392	220.0357	15.75454	8	0	220.0357	1	Not Proven	2	16	3	Minor Watercourse	6	257.9947	495.41722	3	-37.959	1	18	2	6
58	642843	897591	224.8497	7.034045	4	0.9	223.9497	2	Not Proven	2	16	3	Minor Watercourse	6	230.2736	220.804142	3	-5.4239	1	18	2	6
59	642843	897392	233.0162	3.921019	2	0.9	232.1162	2	Not Proven	2	8	2	Minor Watercourse	6	230.2736	53.794322	3	2.7426	1	18	2	4
60	642843	897192	254.1158	6.046936	4	0.1	254.0158	1	Not Proven	2	8	2	Minor Watercourse	6	230.2736	192.440092	3	23.8422	2	36	4	8
61	642843	896992	269.1848	7.570044	4	0.8	268.3848	2	Not Proven	2	16	3	Site Infrastructure	3	269.7684	210.881495	3	-0.5836	1	9	1	3
62	642843	896792	289.6743	11.19379	6	0.5	289.1743	1	Not Proven	2	12	2	Site Infrastructure	3	285.5813	62.288788	3	4.093	1	9	1	2
63	642843	896592	300.941	9.566292	6	1	299.941	2	Not Proven	2	24	3	Site Infrastructure	3	291.7967	81.76868	3	9.1443	1	9	1	3
64	642843	896392	302.8047	7.950406	4	1.1	301.7047	3	Not Proven	2	24	3	Sensitive Habitat	8	305.4682	45.243721	3	-2.6635	1	24	3	9
65	642843	896192	310.8467	6.282969	4	2.3	308.5467	3	Not Proven	2	24	3	Site Infrastructure	3	310.2321	118.96914	3	0.6146	1	9	1	3
66	643042	895992	297.2361	6.07843	4	1.5	295.7361	3	Not Proven	2	24	3	Site Infrastructure	3	299.3454	73.420149	3	-2.1093	1	9	1	3
67	643042	895792	313.1318	6.502746	4	1.9	311.2318	3	Not Proven	2	24	3	Site Infrastructure	3	288.3722	232.236789	3	24.7596	2	18	2	6
68	643042	895592	321.7785	2.99329	2	2.7	319.0785	3	Not Proven	2	12	2	Site Infrastructure	3	288.3722	363.419051	3	33.4063	2	18	2	4
69	643043	897591	217.7567	5.396282	4	2	215.7567	3	Not Proven	2	24	3	Minor Watercourse	6	220.3332	214.65882	3	-2.5765	1	18	2	6
70	643043	897392	224.2919	6.218982	4	0.4	223.8919	1	Not Proven	2	8	2	Minor Watercourse	6	220.3332	14.757002	3	3.9587	1	18	2	4
71	643043	897192	240.7923	6.60426	4	0.6	240.1923	2	Not Proven	2	16	3	Site Infrastructure	3	245.5671	140.978726	3	-4.7748	1	9	1	3
72	643043	896992	249.5292	4.408712	4	0.6	248.9292	2	Not Proven	2	16	3	Site Infrastructure	3	249.4457	40.204939	3	0.0835	1	9	1	3
73	643043	896792	262.1231	8.31736	6	0.3	261.8231	1	Not Proven	2	12	2	Site Infrastructure	3	267.0863	54.493863	3	-4.9632	1	9	1	2
74	643042	896592	270.159	7.737256	4	1.6	268.559	3	Slip Material	5	60	5	Site Infrastructure	3	279.372	116.032638	3	-9.213	1	9	1	5
75	643042	896392	279.7171	5.767446	4	1.6	278.1171	3	Not Proven	2	24	3	Sensitive Habitat	8	296.5811	180.485313	3	-16.864	1	24	3	9
76	643042	896192	287.7281	8.276393	6	1.6	286.1281	3	Not Proven	2	36	4	Site Infrastructure	3	290.3762	85.464345	3	-2.6481	1	9	1	4
77	643242	895992	280.6549	4.449146	4	0.8	279.8549	2	Not Proven	2	16	3	Site Infrastructure	3	280.8707	12.646988	3	-0.2158	1	9	1	3
78	643242	895792	293.6246	9.693633	6	1.8	291.8246	3	Not Proven	2	36	4	Site Infrastructure	3	288.3722	96.071256	3	5.2524	1	9	1	4
79	643242	895592	312.8352	5.957199	4	1.8	311.0352	3	Not Proven	2	24	3	Site Infrastructure	3	288.3722	295.582757	3	24.463	2	18	2	6
80	643242	897392	218.962	5.658572	4	0	218.962	1	Not Proven	2	8	2	Minor Watercourse	6	214.9792	50.622259	3	3.9828	1	18	2	4
81	643242	897192	228.2272	4.174606	4	1.1	227.1272	3	Not Proven	2	24	3	Site Infrastructure	3	228.7549	0	4	-0.5277	1	12	2	6
82	643242	896992	241.4775	2.807713	2	1	240.4775	2	Not Proven	2	8	2	Site Infrastructure	3	243.8464	51.604119	3	-2.3689	1	9	1	2
83	643242	896792	241.5462	4.470191	4	1.8	239.7462	3	Not Proven	2	24	3	Site Infrastructure	3	242.7823	39.77669	3	-1.2361	1	9	1	3
84	643242	896592	246.698	6.445235	4	1	245.698	2	Not Proven	2	16	3	Site Infrastructure	3	236.7683	111.407796	3	9.9297	1	9	1	3
85	643242	896392	258.9078	5.878856	4	1.4	257.5078	3	Not Proven	2	24	3	Minor Watercourse	6	249.1111	81.126767	3	9.7967	1	18	2	6
86	643242	896192	268.1336	7.839496	4	1	267.1336	2	Not Proven	2	16	3	Site Infrastructure	3	270.0745	24.714091	3	-1.9409	1	9	1	3
87	643442	895992	271.2237	9.194921	6	1.7	269.5237	3	Not Proven	2	36	4	Minor Watercourse	6	269.3134	17.420399	3	1.9103	1	18	2	8
88	643442	895792	288.9849	4.86035	4	2	286.9849	3	Not Proven	2	24	3	Site Infrastructure	3	282.292	172.483815	3	6.6929	1	9	1	3
89	643442	895592	302.9698	4.859072	4	2.3	300.6698	3	Not Proven	2	24	3	Site Infrastructure	3	282.292	340.426418	3	20.6778	2	18	2	6
90	643442	895392	319.313	3.895663	2	2.5	316.813	3	Not Proven	2	12	2	Minor Watercourse	6	295.1037	405.261092	3	24.2093	2	36	4	8
91	643442	895192	313.9155	7.964808	4	0.6	313.3155	2	Not Proven	2	16	3	Minor Watercourse	6	295.1037	293.897996	3	18.8118	2	36	4	12
92	643242	897591	206.494	6.300332	4	0	206.494	1	Not Proven	2	8	2	Minor Watercourse	6	202.5205	53.794322	3	3.9735	1	18	2	4
93	643442	897392	225.4567	4.500755	4	0	225.4567	1	Not Proven	2	8	2	Minor Watercourse	6	209.2066	115.783216	3	16.2501	2	36	4	8
94	643442	897192	223.9441	3.346682	2	2.9	221.0441	3	Not Proven	2	12	2	Site Infrastructure	3	226.2168	138.317638	3	-2.2727	1	9	1	2
95	643442	896992	231.3271	3.28877	2	0	231.3271	1	Not Proven	2	4	1	Site Infrastructure	3	231.689	124.386611	3	-0.3619	1	9	1	1
96	643442	896792	226.7873	4.693013	4	1.7	225.0873	3	Not Proven	2	24	3	Site Infrastructure	3	225.9168	12.647098	3	0.8705	1	9	1	3
97	643442	896592	231.475	4.285366	4	2	229.475	3	Not Proven	2	24	3	Site Infrastructure	3	231.8016	23.837976	3	-0.3266	1	9	1	3
98	643442	896392	242.3197	7.622627	4	0.7	241.6197	2	Not Proven	2	16	3	Minor Watercourse	6	237.9514	28.741474	3	4.3683	1	18	2	6
99	643442	896192	259.8563	5.904524	4	1.1	258.7563	3	Not Proven	2	24	3	Minor Watercourse	6	254.1209	62.288621	3	5.7354	1	18	2	6
100	643642	895792	286.9766	3.07156	2	3.5	283.4766	8	Not Proven	2	32	4	Minor Watercourse	6	269.3134	299.564201	3	17.6632	2	36	4	16
101	643642	895592	298.567	3.046542	2	1.9	296.667	3	Not Proven	2	12	2	Site Infrastructure	3	282.292	455.176786	3	16.275	2	18	2	4
102	643642	895392	313.255	4.277333	4	2.6	310.655	3	Not Proven	2	24	3	Minor Watercourse	6	295.1037	561.722629	3	18.1513	2	36	4	12
103	643642	895192	312.4401	4.230575	4	2.2	310.2401	3	Not Proven	2	24	3	Minor Watercourse	6	295.1037	487.515941	3	17.3364	2	36	4	12
104	643642	897392	231.7002	0.603963	1	3.3	228.4002	8	Not Proven	2	16	3	Minor Watercourse	6	209.2066	291.035244	3	22.4936	2	36	4	12
105	643642	897192	228.6564	0.873367	1	3	225.6564	3	Not Proven	2	6	2	Site Infrastructure	3	224.6579	183.525293	3	3.9985	1	9	1	2
106	643642	896992	224.5391	2.885609	2	1.8	222.7391	3	Not Proven	2	12	2	Major Watercourse	8	215.7956	54.679951	3	8.7435	1	24	3	6
108	643842	895792	289.8288	4.656185	4	2.9	286.9288	3	Not Proven	2	24	3	Minor Watercourse	6	262.0277	398.977732	3	27.8011	2	36	4	12
109	643842	895592	299.5893	2.662803	2	2.5	297.0893	3	Not Proven	2	12	2	Minor Watercourse	6	262.0277	563.314042	3	37.5616	2	36	4	8
110	643842	895392	309.8646	2.526789	2	2	307.8646	3	Not Proven	2	12	2	Minor Watercourse	6	237.1784	619.859352	3	72.6862	2	36	4	8
111	643842	895192	309.5787	2.876998	2	1.9	307.6787	3	Not Proven	2	12	2	Minor Watercourse	6	237.1784	538.855357	3	72.4003	2	36	4	8
112	643954	894992	292.3742	4.731545	4	1	291.3742	2	Not Proven	2	16	3	Minor Watercourse	6	237.1784	414.938793	3	55.1958	2	36	4	12
113	644042	895792	296.0111	1.453633	1	3.3	292.7111	8	Not Proven	2	16	3	Minor Watercourse	6	261.2915	550.655225	3	34.7196	2	36	4	12
114	644042	895592	300.0467	1.525955	1	2.1	297.9467	3	Not Proven	2	6	2	Minor Watercourse	6	237.1784	624.004725	3	62.8683	2	36	4	8
115	644042	895392	300.9644	5.229259	4	1.9	299.0644	3	Not Proven	2	24	3	Minor Watercourse	6	237.1784	464.242799	3	63.786	2	36	4	12
116	644042	895192	295.455	5.672179	4	2.4	293.055	3	Not Proven	2	24	3	Minor Watercourse	6	237.1784	348.799163	3	58.2766	2	36	4	12
117	644042	894992	285.3718	4.635272	4	0.9	284.4718	2	Not Proven	2	16	3	Minor Watercourse	6	237.1784	328.329615	3	48.1934	2	36	4	12
118	644080	894792	272.3049	4.182528	4	0.8	271.5049	2	Not Proven	2	16	3	Minor Watercourse	6	237.1784	388.497118	3	35.1265	2	36	4	12
119	644242	895792	292.0635	7.842488	4	1.1	290.9635	3	Not Proven	2	24	3	Minor Watercourse	6	238.6653	498.993317	3	53.3982	2	36	4	12
120	644242	895592	286.7939	5.608401	4	2	284.7939	3	Not Proven	2	24	3	Minor Watercourse	6	232.9388	452.432676	3	53.8551	2	36	4	12
121	644242	895392	281.8897	5.972925	4	3	278.8897	3	Not Proven	2	24	3	Minor Watercourse	6	237.1784	356.113937	3	44.7113	2	36	4	12
122	644242	895192	272.8062	6.577172	4	2.2	270.6062	3	Not Proven	2	24	3	Minor Watercourse	6	237.1784	181.539572	3	35.6278	2	36	4	12
123	644242	894992	264.816	7.917672	4	0.9	263.916	2	Not Proven	2	16	3	Minor Watercourse	6	237.1784	138.188626	3	27.6376	2	36	4	12
124	644242	894792	260.0413	7.074618	4	0.4	259.6413	1	Not Proven	2	8	2	Minor Watercourse	6	237.1784	291.951325	3	22.8629	2	36	4	8
125	644442	895792	268.206	8.424455	6	1.2	267.006	3	Not Proven	2	36	4	Minor Watercourse	6	238.6653	303.792841	3	29.5407	2	36	4	16
126	644442	895592	268.5234	6.676641	4	2.3	266.2234	3	Not Proven	2	24	3	Minor Watercourse	6	232.9388	252.964595	3	35.5846	2	36	4	12
127	644442	895392	257.1311	9.736019	6	2	255.1311	3	Not Proven	2	36	4	Minor Watercourse	6	214.2208	250.255826	3	42.9103	2	36	4	16
128	644442	895192	238.9738	11.21325	6	1.5	237.4738	3	Not Proven	2	36	4	Minor Watercourse	6	225.0423	94.391686	3	13.9315	2	36	4	16
129	644442	894992	235.1019	5.654438	4	1.4	233.7019	3	Not Proven	2	24	3	Minor Watercourse	6	230.1437	77.52485	3	4.9582	1	18	2	6
130	644442	894792	240.2318	10.36872	6	1.7	238.5318	3	Not Proven	2	36	4	Minor Watercourse	6	233.517	269.697928	3	6.7148	1	18	2	8
131	644642	895792	251.0828	4.352722	4	2.7	248.3828	3	Not Proven	2	24	3	Minor Watercourse	6	238.6653	124.843303	3	12.4175	2	36	4	12
132	644642	895592	246.0329	9.064553	6	1.2	244.8329	3	Not Proven	2	36	4	Minor Watercourse	6	232.9388	57.331024	3	13.0941	2	36	4	16
133	644642	895192	218.6905	3.218405	2	0.5	218.1905	1	Not Proven	2	4	1	Minor Watercourse	6	219.1955	88.881136	3	-0.505	1	18	2	2
134	644642	894992	221.7979	3.120039	2	0.5	221.2979	1	Not Proven	2	4	1	Minor Watercourse	6	217.4237	95.364953	3	4.3742	1	18	2	2
135	644842	895792	227.5164	12.1972	6	0.1	227.4164	1	Not Proven	2	12	2	Minor Watercourse	6	238.6653	137.410372	3	-11.1489	1	18	2	4
136	644842	895192	216.5268	0.853421	1	4	212.5268	8	Not Proven	2	16	3	Minor Watercourse	6	213.5511	102.083889	3	2.9757	1	18	2	6
137	644842	894992	211.3936	0.748118	1	4	207.3936	8	Not Proven	2	16	3	Minor Watercourse	6	211.2581	4.973359	4	0.1355	1	24	3	9
138	642168	896992	290.9943	8.097275	6	0.61	290.3843	2	Not Proven	2	24	3	Site Infrastructure	3	296.5042	47.065477	3	-5.5099	1	9	1	3
139	642141	896792	310.973	10.80046	6	0.75	310.223	2	Not Proven	2	24	3	Site Infrastructure	3	324.5394	123.847985	3	-13.5664	1	9	1	3
140	642116	896592	331.0613	16.69573	8	0.7	330.3613	2	Not Proven	2	32	4	Site Infrastructure	3	363.6784	146.91447	3	-32.6171	1	9	1	4
141	642243	897591	236.1411	7.048215	4	0.66	235.4811	2	Not Proven	2	16	3	Minor Watercourse	6	213.8605	110.031909	3	22.2806	2	36	4	12
142	642243	897392	252.4044	2.992048	2	0.92	251.4844	2	Not Proven	2	8	2	Site Infrastructure	3	264.4178	157.284637	3	-12.0134	1	9	1	2
143	642243	897192	268.5463	10.13187	6	0.97	267.5763	2	Not Proven	2	24	3	Site Infrastructure	3	265.2044	76.621466	3	3.3419	1	9	1	3
144	642243	896992	296.4498	7.188188	4	0.97	295.4798	2	Not Proven	2	16	3	Site Infrastructure	3	296.4498	5.630728	4	0	1	12	2	6
145	642243	896792	322.8304	8.806339	6	0.29	322.5404	1	Not Proven	2	12	2	Site Infrastructure	3	324.5394	22.252216	3	-1.709	1	9	1	2
146	642243	896592	349.5514	9.746704	6	1.17	348.3814	3	Not Proven	2	36	4	Site Infrastructure	3	353.0278	32.099425	3	-3.4764	1	9	1	4
147	642443	897591	227.9263	8.414474	6	0.74	227.1863	2	Not Proven	2	24	3	Minor Watercourse	6	210.9113	115.946389	3	17.015	2	36	4	12
148	642443	897392	251.2908	3.234829	2	1.8	249.4908	3	Not Proven	2	12	2	Site Infrastructure	3	266.6241	178.054231	3	-15.3333	1	9	1	2
149	642443	897192	269.9706	7.700577	4	0.91	269.0606	2	Not Proven	2	16	3	Site Infrastructure	3	273.162	54.173251	3	-3.1914	1	9	1	3
150	642443	896992	296.318	10.98938	6	0.27	296.048	1	Not Proven	2	12	2	Site Infrastructure	3	302.2012	44.701198	3	-5.8832	1	9	1	2
151	642443	896792	325.4953	8.734171	6	1.95	323.5453	3	Not Proven	2	36	4	Site Infrastructure	3	314.774	81.76868	3	10.7213	2	18	2	8
152	642443	896592	352.3747	4.039472	4	1.74	350.6347	3	Not Proven	2	24	3	Sensitive Habitat	8	352.7474	0	4	-0.3727	1	32	4	12
153	642643	897591	230.7973	8.311022	6	0.42	230.3773	1	Not Proven	2	12	2	Minor Watercourse	6	210.0096	212.307647	3	20.7877	2	36	4	8
154	642643	897392	241.9751	3.731026	2	0.74	241.2351	2	Not Proven	2	8	2	Minor Watercourse	6	230.2736	252.186576	3	11.7015	2	36	4	8
155	642643	897192	264.191	7.213224	4	0.38	263.811	1	Not Proven	2	8	2	Site Infrastructure	3	273.162	249.46042	3	-8.971	1	9	1	2
156	642643	896992	286.3877	11.41519	6	1.74	284.6477	3	Not Proven	2	36	4	Site Infrastructure	3	301.6794	108.140025	3	-15.2917	1	9	1	4
157	642643	896792	315.2092	12.39431	6	0.66	314.5492	2	Not Proven	2	24	3	Sensitive Habitat	8	330.6351	97.431684	3	-15.4259	1	24	3	9
158	642643	896592	329.4685	5.731616	4	1.86	327.6085	3	Not Proven	2	24	3	Sensitive Habitat	8	329.7231	0	4	-0.2546	1	32	4	12
159	642643	896392	329.8937	5.760217	4	2.27	327.6237	3	Not Proven	2	24	3	Sensitive Habitat	8	329.9623	0	4	-0.0686	1	32	4	12
160	642643	896192	333.0584	6.130432	4	2.21	330.8484	3	Not Proven	2	24	3	Sensitive Habitat	8	326.7992	168.3714	3	6.2592	1	24	3	9

1 TO 4	Negligible
5 TO10	Low
11 TO 16	Medium
17 TO 25	High

161	642843	897591	224.8497	7.034045	4	0.9	223.9497	2	Not Proven	2	16	3	Minor Watercourse	6	230.2736	220.804142	3	-5.4239	1	18	2	6
162	642843	897392	233.0162	3.921019	2	1.39	231.6262	3	Not Proven	2	12	2	Minor Watercourse	6	230.2736	53.794322	3	2.7426	1	18	2	4
163	642843	897192	254.1158	6.046936	4	0.44	253.6758	1	Not Proven	2	8	2	Minor Watercourse	6	230.2736	192.440092	3	23.8422	2	36	4	8
164	642843	896992	269.1848	7.570044	4	0.85	268.3348	2	Not Proven	2	16	3	Site Infrastructure	3	269.7684	210.881495	3	-0.5836	1	9	1	3
165	642843	896792	289.6743	11.19379	6	0.7	288.9743	2	Not Proven	2	24	3	Site Infrastructure	3	285.5813	62.288788	3	4.093	1	9	1	3
166	642843	896592	300.941	9.566292	6	0.83	300.111	2	Not Proven	2	24	3	Site Infrastructure	3	291.7967	81.76868	3	9.1443	1	9	1	3
167	642843	896392	302.8047	7.950406	4	1.02	301.7847	3	Not Proven	2	24	3	Sensitive Habitat	8	305.4682	45.243721	3	-2.6635	1	24	3	9
168	642843	896192	310.8467	6.282969	4	2.3	308.5467	3	Not Proven	2	24	3	Site Infrastructure	3	310.2321	118.96914	3	0.6146	1	9	1	3
169	642843	895992	317.5513	6.858306	4	1.24	316.3113	3	Not Proven	2	24	3	Site Infrastructure	3	313.8969	35.274896	3	3.6544	1	9	1	3
170	642843	895792	328.5028	4.898921	4	2.02	326.4828	3	Not Proven	2	24	3	Site Infrastructure	3	312.7902	211.771689	3	15.7126	2	18	2	6
171	643043	897392	224.2919	6.218982	4	0.55	223.7419	2	Not Proven	2	16	3	Minor Watercourse	6	220.3332	14.757002	3	3.9587	1	18	2	6
172	643043	897192	240.7923	6.60426	4	0.91	239.8823	2	Not Proven	2	16	3	Site Infrastructure	3	245.5671	140.978726	3	-4.7748	1	9	1	3
173	643043	896992	249.5292	4.408712	4	0.64	248.8892	2	Not Proven	2	16	3	Site Infrastructure	3	249.4457	40.204939	3	0.0835	1	9	1	3
174	643043	896792	262.1231	8.31736	6	0.61	261.5131	2	Not Proven	2	24	3	Site Infrastructure	3	267.0863	54.493863	3	-4.9632	1	9	1	3
175	643042	896592	270.159	7.737256	4	0.97	269.189	2	Not Proven	2	16	3	Site Infrastructure	3	279.372	116.032638	3	-9.213	1	9	1	3
176	643042	896392	279.7171	5.767446	4	1.37	278.3471	3	Not Proven	2	24	3	Sensitive Habitat	8	296.5811	180.485313	3	-16.864	1	24	3	9
177	643042	896192	287.7281	8.276393	6	1.59	286.1381	3	Not Proven	2	36	4	Site Infrastructure	3	290.3762	85.464345	3	-2.6481	1	9	1	4
178	643042	895992	297.2361	6.07843	4	1.45	295.7861	3	Not Proven	2	24	3	Site Infrastructure	3	299.3454	73.420149	3	-2.1093	1	9	1	3
179	643042	895792	313.1318	6.502746	4	1.6	311.5318	3	Not Proven	2	24	3	Site Infrastructure	3	288.3722	232.236789	3	24.7596	2	18	2	6
180	643242	897392	218.962	5.658572	4	0.05	218.912	1	Not Proven	2	8	2	Minor Watercourse	6	214.9792	50.622259	3	3.9828	1	18	2	4
181	643242	897192	228.2272	4.174606	4	1.15	227.0772	3	Not Proven	2	24	3	Site Infrastructure	3	228.7549	0	4	-0.5277	1	12	2	6
182	643242	896992	241.4775	2.807713	2	1.19	240.2875	3	Not Proven	2	12	2	Site Infrastructure	3	243.8464	51.604119	3	-2.3689	1	9	1	2
183	643242	896792	241.5462	4.470191	4	1.77	239.7762	3	Not Proven	2	24	3	Site Infrastructure	3	242.7823	39.77669	3	-1.2361	1	9	1	3
184	643242	896592	246.698	6.445235	4	1.24	245.458	3	Not Proven	2	24	3	Site Infrastructure	3	236.7683	111.407796	3	9.9297	1	9	1	3
185	643242	896392	258.9078	5.878856	4	1.51	257.3978	3	Not Proven	2	24	3	Minor Watercourse	6	249.1111	81.126767	3	9.7967	1	18	2	6
186	643242	896192	268.1336	7.839496	4	0.79	267.3436	2	Not Proven	2	16	3	Site Infrastructure	3	270.0745	24.714091	3	-1.9409	1	9	1	3
187	643242	895992	280.6549	4.449146	4	0.87	279.7849	2	Not Proven	2	16	3	Site Infrastructure	3	280.8707	12.646988	3	-0.2158	1	9	1	3
188	643242	895792	293.6246	9.693633	6	1.96	291.6646	3	Not Proven	2	36	4	Site Infrastructure	3	288.3722	96.071256	3	5.2524	1	9	1	4
189	643242	895592	312.8352	5.957199	4	1.82	311.0152	3	Not Proven	2	24	3	Site Infrastructure	3	288.3722	295.582757	3	24.463	2	18	2	6
190	643442	897392	225.4567	4.500755	4	0.47	224.9867	1	Not Proven	2	8	2	Minor Watercourse	6	209.2066	115.783216	3	16.2501	2	36	4	8
191	643442	897192	223.9441	3.346682	2	3.05	220.8941	8	Not Proven	2	32	4	Site Infrastructure	3	226.2168	138.317638	3	-2.2727	1	9	1	4
192	643442	896992	231.3271	3.28877	2	0.84	230.4871	2	Not Proven	2	8	2	Site Infrastructure	3	231.689	124.386611	3	-0.3619	1	9	1	2
193	643442	896792	226.7873	4.693013	4	1.51	225.2773	3	Not Proven	2	24	3	Site Infrastructure	3	225.9168	12.647098	3	0.8705	1	9	1	3
194	643442	896592	231.475	4.285366	4	1.13	230.345	3	Not Proven	2	24	3	Site Infrastructure	3	231.8016	23.837976	3	-0.3266	1	9	1	3
195	643442	896392	242.3197	7.622627	4	0.98	241.3397	2	Not Proven	2	16	3	Minor Watercourse	6	237.9514	28.741474	3	4.3683	1	18	2	6
196	643442	896192	259.8563	5.904524	4	1.27	258.5863	3	Not Proven	2	24	3	Minor Watercourse	6	254.1209	62.288621	3	5.7354	1	18	2	6
197	643442	895992	271.2237	9.194921	6	1.25	269.9737	3	Not Proven	2	36	4	Minor Watercourse	6	269.3134	17.420399	3	1.9103	1	18	2	8
198	643442	895792	288.9849	4.86035	4	2.31	286.6749	3	Not Proven	2	24	3	Site Infrastructure	3	282.292	172.483815	3	6.6929	1	9	1	3
199	643442	895592	302.9698	4.859072	4	2.39	300.5798	3	Not Proven	2	24	3	Site Infrastructure	3	282.292	340.426418	3	20.6778	2	18	2	6
200	642257	897020	294.2165	7.127142	4	1.15	293.0665	3	Not Proven	2	24	3	Site Infrastructure	3	294.2165	0	4	0	1	12	2	6
201	642679	896946	292.6969	9.068772	6	1.45	291.2469	3	Not Proven	2	36	4	Site Infrastructure	3	305.7778	106.05679	3	-13.0809	1	9	1	4
202	642929	896699	282.8255	10.42439	6	0.75	282.0755	2	Not Proven	2	24	3	Site Infrastructure	3	282.8255	0	4	0	1	12	2	6
203	643166	896487	264.1627	7.750378	4	1.1	263.0627	3	Not Proven	2	24	3	Minor Watercourse	6	249.1111	200.982617	3	15.0516	2	36	4	12
204	642265	896688	338.8993	9.679115	6	1.3	337.5993	3	Not Proven	2	36	4	Site Infrastructure	3	340.2346	29.767732	3	-1.3353	1	9	1	4
205	642636	896601	330.4191	5.668219	4	1.8	328.6191	3	Not Proven	2	24	3	Sensitive Habitat	8	330.4191	0	4	0	1	32	4	12
206	642817	896387	307.3212	8.158318	6	1.1	306.2212	3	Not Proven	2	36	4	Sensitive Habitat	8	308.3386	37.624919	3	-1.0174	1	24	3	12
207	643014	896025	298.4967	6.673503	4	0.55	297.9467	2	Not Proven	2	16	3	Site Infrastructure	3	299.3454	29.489302	3	-0.8487	1	9	1	3
208	643166	895820	300.515	6.02975	4	1.6	298.915	3	Not Proven	2	24	3	Site Infrastructure	3	288.3722	110.624456	3	12.1428	2	18	2	6
209	643116	897037	245.4763	2.160915	2	0.05	245.4263	1	Not Proven	2	4	1	Site Infrastructure	3	245.4763	0	4	0	1	12	2	2
210	643092	896993	247.5371	3.470076	2	0.06	247.4771	1	Not Proven	2	4	1	Site Infrastructure	3	247.5371	0	4	0	1	12	2	2
211	643040	896908	256.3682	8.323383	6	0.08	256.2882	1	Not Proven	2	12	2	Site Infrastructure	3	254.1471	14.774975	3	2.2211	1	9	1	2
212	642958	896851	270.3013	10.13299	6	0.05	270.2513	1	Not Proven	2	12	2	Site Infrastructure	3	269.7684	28.988203	3	0.5329	1	9	1	2
213	642975	896861	267.4391	7.132376	4	0.9	266.5391	2	Not Proven	2	16	3	Site Infrastructure	3	266.1605	30.820115	3	1.2786	1	9	1	3
214	642871	896818	284.0916	9.389057	6	0.9	283.1916	2	Not Proven	2	24	3	Site Infrastructure	3	280.906	59.72891	3	3.1856	1	9	1	3
215	642780	896818	296.9877	8.289439	6	0.07	296.9177	1	Not Proven	2	12	2	Site Infrastructure	3	285.5813	129.802203	3	11.4064	2	18	2	4
216	642780	896813	296.9877	8.289439	6	0.8	296.1877	2	Not Proven	2	24	3	Site Infrastructure	3	285.5813	127.542526	3	11.4064	2	18	2	6
217	642685	896785	310.8637	10.36587	6	0.95	309.9137	2	Not Proven	2	24	3	Sensitive Habitat	8	330.6132	118.832505	3	-19.7495	1	24	3	9
218	642670	896692	324.0911	12.57205	6	0.05	324.0411	1	Not Proven	2	12	2	Sensitive Habitat	8	327.7222	42.869111	3	-3.6311	1	24	3	6
219	642669	896691	324.9786	9.729271	6	1.3	323.6786	3	Not Proven	2	36	4	Sensitive Habitat	8	327.7222	41.472626	3	-2.7436	1	24	3	12
220	642701	896599	323.9459	7.271604	4	1.5	322.4459	3	Not Proven	2	24	3	Sensitive Habitat	8	322.6032	0	4	1.3427	1	32	4	12
221	642701	896597	323.9459	7.271604	4	0.04	323.9059	1	Not Proven	2	8	2	Sensitive Habitat	8	322.6032	0	4	1.3427	1	32	4	8
222	642755	896514	315.7743	9.08072	6	1.5	314.2743	3	Not Proven	2	36	4	Sensitive Habitat	8	318.9182	24.244857	3	-3.1439	1	24	3	12
223	642813	896430	305.4682	7.468745	4	1.8	303.6682	3	Not Proven	2	24	3	Sensitive Habitat	8	305.4682	0	4	0	1	32	4	12
224	642856	896340	304.423	7.09338	4	1.45	302.973	3	Not Proven	2	24	3	Sensitive Habitat	8	305.4682	96.594428	3	-1.0452	1	24	3	9
225	642903	896253	300.7356	10.33407	6	1.1	299.6356	3	Not Proven	2	36	4	Site Infrastructure	3	306.8659	165.660656	3	-6.1303	1	9	1	4
226	642959	896170	299.3533	7.246715	4	1.4	297.9533	3	Not Proven	2	24	3	Site Infrastructure	3	301.0825	82.759954	3	-1.7292	1	9	1	3
227	643003	896083	296.3774	6.258759	4	1.1	295.2774	3	Not Proven	2	24	3	Site Infrastructure	3	296.8476	5.919198	4	-0.4702	1	12	2	6
228	643053	895995	296.4599	6.06081	4	1.2	295.2599	3	Not Proven	2	24	3	Site Infrastructure	3	295.3555	78.033819	3	1.1044	1	9	1	3
229	643115	895917	297.5484	6.487531	4	1.5	296.0484	3	Not Proven	2	24	3	Site Infrastructure	3	286.7608	128.761072	3	10.7876	2	18	2	6
230	643177	895840	298.5285	6.003796	4	1.4	297.1285	3	Not Proven	2	24	3	Site Infrastructure	3	288.3722	90.189185	3	10.1563	2	18	2	6
231	642937	896723	280.3045	9.552979	6	0.3	280.0045	1	Not Proven	2	12	2	Site Infrastructure	3	280.3045	0	4	0	1	12	2	4
232	643012	896657	273.1661	8.401258	6	0.3	272.8661	1	Slip Material	5	30	3	Site Infrastructure	3	276.9758	56.147897	3	-3.8097	1	9	1	3
233	643091	896597	264.8096	7.474034	4	1.5	263.3096	3	Slip Material	5	60	5	Site Infrastructure	3	279.372	154.219163	3	-14.5624	1	9	1	5
234	643150	896516	263.1423	8.006869	6	1.5	261.6423	3	Not Proven	2	36	4	Site Infrastructure	3	236.7683	228.62328	3	26.374	2	18	2	8
235	642835	896834	286.9797	11.72469	6	0.02	286.9597	1	Not Proven	2	12	2	Site Infrastructure	3	283.5789	96.48304	3	3.4008	1	9	1	2
236	642832	896842	287.0586	11.79105	6	0.5	286.5586	1	Not Proven	2	12	2	Site Infrastructure	3	283.5789	104.244742	3	3.4797	1	9	1	2
237	642829	896842	287.0586	11.79105	6	0.6	286.4586	2	Not Proven	2	24	3	Site Infrastructure	3	283.5789	106.360377	3	3.4797	1	9	1	3
238	642765	896907	288.3756	9.44335	6	0.08	288.2956	1	Not Proven	2	12	2	Site Infrastructure	3	305.7778	180.497631	3	-17.4022	1	9	1	2
239	642765	896905	288.3756	9.44335	6	1.1	287.2756	3	Not Proven	2	36	4	Site Infrastructure	3	305.7778	180.401741	3	-17.4022	1	9	1	4
240	642758	896908	289.7565	9.040819	6	0.6	289.1565	2	Not Proven	2	24	3	Site Infrastructure	3	305.7778	173.566547	3	-16.0213	1	9	1	3
241	642697	896957	289.8192	9.404938	6	0.09	289.7292	1	Not Proven	2	12	2	Site Infrastructure	3	305.7778	127.10624	3	-15.9586	1	9	1	2
242	642698	896958	289.8192	9.404938	6	1.3	288.5192	3	Not Proven	2	36	4	Site Infrastructure	3	305.7778	128.459248	3	-15.9586	1	9	1	4
243	642697	896957	289.8192	9.404938	6	1.3	288.5192	3	Not Proven	2	36	4	Site Infrastructure	3	305.7778	127.10624	3	-15.9586	1	9	1	4
244	642306	897253	263.41	8.884035	6	0.01	263.4	1	Not Proven	2	12	2	Site Infrastructure	3	264.4178	5.785905	4	-1.0078	1	12	2	4
245	642281	897161	275.4903	7.863544	4	0.01	275.4803	1	Not Proven	2	8	2	Site Infrastructure	3	285.2728	73.747544	3	-9.7825	1	9	1	2
246	642212	897092	284.8878	6.153192	4	0.01	284.8778	1	Not Proven	2	8	2	Site Infrastructure	3	288.4582	24.805691	3	-3.5704	1	9	1	2
247	642235	896999	295.8543	7.308222	4	0.01	295.8443	1	Not Proven	2	8	2	Site Infrastructure	3	295.8543	0	4	0	1	12	2	4
248	642272	896909	310.1206	7.750805	4	0.01	310.1106	1	Not Proven	2	8	2	Site Infrastructure	3	311.5152	17.279835	3	-1.3946	1	9	1	2
249	642262	896687	338.0464	9.974143	6	0.01	338.0364	1	Not Proven	2	12	2	Site Infrastructure	3	340.2346	32.762453	3	-2.1882	1	9	1	2
250	642679	896929	295.2885	7.851629	4	0.01	295.2785	1	Not Proven	2	8	2	Site Infrastructure	3	305.7778	99.412717	3	-10.4893	1	9	1	2
251	642599	897211	266.0678	8.323091	6	0.85	265.2178	2	Not Proven	2	24	3	Site Infrastructure	3	273.162	208.852088	3	-7.0942	1	9	1	3
252	642599	897111	277.8252	6.134583	4	1.6	276.2252	3	Not Proven	2	24	3	Site Infrastructure	3	301.6794	196.655228	3	-23.8542	1	9	1	3
253	642637	896958	293.4672	9.936892	6	1.5	291.9672	3	Not Proven	2	36	4	Site Infrastructure	3	305.7778	80.047308	3	-12.3106	1	9	1	4
254	643116	897037	245.4763	2.160915	2	0.01	245.4663	1	Not Proven	2	4	1	Site Infrastructure	3	245.4763	0	4	0	1	12	2	2
255	643065	896951	251.3498	3.834108	2	0.01	251.3398	1	Not Proven	2	4	1	Site Infrastructure	3	251.3498	0	4	0	1	12	2	2
256	643000	896880	262.6299	9.677137	6	0.01	262.6199	1	Not Proven	2	12	2	Site Infrastructure	3	259.8473	33.55864	3	2.7826	1	9	1	2
257	642827	896835	288.6878	12.70989	6	0.6	288.0878	2	Not Proven	2	24	3	Site Infrastructure	3	285.5813	103.059545	3	3.1065	1	9	1	3
258	642734	896800	303.0793	9.010835	6	0.7	302.3793	2	Not Proven	2	24	3	Site Infrastructure	3	290.6376	158.403919	3	12.4417	2	18	2	6
259	642640	896766	319.4931	8.518079	6	1.8	317.6931	3	Not Proven	2	36	4	Sensitive Habitat	8	330.6351	74.071678	3	-11.142	1	24	3	12
260	642609	896693	330.6132	3.306852	2	2.1	328.5132	3	Not Proven	2	12	2	Sensitive Habitat	8	330.6132	0	4	0	1	32	4	8
261	642649	896602	329.1696	5.977038	4	1.95	327.2196	3	Not Proven	2	24	3	Sensitive Habitat	8	329.4685	0	4	-0.2989	1	32	4	12
262	642694	896513	324.5362	7.070749	4	0.25	324.2862	1	Not Proven	2	8	2	Sensitive Habitat	8	324.5362	0	4	0	1	32	4	8
263	642791	896491	309.9063	9.920181	6	1.65	308.2563	3	Not Proven	2	36	4	Sensitive Habitat	8	309.5122	15.009873	3	0.3941	1	24	3	12
264	642888	896465	294.7556	7.076519	4	1.4	293.3556	3	Not Proven	2	24	3	Sensitive Habitat	8	296.5811	15.291308	3	-1.8255	1	24	3	9
265	642987	896450	284.6742	7.148474	4	1.75	282.9242	3	Not Proven	2	24	3	Sensitive Habitat	8	296.5811	112.479715	3	-11.9069	1	24	3	9
266	643084	896435	274.9537	5.847676	4	1.4	273.5537	3	Not Proven	2	24	3	Sensitive Habitat	8	296.5811	211.42391	3	-21.6274	1	24	3	9
267	643171	896421	267.5085	9.842	6	1.35	266.1585	3	Not Proven	2	36	4	Minor Watercourse	6	249.1111	145.956613	3	18.3974	2	36	4	16
268	642940	896723	280.3045	9.552979	6	0.65	279.6545	2	Not Proven	2	24	3	Site Infrastructure	3	278.6717	0	4	1.6328	1	12	2	6
269	642942	896688	281.6323	9.91567	6	0.55	281.0823	2	Not Proven	2	24	3	Site Infrastructure	3	280.0089	0	4	1.6234	1	12	2	6
270	642740	896501	318.7567	9.492493	6	0.1	318.6567	1	Not Proven	2	12	2	Sensitive Habitat	8	318.442	14.6225	3	0.3147	1	24	3	6
271	642805	896424	306.7219	7.511386	4	2	304.7219	3	Not Proven	2	24	3	Sensitive Habitat	8	306.7219	0	4	0	1	32	4	12
272	642834	896390	304.6513	8.147458	6	0.9	303.7513	2	Not Proven	2	24	3	Sensitive Habitat	8	305.4682	42.012854	3	-0.8169	1	24	3	9
273	643129	895953	293.3195	6.497841	4	1.2	292.1195	3	Not Proven	2	24	3	Site Infrastructure	3	283.645	114.842965	3	9.6745	1	9	1	3
274	643089	895957	297.0863	6.673768	4	0.8	296.2863	2	Not Proven	2	16	3	Site Infrastructure	3	291.9402	125.401854	3	5.1461	1	9	1	3
275	643016	896042	297.3034	6.592965	4	1	296.3034	2	Not Proven	2	16	3	Site Infrastructure	3	299.3454	21.902527	3	-2.042	1	9	1	3
276	643121	895914	297.5484	6.487531	4	1.4	296.1484	3	Not Proven	2	24	3	Site Infrastructure	3	286.7608	122.806265	3	10.7876	2	18	2	6
277	643183	895817	298.7164	5.991025	4	1.65	297.0664	3	Not Proven	2	24	3	Site Infrastructure	3	288.3722	99.779768	3	10.3442	2	18	2	6
278	643092	896892	251.4455	5.791359	4	0.3	251.1455	1	Not Proven	2	8	2	Site Infrastructure	3	251.4455	5.630728	4	0	1	12	2	4
279	643081	896910	252.8908	4.828267	4	0.5	252.3908	1	Not Proven	2	8	2	Site Infrastructure	3	251.9988	0	4	0.892	1	12	2	4
280	643065	896928	252.3951	4.345395	4	0.2	252.1951	1	Not Proven	2	8	2	Site Infrastructure	3	252.3951	0	4	0	1	12	2	4
281	643077	896937	251.6454	3.526829	2	0.4	251.2454	1	Not Proven	2	4	1	Site Infrastructure	3	251.6454	0	4	0	1	12	2	2
282	643089	896937	250.9805	4.659138	4	0.6	250.3805	2	Not Proven	2	16	3	Site Infrastructure	3	250.2314	0	4	0.7491	1	12	2	6
283	643118	896915	249.0992	4.762586	4	0.55	248.5492	2	Not Proven	2	16	3	Site Infrastructure	3	249.0992	0	4	0	1	12	2	6
284	643153	896952	245.651	3.001734	2	0.5	245.151	1	Not Proven	2	4	1	Site Infrastructure	3	245.8806	0	4	-0.2296	1	12	2	2
285	643135	896971	246.3859	3.167917	2	0.75	245.6359	2	Not Proven	2	8	2	Site Infrastructure	3	246.3859	0	4	0	1	12	2	4
286	643113	896992	246.3484	3.487379	2	1	245.3484	2	Not Proven	2	8	2	Site Infrastructure	3	246.6919	0	4	-0.3435	1	12	2	4
287	643089	896937	250.9805	4.659138	4	0.08	250.9005	1	Not Proven	2	8	2	Site Infrastructure	3	250.2314	0	4	0.7491	1	12	2	4
288	643092	897010	246.9759	2.938602	2	1.1	245.8759	3	Not Proven	2	12	2	Site Infrastructure	3	246.9759	0	4	0	1	12	2	4
289	643074	897031	246.9552	2.718315	2	0.85	246.1052	2	Not Proven	2	8	2	Site Infrastructure	3	246.428	11.643517	3	0.5272	1	9	1	2
290	643064	897030	247.3802	3.077119	2	1.05	246.3302	3	Not Proven	2	12	2	Site Infrastructure	3	246.4959	19.905685	3	0.8843	1	9	1	2
291	643052	897012	248.1355	3.160506	2	0.6	247.5355	2	Not Proven	2	8	2	Site Infrastructure	3	248.2395	40.204939	3	-0.104	1	9	1	2
292	643061	897006	248.4622	3.659881	2	0.4	248.0622	1	Not Proven	2	4	1	Site Infrastructure	3	248.2395	29.426639	3	0.2227	1	9	1	1
293	643077	897001	247.959	3.229262	2	0.4	247.559	1	Not Proven	2	4	1	Site Infrastructure	3	248.2395	15.233906	3	-0.2805	1	9	1	1
294	642257	897019	294.2165	7.127142	4	1	293.2165	2	Not Proven	2	16	3	Site Infrastructure	3	294.2165	0	4	0	1	12	2	6
295	642677	896947	292.6969	9.068772	6	0.5	292.1969	1	Not Proven	2	12	2	Site Infrastructure	3	305.7778	104.753942	3	-13.0809	1	9	1	2
296	642681	896942	292.6969	9.068772	6	0.65	292.0469	2	Not Proven	2	24	3	Site Infrastructure	3	305.7778	106.093296	3	-13.0809	1	9	1	3
297	642684	896947	291.9972	9.099712	6	0.7	291.2972	2	Not Proven	2	24	3	Site Infrastructure	3	305.7778	110.967292	3	-13.7806	1	9	1	3
298	642930	896702	282.378	10.20295	6	0.4	281.978	1	Not Proven	2	12	2	Site Infrastructure	3	281.0652	0	4	1.3128	1	12	2	4
299	643144	896490	266.1743	7.489462	4	0.5	265.6743	1	Not Proven	2	8	2	Minor Watercourse	6	249.1111	215.97775	3	17.0632	2	36	4	8
300	642271	896686	338.8993	9.679115	6	2	336.8993	3	Not Proven	2	36	4	Site Infrastructure	3	340.2346	23.79883	3	-1.3353	1	9	1	4
301	642270	896683	338.8993	9.679115	6	2	336.8993	3	Not Proven	2	36	4	Site Infrastructure	3	340.2346	25.139529	3	-1.3353	1	9	1	4
302	642637	896601	330.4191	5.668219	4	2	328.4191	3	Not Proven	2	24	3	Sensitive Habitat	8	330.4191	0	4	0	1	32	4	12
303	642816	896387	307.3212	8.158318	6	1.4	305.9212	3	Not Proven	2	36	4	Sensitive Habitat	8	308.3386	37.04262	3	-1.0174	1	24	3	12
304	643013	896027	298.4967	6.673503	4	0.8	297.6967	2	Not Proven	2	16	3	Site Infrastructure	3	299.3454	27.326641	3	-0.8487	1	9	1	3
305	643166	895820	300.515	6.02975	4	1.8	298.715	3	Not Proven	2	24	3	Site Infrastructure	3	288.3722	110.624456	3	12.1428	2	18	2	6
306	642267	897095	284.2286	6.74464	4	1.72	282.5086	3	Not Proven	2	24	3	Site Infrastructure	3	286.578	17.793086	3	-2.3494	1	9	1	3
307	642306	896701	339.8688	9.371343	6	1.87	337.9988	3	Slip Material	5	90	5	Site Infrastructure	3	338.9178	11.817711	3	0.951	1	9	1	5
308	642875	896722	290.6376	9.41207	6	1.25	289.3876	3	Not Proven	2	36	4	Site Infrastructure	3	290.9229	0	4	-0.2853	1	12	2	8
309	642775	896119	319.9095	6.350637	4	1.52	318.3895	3	Not Proven	2	24	3	Site Infrastructure	3	322.4419	81.651651	3	-2.5324	1	9	1	3
310	643129	896234	277.0976	8.6586	6	1.35	275.7476	3	Not Proven	2	36	4	Minor Watercourse	6	267.304	66.86704	3	9.7936	1	18	2	8
311	643106	895890	300.8358	6.869263	4	1.31	299.5258	3	Not Proven	2	24	3	Site Infrastructure	3	287.616	138.848696	3	13.2198	2	18	2	6
312	643411	896126	266.0065	5.12887	4	1.13	264.8765	3	Not Proven	2	24	3	Minor Watercourse	6	258.1815	63.354068	3	7.825	1	18	2	6
313	643442	895392	319.313	3.895663	2	2.36	316.953	3	Not Proven	2	12	2	Minor Watercourse	6	295.1037	405.261092	3	24.2093	2	36	4	8
314	643642	895792	286.9766	3.07156	2	3.45	283.5266	8	Not Proven	2	32	4	Minor Watercourse	6	269.3134	299.564201	3	17.6632	2	36	4	16
315	643642	895592	298.567	3.046542	2	1.85	296.717	3	Not Proven	2	12	2	Site Infrastructure	3	282.292	455.176786	3	16.275	2	18	2	4
316	643642	895392	313.255	4.277333	4	2.72	310.535	3	Not Proven	2	24	3	Minor Watercourse	6	295.1037	561.722629	3	18.1513	2	36	4	12
317	643146	896487	266.1743	7.489462	4	0.5	265.6743	1	Not Proven	2	8	2	Minor Watercourse	6	249.1111	212.37805	3	17.0632	2	36	4	8
318	642270	896685	338.8993	9.679115	6	2	336.8993	3	Not Proven	2	36	4	Site Infrastructure	3	340.2346	24.871717	3	-1.3353	1	9	1	4
319	642276	896890	312.6686	5.083059	4	1.37	311.2986	3	Not Proven	2	24	3	Site Infrastructure	3	312.2535	9.153092	4	0.4151	1	12	2	6
320	642648	895691	346.9973	13.78046	6	1.9	345.0973	3	Not Proven	2	36	4	Sensitive Habitat	8	366.0892	135.819703	3	-19.0919	1	24	3	12

321	642151	896225	390.0422	10.44711	6	2.05	387.9922	3	Not Proven	2	36	4	Sensitive Habitat	8	394.5025	47.799461	3	-4.4603	1	24	3	12
351	642048	896118	389.0001	7.682336	4	1.8	387.2001	3	R	1.5	18	3	Sensitive Habitat	8	393.7961	50.659974	3	-4.796	1	24	3	9
352	641946	896115	382.6681	9.420559	6	1.8	380.8681	3	G	1	18	3	Sensitive Habitat	8	395.6016	143.603034	3	-12.9335	1	24	3	9
353	641944	896217	366.6094	10.39629	6	0.8	365.8094	2	G	1	12	2	Sensitive Habitat	8	390.8339	180.102739	3	-24.2245	1	24	3	6
354	642043	896218	376.9235	9.515376	6	0.4	376.5235	1	R	1.5	9	2	Sensitive Habitat	8	391.4479	90.699698	3	-14.5244	1	24	3	6
355	642043	896321	363.4814	13.71384	6	0.7	362.7814	2	Slip Material	5	60	5	Site Infrastructure	3	366.7554	90.902459	3	-3.274	1	9	1	5
356	641946	896314	346.9923	15.91336	8	1.7	345.2923	3	Slip Material	5	120	5	Site Infrastructure	3	366.7554	179.80929	3	-19.7631	1	9	1	5
357	641845	896315	327.3949	16.18932	8	0.3	327.0949	1	G	1	8	2	Site Infrastructure	3	274.0625	221.499183	3	53.3324	2	18	2	4
358	641751	896223	324.8702	18.3079	8	0.3	324.5702	1	G	1	8	2	Site Infrastructure	3	274.0625	252.885757	3	50.8077	2	18	2	4
359	641747	896313	306.6102	17.82825	8	0.1	306.5102	1	G	1	8	2	Site Infrastructure	3	274.0625	166.882978	3	32.5477	2	18	2	4
360	641643	896313	282.5022	15.24139	8	1	281.5022	2	G	1	16	3	Site Infrastructure	3	270.6791	155.331285	3	11.8231	2	18	2	6
361	641544	896314	271.4874	7.142735	4	2.1	269.3874	3	G	1	12	2	Site Infrastructure	3	261.3599	173.95032	3	10.1275	2	18	2	4
362	641546	896415	260.8045	7.304914	4	1.5	259.3045	3	G	1	12	2	Site Infrastructure	3	261.3599	84.955962	3	-0.5554	1	9	1	2
363	641646	896413	269.9268	8.227983	6	0.1	269.8268	1	G	1	6	2	Site Infrastructure	3	270.6791	57.339456	3	-0.7523	1	9	1	2
364	641729	896420	285.6625	12.98136	6	0.2	285.4625	1	G	1	6	2	Site Infrastructure	3	274.0625	64.417258	3	11.6	2	18	2	4
365	641844	896416	306.6364	14.52098	6	1.2	305.4364	3	G	1	18	3	Site Infrastructure	3	276.6337	156.022752	3	30.0027	2	18	2	6
366	641946	896417	324.1282	15.91375	8	0.4	323.7282	1	Slip Material	5	40	4	Site Infrastructure	3	365.4801	171.606725	3	-41.3519	1	9	1	4
367	642043	896418	344.3804	18.25113	8	0.5	343.8804	1	Slip Material	5	40	4	Site Infrastructure	3	365.4801	77.657	3	-21.0997	1	9	1	4
368	642043	896517	325.4676	15.11361	8	0.4	325.0676	1	G	1	8	2	Site Infrastructure	3	363.8703	135.266132	3	-38.4027	1	9	1	2
369	641943	896511	309.0215	10.22885	6	0.7	308.3215	2	G	1	12	2	Site Infrastructure	3	365.4801	211.509983	3	-56.4586	1	9	1	2
370	641847	896512	296.1914	8.85236	6	0.5	295.6914	1	G	1	6	2	Site Infrastructure	3	276.018	142.977444	3	20.1734	2	18	2	4
371	641747	896521	281.1408	10.6753	6	0.7	280.4408	2	G	1	12	2	Site Infrastructure	3	276.018	48.9382	3	5.1228	1	9	1	2
372	641745	896611	272.6918	9.514648	6	0.8	271.8918	2	G	1	12	2	Site Infrastructure	3	262.9776	87.012562	3	9.7142	1	9	1	2
373	641843	896618	287.6309	11.92285	6	0.9	286.7309	2	G	1	12	2	Site Infrastructure	3	269.2318	177.836901	3	18.3991	2	18	2	4
374	641947	896613	300.0756	8.965785	6	1.4	298.6756	3	G	1	18	3	Site Infrastructure	3	276.018	268.48144	3	24.0576	2	18	2	6
375	642050	896609	312.8292	10.64492	6	0.4	312.4292	1	G	1	6	2	Site Infrastructure	3	363.6784	196.592797	3	-50.8492	1	9	1	2
376	641847	896718	276.3676	8.34225	6	1.3	275.0676	3	G	1	18	3	Site Infrastructure	3	262.9776	230.902387	3	13.39	2	18	2	6
377	641744	896717	263.3128	9.555743	6	0.8	262.5128	2	G	1	12	2	Site Infrastructure	3	251.0893	147.648719	3	12.2235	2	18	2	4
378	641754	896812	259.8436	9.119725	6	1	258.8436	2	G	1	12	2	Site Infrastructure	3	243.8489	199.125253	3	15.9947	2	18	2	4
379	641745	896913	253.829	5.43615	4	1.3	252.529	3	G	1	12	2	Site Infrastructure	3	256.7022	162.28651	3	-2.8732	1	9	1	2
380	641840	896918	260.4395	6.493192	4	1.8	258.6395	3	G	1	12	2	Site Infrastructure	3	256.7545	194.348037	3	3.685	1	9	1	2
381	641843	896820	270.1108	7.468224	4	1.5	268.6108	3	G	1	12	2	Site Infrastructure	3	246.8893	281.537275	3	23.2215	2	18	2	4
382	641944	896715	289.0329	9.108192	6	1.2	287.8329	3	G	1	18	3	Site Infrastructure	3	262.9776	312.291328	3	26.0553	2	18	2	6
383	641943	896813	280.2531	8.394894	6	0.8	279.4531	2	G	1	12	2	Site Infrastructure	3	321.8102	321.439693	3	-41.5571	1	9	1	2
384	641946	896913	269.3968	10.84847	6	0.1	269.2968	1	G	1	6	2	Site Infrastructure	3	251.7681	251.682538	3	17.6287	2	18	2	4
385	642045	896914	283.6609	12.77791	6	0.5	283.1609	1	G	1	6	2	Site Infrastructure	3	296.5042	188.25927	3	-12.8433	1	9	1	2
386	642045	896818	292.9131	8.29605	6	1	291.9131	2	G	1	12	2	Site Infrastructure	3	321.8102	219.166607	3	-28.8971	1	9	1	2
387	642043	896714	303.5738	10.76996	6	2.1	301.4738	3	G	1	18	3	Site Infrastructure	3	326.0051	229.812	3	-22.4313	1	9	1	3
388	642142	896715	319.9909	9.849713	6	1.7	318.2909	3	G	1	18	3	Site Infrastructure	3	330.2161	136.733929	3	-10.2252	1	9	1	3
389	642245	896714	332.7005	9.68961	6	1.5	331.2005	3	G	1	18	3	Site Infrastructure	3	334.3635	39.363779	3	-1.663	1	9	1	3
390	640946	896719	207.2416	7.339	4	0.01	207.2316	1	G	1	4	1	Minor Watercourse	6	203.2328	43.361173	3	4.0088	1	18	2	2
391	641044	896719	217.6312	5.320501	4	0.01	217.6212	1	G	1	4	1	Minor Watercourse	6	203.2328	125.446757	3	14.3984	2	36	4	4
392	641046	896612	220.9176	5.829384	4	0.01	220.9076	1	G	1	4	1	Minor Watercourse	6	203.2328	189.219819	3	17.6848	2	36	4	4
393	641145	896617	229.1991	5.1052	4	0.2	228.9991	1	G	1	4	1	Minor Watercourse	6	210.504	126.89662	3	18.6951	2	36	4	4
394	641244	896517	228.9381	4.18267	4	1.2	227.7381	3	G	1	12	2	Minor Watercourse	6	229.5719	14.45119	3	-0.6338	1	18	2	4
395	641343	896514	233.6869	6.704833	4	1	232.6869	2	G	1	8	2	Minor Watercourse	6	232.4771	31.559005	3	1.2098	1	18	2	4
396	641348	896415	240.9425	6.172936	4	0.5	240.4425	1	G	1	4	1	Minor Watercourse	6	232.4771	123.528047	3	8.4654	1	18	2	2
397	641446	896414	250.3154	8.23157	6	0.8	249.5154	2	G	1	12	2	Minor Watercourse	6	237.7883	125.14064	3	12.5271	2	36	4	8
398	641446	896515	241.1951	7.120564	4	0.8	240.3951	2	G	1	8	2	Minor Watercourse	6	237.7883	31.294142	3	3.4068	1	18	2	4
399	641546	896514	251.3889	7.52001	4	0.6	250.7889	2	G	1	8	2	Site Infrastructure	3	258.0513	58.860437	3	-6.6624	1	9	1	2
400	641636	896510	263.0933	10.57832	6	0.6	262.4933	2	G	1	12	2	Site Infrastructure	3	263.0933	0	4	0	1	12	2	4
401	641644	896614	257.0907	9.303923	6	0.9	256.1907	2	G	1	12	2	Site Infrastructure	3	255.2423	25.888601	3	1.8484	1	9	1	2
402	641642	896715	250.6774	7.851084	4	0.9	249.7774	2	R	1.5	12	2	Site Infrastructure	3	246.8893	54.764716	3	3.7881	1	9	1	2
403	641643	896816	247.7731	5.964749	4	0.5	247.2731	1	G	1	4	1	Site Infrastructure	3	239.9061	102.661525	3	7.867	1	9	1	1
404	641545	896815	238.5283	5.574458	4	1	237.5283	2	G	1	8	2	Site Infrastructure	3	237.6745	11.04409	3	0.8538	1	9	1	2
405	641547	896718	241.7836	4.552654	4	1.6	240.1836	3	G	1	12	2	Site Infrastructure	3	243.0852	20.175468	3	-1.3016	1	9	1	2
406	641549	896620	245.297	5.795638	4	1.5	243.797	3	G	1	12	2	Site Infrastructure	3	251.3283	55.36787	3	-6.0313	1	9	1	2
407	641448	896615	235.1809	7.033607	4	0.4	234.7809	1	G	1	4	1	Minor Watercourse	6	231.7995	34.191126	3	3.3814	1	18	2	2
408	641343	896615	223.5931	7.632006	4	0.1	223.4931	1	G	1	4	1	Minor Watercourse	6	222.1713	12.185223	3	1.4218	1	18	2	2
409	641243	896617	222.2982	8.55198	6	0.01	222.2882	1	G	1	6	2	Minor Watercourse	6	216.5596	33.020661	3	5.7386	1	18	2	4
410	641144	896717	218.7743	7.044059	4	0.1	218.6743	1	G	1	4	1	Minor Watercourse	6	207.6933	83.445869	3	11.081	2	36	4	4
411	641148	896811	208.2082	6.372156	4	0.5	207.7082	1	G	1	4	1	Major Watercourse	8	198.0963	39.676903	3	10.1119	2	48	4	4
412	641242	896819	207.57	6.451556	4	0.2	207.37	1	G	1	4	1	Minor Watercourse	6	208.5441	31.836242	3	-0.9741	1	18	2	2
413	641345	896812	220.1262	6.065697	4	0.3	219.8262	1	G	1	4	1	Minor Watercourse	6	214.6682	54.009619	3	5.458	1	18	2	2
414	641348	896712	220.9946	5.618611	4	0.1	220.8946	1	G	1	4	1	Minor Watercourse	6	222.091	8.559452	4	-1.0964	1	24	3	3
415	641246	896716	211.823	6.951677	4	0.1	211.723	1	G	1	4	1	Minor Watercourse	6	210.418	8.919505	4	1.405	1	24	3	3
416	641446	896715	232.9278	6.11258	4	1.4	231.5278	3	G	1	12	2	Minor Watercourse	6	231.2807	39.36748	3	1.6471	1	18	2	4
417	641449	896814	230.9395	4.999172	4	1.3	229.6395	3	G	1	12	2	Site Infrastructure	3	233.1101	31.210704	3	-2.1706	1	9	1	2
418	641449	896914	228.4382	7.474678	4	0.2	228.2382	1	G	1	4	1	Minor Watercourse	6	226.9317	37.094219	3	1.5065	1	18	2	2
419	641543	896915	240.1937	5.910272	4	0.8	239.3937	2	G	1	8	2	Site Infrastructure	3	237.9128	18.991881	3	2.2809	1	9	1	2
420	641644	896918	247.3464	4.198903	4	0.4	246.9464	1	G	1	4	1	Site Infrastructure	3	250.0049	97.363868	3	-2.6585	1	9	1	1
421	641642	897018	252.6039	5.008308	4	0.1	252.5039	1	G	1	4	1	Site Infrastructure	3	251.2365	27.2453	3	1.3674	1	9	1	1
422	641546	897016	244.9167	6.381848	4	0.01	244.9067	1	G	1	4	1	Site Infrastructure	3	244.9167	1.215173	4	0	1	12	2	2
423	641440	897015	228.1932	7.952383	4	0.3	227.8932	1	G	1	4	1	Site Infrastructure	3	242.248	86.160352	3	-14.0548	1	9	1	1
424	641345	897114	216.7997	7.71669	4	0.3	216.4997	1	G	1	4	1	Major Watercourse	8	203.8623	165.005479	3	12.9374	2	48	4	4
425	641345	897014	216.4435	7.530385	4	0.5	215.9435	1	R	1.5	6	2	Major Watercourse	8	207.844	73.691041	3	8.5995	1	24	3	6
426	641243	897011	201.7653	9.332794	6	0.3	201.4653	1	G	1	6	2	Major Watercourse	8	198.7444	55.120959	3	3.0209	1	24	3	6
427	641244	897115	204.8932	6.687848	4	0.3	204.5932	1	G	1	4	1	Major Watercourse	8	188.402	148.202631	3	16.4912	2	48	4	4
428	641147	897113	194.5777	5.188308	4	0.2	194.3777	1	G	1	4	1	Major Watercourse	8	184.7671	110.327442	3	9.8106	1	24	3	3
429	641146	897016	191.0198	8.235928	6	0.9	190.1198	2	G	1	12	2	Major Watercourse	8	187.3239	19.183074	3	3.6959	1	24	3	6
430	641245	896917	202.6573	10.77099	6	0.2	202.4573	1	G	1	6	2	Major Watercourse	8	197.6838	30.400758	3	4.9735	1	24	3	6
431	641345	896915	213.6812	11.95915	6	0.3	213.3812	1	G	1	6	2	Major Watercourse	8	212.1863	9.895541	4	1.4949	1	32	4	8
432	641046	897015	181.6108	11.98782	6	0.4	181.2108	1	G	1	6	2	Major Watercourse	8	181.3081	9.361852	4	0.3027	1	32	4	8
433	641144	896917	191.9101	9.507382	6	0.4	191.5101	1	G	1	6	2	Major Watercourse	8	191.4297	10.744293	3	0.4804	1	24	3	6
434	641045	896910	196.3411	7.811047	4	0.4	195.9411	1	G	1	4	1	Minor Watercourse	6	200.8803	86.443073	3	-4.5392	1	18	2	2
435	641045	896818	206.6573	6.380637	4	0.2	206.4573	1	G	1	4	1	Minor Watercourse	6	205.0902	72.407064	3	1.5671	1	18	2	2
436	640946	896816	200.5402	7.7047	4	0.1	200.4402	1	G	1	4	1	Minor Watercourse	6	198.7936	15.140247	3	1.7466	1	18	2	2
437	643745	896980	222.4149	3.380655	2	0.1	222.3149	1	G	1	2	1	Major Watercourse	8	213.1786	54.176716	3	9.2363	1	24	3	3
438	643845	896986	221.2256	4.230306	4	0.1	221.1256	1	G	1	4	1	Residential Dwelling	6	217.1321	62.178626	3	4.0935	1	18	2	2
439	643944	896991	205.0422	10.91736	6	0.1	204.9422	1	G	1	6	2	Major Watercourse	8	201.6166	31.045686	3	3.4256	1	24	3	6
440	643943	897078	217.2267	4.644292	4	0.1	217.1267	1	G	1	4	1	Site Infrastructure	3	220.8384	48.211929	3	-3.6117	1	9	1	1
441	643847	897067	220.838	2.960193	2	0.1	220.738	1	G	1	2	1	Site Infrastructure	3	221.8333	10.198129	3	-0.9953	1	9	1	1
442	643804	897056	223.1505	3.375104	2	1.6	221.5505	3	G	1	6	2	Site Infrastructure	3	221.1	32.173073	3	2.0505	1	9	1	2
443	643833	897048	222.4415	5.922053	4	0.1	222.3415	1	G	1	4	1	Site Infrastructure	3	221.1	18.997215	3	1.3415	1	9	1	1
444	643843	897114	223.8453	1.231593	1	0.01	223.8353	1	G	1	1	1	Site Infrastructure	3	223.8453	0	4	0	1	12	2	2
445	643873	897172	222.5437	4.465877	4	0.3	222.2437	1	G	1	4	1	Site Infrastructure	3	222.203	14.767753	3	0.3407	1	9	1	1
446	643747	897180	227.5503	2.137164	2	0.2	227.3503	1	G	1	2	1	Site Infrastructure	3	224.6579	85.517572	3	2.8924	1	9	1	1
447	643647	897116	226.6468	1.739138	1	3.4	223.2468	8	R	1.5	12	2	Site Infrastructure	3	224.7525	167.569106	3	1.8943	1	9	1	2
448	643546	897117	228.3799	0.396723	1	3	225.3799	3	G	1	3	1	Major Watercourse	8	215.7956	204.855627	3	12.5843	2	48	4	4
449	643544	896412	237.7759	5.203827	4	0.7	237.0759	2	G	1	8	2	Minor Watercourse	6	233.9008	42.643577	3	3.8751	1	18	2	4
450	643345	896410	245.8258	9.096037	6	0.4	245.4258	1	G	1	6	2	Minor Watercourse	6	240.1489	51.440289	3	5.6769	1	18	2	4
451	643246	896515	252.3481	6.992192	4	1.4	250.9481	3	G	1	12	2	Site Infrastructure	3	236.3767	155.830328	3	15.9714	2	18	2	4
452	643346	896520	244.0505	5.68213	4	0.9	243.1505	2	G	1	8	2	Site Infrastructure	3	234.2606	90.981063	3	9.7899	1	9	1	2
453	643443	896513	234.0757	6.257444	4	0.5	233.5757	1	G	1	4	1	Minor Watercourse	6	231.0153	31.25786	3	3.0604	1	18	2	2
454	643347	896616	237.6087	5.676784	4	0.9	236.7087	2	G	1	8	2	Site Infrastructure	3	236.3767	13.691761	3	1.232	1	9	1	2
455	643255	896711	242.9636	4.970642	4	1.9	241.0636	3	G	1	12	2	Site Infrastructure	3	235.1207	112.637681	3	7.8429	1	9	1	2
456	643346	896715	234.5216	5.421503	4	1.6	232.9216	3	R	1.5	18	3	Site Infrastructure	3	232.9979	47.632279	3	1.5237	1	9	1	3
457	643444	896717	227.4972	3.162817	2	1.4	226.0972	3	G	1	6	2	Site Infrastructure	3	226.998	9.827328	4	0.4992	1	12	2	4
458	643635	896463	236.1631	7.102483	4	1	235.1631	2	G	1	8	2	Site Infrastructure	3	236.1408	5.727081	4	0.0223	1	12	2	4
459	643648	896513	238.0681	6.476609	4	1.5	236.5681	3	G	1	12	2	Site Infrastructure	3	234.0827	42.245967	3	3.9854	1	9	1	2
460	643745	896515	248.2046	4.330285	4	0.5	247.7046	1	R	1.5	6	2	Site Infrastructure	3	242.398	115.748896	3	5.8066	1	9	1	2
461	643625	896390	236.259	7.067092	4	1	235.259	2	R	1.5	12	2	Site Infrastructure	3	236.259	0	4	0	1	12	2	4
462	643945	896815	219.7114	8.252115	6	0.5	219.2114	1	R	1.5	9	2	Minor Watercourse	6	217.9052	15.767086	3	1.8062	1	18	2	4
463	643946	896714	234.1011	7.479199	4	1.2	232.9011	3	G	1	12	2	Minor Watercourse	6	234.0463	28.697482	3	0.0548	1	18	2	4
464	643945	896615	244.7169	5.760975	4	2.3	242.4169	3	G	1	12	2	Minor Watercourse	6	242.4762	44.854577	3	2.2407	1	18	2	4
465	643946	896514	255.5056	6.915436	4	1.8	253.7056	3	G	1	12	2	Minor Watercourse	6	256.4335	69.649093	3	-0.9279	1	18	2	4
466	644047	896519	258.7455	5.944227	4	1.9	256.8455	3	G	1	12	2	Minor Watercourse	6	257.8052	22.923799	3	0.9403	1	18	2	4
467	644144	896514	261.2769	4.734095	4	0.9	260.3769	2	G	1	8	2	Minor Watercourse	6	263.4115	110.350543	3	-2.1346	1	18	2	4
468	644244	896517	261.5915	3.170719	2	0.8	260.7915	2	G	1	4	1	Site Infrastructure	3	244.8695	184.694898	3	16.722	2	18	2	2
469	644346	896514	256.5646	3.483	2	0.7	255.8646	2	G	1	4	1	Site Infrastructure	3	244.8695	231.790704	3	11.6951	2	18	2	2
470	644344	896615	253.323	3.709193	2	0.2	253.123	1	G	1	2	1	Site Infrastructure	3	244.0385	159.500839	3	9.2845	1	9	1	1
471	644245	896616	254.6291	4.378195	4	0.4	254.2291	1	G	1	4	1	Site Infrastructure	3	244.8695	91.023947	3	9.7596	1	9	1	1
472	644146	896617	252.0276	6.652709	4	0.7	251.3276	2	R	1.5	12	2	Site Infrastructure	3	243.2255	84.862976	3	8.8021	1	9	1	2
473	644045	896615	246.8674	6.485133	4	1.2	245.6674	3	G	1	12	2	Minor Watercourse	6	244.667	51.104226	3	2.2004	1	18	2	4
474	644047	896716	234.8603	7.150566	4	2.2	232.6603	3	G	1	12	2	Minor Watercourse	6	235.3064	63.540161	3	-0.4461	1	18	2	4
475	644144	896717	240.4378	7.26001	4	0.4	240.0378	1	G	1	4	1	Site Infrastructure	3	240.4378	0	4	0	1	12	2	2
476	644166	896748	236.6067	7.677423	4	0.4	236.2067	1	G	1	4	1	Site Infrastructure	3	236.6067	0	4	0	1	12	2	2
477	644242	896716	243.4899	7.099082	4	0.2	243.2899	1	R	1.5	6	2	Site Infrastructure	3	242.8401	27.718788	3	0.6498	1	9	1	2
478	644345	896716	246.2251	6.053216	4	0.2	246.0251	1	G	1	4	1	Site Infrastructure	3	238.9876	127.392488	3	7.2375	1	9	1	1
479	644344	896812	234.0438	6.980251	4	0.8	233.2438	2	G	1	8	2	Site Infrastructure	3	232.0047	119.764834	3	2.0391	1	9	1	2
480	644243	896819	232.7031	7.303083	4	1	231.7031	2	G	1	8	2	Site Infrastructure	3	232.0047	18.877936	3	0.6984	1	9	1	2
481	644143	896815	228.0521	7.531301	4	1	227.0521	2	G	1	8	2	Site Infrastructure	3	229.4171	7.890429	4	-1.365	1	12	2	4
482	644048	896819	224.9974	6.82749	4	1	223.9974	2	G	1	8	2	Site Infrastructure	3	231.3907	91.961516	3	-6.3933	1	9	1	2
483	644144	896915	218.7018	7.200661	4	1	217.7018	2	G	1	8	2	Minor Watercourse	6	212.0515	52.5614	3	6.6503	1	18	2	4
484	643544	897207	226.9187	1.693694	1	4.3	222.6187	8	G	1	8	2	Site Infrastructure	3	226.2168	240.971569	3	0.7019	1	9	1	2
485	643445	897114	229.1141	3.287652	2	1	228.1141	2	G	1	4	1	Site Infrastructure	3	227.047	154.242098	3	2.0671	1	9	1	1
486	643346	897017	237.4474	4.036829	4	0.4	237.0474	1	R	1.5	6	2	Site Infrastructure	3	238.6636	117.381257	3	-1.2162	1	9	1	2
487	643346	897118	230.8773	4.655139	4	1.9	228.9773	3	G	1	12	2	Site Infrastructure	3	228.4393	71.110526	3	2.438	1	9	1	2
488	643344	897209	222.7305	4.711464	4	3	219.7305	3	G	1	12	2	Site Infrastructure	3	226.2168	45.407662	3	-3.4863	1	9	1	2
489	643245	897115	234.9647	5.506799	4	0.1	234.8647	1	R	1.5	6	2	Site Infrastructure	3	234.1058	11.885234	3	0.8589	1	9	1	2
490	643545	896714	222.1354	1.448959	1	0.1	222.0354	1	G	1	1	1	Major Watercourse	8	222.2832	11.456037	3	-0.1478	1	24	3	3
491	643546	896615	224.7471	2.547225	2	0.1	224.6471	1	G	1	2	1	Minor Watercourse	6	224.7471	2.897672	4	0	1	24	3	3
492	643541	896516	231.858	4.432518	4	0.2	231.658	1	G	1	4	1	Site Infrastructure	3	231.858	6.789618	4	0	1	12	2	2
493	643842	896513	255.9098	5.306489	4	0.3	255.6098	1	G	1	4	1	Minor Watercourse	6	252.2821	168.311366	3	3.6277	1	18	2	2
494	643844	896416	257.471	3.063492	2	0.7	256.771	2	G	1	4	1	Site Infrastructure	3	249.6886	124.145605	3	7.7824	1	9	1	1
495	643754	896415	249.6076	9.77035	6	1	248.6076	2	G	1	12	2	Site Infrastructure	3	245.511	53.263433	3	4.0966	1	9	1	2
496	643647	896319	239.9667	8.373613	6	1	238.9667	2	G	1	12	2	Site Infrastructure	3	241.2818	18.70588	3	-1.3151	1	9	1	2
497	643739	896308	252.2085	5.564457	4	0.3	251.9085	1	G	1	4	1	Site Infrastructure	3	251.192	29.786829	3	1.0165	1	9	1	1
498	643679	896256	249.4828	13.14615	6	0.2	249.2828	1	R	1.5	9	2	Minor Watercourse	6	244.9099	45.338166	3	4.5729	1	18	2	4
499	641348	897415	207.6505	6.922659	4	0.2	207.4505	1	R	1.5	6	2	Minor Watercourse	6	206.5521	22.651011	3	1.0984	1	18	2	4
500	641444	897411	216.7433	8.807039	6	0.2	216.5433	1	R	1.5	9	2	Minor Watercourse	6	213.1005	12.187239	3	3.6428	1	18	2	4
501	641547	897314	227.5187	7.05557	4	0.4	227.1187	1	G	1	4	1	Minor Watercourse	6	223.1292	33.594506	3	4.3895	1	18	2	2
502	641544	897216	234.9976	5.797132	4	0.4	234.5976	1	G	1	4	1	Minor Watercourse	6	230.3928	109.122863	3	4.6048	1	18	2	2
503	641545	897115	241.1862	7.072165	4	0.6	240.5862	2	G	1	8	2	Site Infrastructure	3	246.7236	61.239612	3	-5.5374	1	9	1	2
504	641645	897117	251.5888	7.259437	4	0.4	251.1888	1	G	1	4	1	Site Infrastructure	3	253.603	19.746452	3	-2.0142	1	9	1	1
505	641745	897017	254.8164	2.198064	2	0.5	254.3164	1	G	1	2	1	Site Infrastructure	3	257.1305	63.673795	3	-2.3141	1	9	1	1
506	641746	897115	255.8745	2.333894	2	0.2	255.6745	1	G	1	2	1	Site Infrastructure	3	255.8745	0	4	0	1	12	2	2
507	641743	897215	245.151	7.7	4	0.1	245.051	1	G	1	4	1	Minor Watercourse	6	243.6031	12.273972	3	1.5479	1	18	2	2
508	641642	897218	243.6013	6.706996	4	0.4	243.2013	1	G	1	4	1	Minor Watercourse	6	237.5308	58.859964	3	6.0705	1	18	2	2
509	642345	896815	323.2121	8.185696	6	2.2	321.0121	3	R	1.5	27	3	Site Infrastructure	3	321.8102	81.078489	3	1.4019	1	9	1	3

510	642445	896816	322.584	7.483361	4	0.7	321.884	2	G	1	8	2	Site Infrastructure	3	314.774	58.927155	3	7.81	1	9	1	2
511	642544	896815	317.8213	6.417602	4	0.9	316.9213	2	R	1.5	12	2	Site Infrastructure	3	314.2823	21.782624	3	3.539	1	9	1	2
512	642445	896914	307.7321	9.730234	6	0.8	306.9321	2	G	1	12	2	Site Infrastructure	3	307.7792	9.299718	4	-0.0471	1	12	2	4
513	642545	896915	304.5569	10.14127	6	1.6	302.9569	3	G	1	18	3	Site Infrastructure	3	304.5569	0	4	0	1	12	2	6
514	642644	896912	298.9067	9.101164	6	0.2	298.7067	1	G	1	6	2	Site Infrastructure	3	305.7778	61.918022	3	-6.8711	1	9	1	2
515	642564	896897	305.237	9.59481	6	0.7	304.537	2	G	1	12	2	Site Infrastructure	3	305.237	0	4	0	1	12	2	4
516	642593	896884	306.0477	7.084419	4	1	305.0477	2	G	1	8	2	Site Infrastructure	3	306.5734	9.091252	4	-0.5257	1	12	2	4
517	642584	896862	309.0626	9.399445	6	0.8	308.2626	2	G	1	12	2	Site Infrastructure	3	308.1019	17.539098	3	0.9607	1	9	1	2
518	642581	896832	313.8726	7.237998	4	0.7	313.1726	2	G	1	8	2	Site Infrastructure	3	315.1441	26.70133	3	-1.2715	1	9	1	2
519	642645	896813	309.6952	10.14579	6	0.7	308.9952	2	R	1.5	18	3	Site Infrastructure	3	315.1441	94.047094	3	-5.4489	1	9	1	3
520	642632	896816	311.2429	7.703434	4	1.2	310.0429	3	G	1	12	2	Site Infrastructure	3	315.1441	80.831581	3	-3.9012	1	9	1	2
521	642653	896815	308.9214	11.26	6	0.5	308.4214	1	G	1	6	2	Site Infrastructure	3	306.5734	99.376582	3	2.348	1	9	1	2
522	642673	896799	311.3612	10.0362	6	0.1	311.2612	1	G	1	6	2	Sensitive Habitat	8	330.6351	121.103922	3	-19.2739	1	24	3	6
523	642580	896764	324.606	9.49674	6	1.3	323.306	3	G	1	18	3	Sensitive Habitat	8	331.0327	57.276731	3	-6.4267	1	24	3	9
524	642552	896715	333.225	8.076813	6	0.8	332.425	2	R	1.5	18	3	Sensitive Habitat	8	333.9883	18.586501	3	-0.7633	1	24	3	9
525	642446	896716	336.2931	10.08537	6	1.8	334.4931	3	Slip Material	5	90	5	Sensitive Habitat	8	341.3016	28.570191	3	-5.0085	1	24	3	15
526	642397	896715	337.0737	7.959602	4	2	335.0737	3	Slip Material	5	60	5	Sensitive Habitat	8	341.1073	39.201268	3	-4.0336	1	24	3	15
527	642345	896714	337.5452	8.398345	6	1.3	336.2452	3	Slip Material	5	90	5	Site Infrastructure	3	337.6781	51.313276	3	-0.1329	1	9	1	5
528	642288	896784	326.0139	6.421445	4	1.1	324.9139	3	G	1	12	2	Site Infrastructure	3	327.9497	22.105904	3	-1.9358	1	9	1	2
529	642246	896819	320.4205	8.239361	6	0.1	320.3205	1	G	1	6	2	Site Infrastructure	3	321.8102	18.557078	3	-1.3897	1	9	1	2
530	642210	896889	308.0817	7.374384	4	0.4	307.6817	1	G	1	4	1	Site Infrastructure	3	314.0928	58.731453	3	-6.0111	1	9	1	1
531	642171	896856	308.0069	9.371318	6	1.2	306.8069	3	G	1	18	3	Site Infrastructure	3	316.038	93.787208	3	-8.0311	1	9	1	3
532	642129	896843	303.5637	10.58618	6	2.3	301.2637	3	G	1	18	3	Site Infrastructure	3	317.6369	135.657977	3	-14.0732	1	9	1	3
533	642045	896874	288.0624	8.614876	6	1.8	286.2624	3	G	1	18	3	Site Infrastructure	3	296.5042	209.114904	3	-8.4418	1	9	1	3
534	642055	896894	287.877	10.19966	6	0.7	287.177	2	G	1	12	2	Site Infrastructure	3	296.5042	189.998087	3	-8.6272	1	9	1	2
535	642094	896921	290.775	10.16349	6	0.4	290.375	1	G	1	6	2	Site Infrastructure	3	296.5042	142.794858	3	-5.7292	1	9	1	2
536	642098	896941	288.6297	10.3246	6	0.9	287.7297	2	G	1	12	2	Site Infrastructure	3	296.5042	129.108791	3	-7.8745	1	9	1	2
537	642074	896976	281.195	11.00697	6	1	280.195	2	G	1	12	2	Site Infrastructure	3	292.8564	140.220807	3	-11.6614	1	9	1	2
538	642106	896953	287.9598	10.07136	6	0.9	287.0598	2	G	1	12	2	Site Infrastructure	3	296.5042	117.310988	3	-8.5444	1	9	1	2
539	642095	896931	289.7023	10.11069	6	0.6	289.1023	2	G	1	12	2	Site Infrastructure	3	296.5042	136.515147	3	-6.8019	1	9	1	2
540	642069	896926	285.4755	11.34214	6	0.5	284.9755	1	G	1	6	2	Site Infrastructure	3	296.5042	161.657215	3	-11.0287	1	9	1	2
541	642083	896928	288.2812	10.15366	6	1	287.2812	2	G	1	12	2	Site Infrastructure	3	296.5042	148.444835	3	-8.223	1	9	1	2
542	642110	896924	291.1235	9.987301	6	1	290.1235	2	G	1	12	2	Site Infrastructure	3	296.5042	127.144705	3	-5.3807	1	9	1	2
543	642125	896918	294.8802	9.875353	6	1	293.8802	2	G	1	12	2	Site Infrastructure	3	296.5042	118.900841	3	-1.624	1	9	1	2
544	642148	896957	293.393	9.444052	6	0.3	293.093	1	G	1	6	2	Site Infrastructure	3	296.5042	77.905583	3	-3.1112	1	9	1	2
545	642190	896968	296.5864	9.309319	6	0.6	295.9864	2	G	1	12	2	Site Infrastructure	3	296.5042	37.709591	3	0.0822	1	9	1	2
546	642444	896317	357.9662	12.0214	6	1.2	356.7662	3	G	1	18	3	Sensitive Habitat	8	349.923	94.316595	3	8.0432	1	24	3	9
547	642545	896383	341.4248	8.172775	6	1.8	339.6248	3	G	1	18	3	Sensitive Habitat	8	341.4248	4.494601	4	0	1	32	4	12
548	642544	896313	340.2453	5.60561	4	2	338.2453	3	G	1	12	2	Sensitive Habitat	8	341.4248	73.6695	3	-1.1795	1	24	3	6
549	642644	896311	330.8037	5.254815	4	0.9	329.9037	2	G	1	8	2	Sensitive Habitat	8	326.7992	55.284735	3	4.0045	1	24	3	6
550	642747	896412	315.696	9.143167	6	1.8	313.896	3	G	1	18	3	Sensitive Habitat	8	315.696	0	4	0	1	32	4	12
551	642742	896364	318.994	7.762243	4	1.3	317.694	3	G	1	12	2	Sensitive Habitat	8	318.032	24.005648	3	0.962	1	24	3	6
552	642749	896312	319.421	6.944591	4	1	318.421	2	G	1	8	2	Sensitive Habitat	8	321.3289	74.008754	3	-1.9079	1	24	3	6
553	642745	896213	321.6919	6.298985	4	1.9	319.7919	3	G	1	12	2	Sensitive Habitat	8	326.7992	160.683599	3	-5.1073	1	24	3	6
554	642643	896113	333.9445	6.637676	4	1.9	332.0445	3	G	1	12	2	Site Infrastructure	3	332.375	95.328763	3	1.5695	1	9	1	2
555	642545	896119	346.6773	8.001678	6	2	344.6773	3	G	1	18	3	Site Infrastructure	3	352.3188	52.029053	3	-5.6415	1	9	1	3
556	642447	896117	361.5639	12.91792	6	1	360.5639	2	G	1	12	2	Site Infrastructure	3	361.5639	0	4	0	1	12	2	4
557	642543	896214	341.5122	5.303069	4	1.5	340.0122	3	G	1	12	2	Site Infrastructure	3	355.4009	130.843937	3	-13.8887	1	9	1	2
558	642568	896218	339.7939	5.245262	4	1.9	337.8939	3	G	1	12	2	Site Infrastructure	3	355.4009	146.583742	3	-15.607	1	9	1	2
559	642567	896230	339.4719	5.257199	4	1.8	337.6719	3	G	1	12	2	Sensitive Habitat	8	335.2378	149.803933	3	4.2341	1	24	3	6
560	642567	896242	339.183	5.194274	4	1.8	337.383	3	G	1	12	2	Sensitive Habitat	8	335.2378	137.413543	3	3.9452	1	24	3	6
561	642579	896253	338.1552	5.190851	4	0.8	337.3552	2	G	1	8	2	Sensitive Habitat	8	335.2378	124.961372	3	2.9174	1	24	3	6
562	642594	896254	336.3335	5.435218	4	2	334.3335	3	G	1	12	2	Sensitive Habitat	8	331.1271	120.241458	3	5.2064	1	24	3	6
563	642608	896253	335.4224	5.380613	4	2	333.4224	3	G	1	12	2	Sensitive Habitat	8	331.1271	116.8875	3	4.2953	1	24	3	6
564	642563	896285	338.9497	4.247607	4	2	336.9497	3	G	1	12	2	Sensitive Habitat	8	335.2378	96.976128	3	3.7119	1	24	3	6
565	642565	896275	338.9256	4.258984	4	1.8	337.1256	3	G	1	12	2	Sensitive Habitat	8	335.2378	106.333957	3	3.6878	1	24	3	6
566	642565	896262	338.9015	4.490443	4	1.7	337.2015	3	G	1	12	2	Sensitive Habitat	8	335.2378	119.112257	3	3.6637	1	24	3	6
567	642555	896253	339.9176	5.113189	4	1.8	338.1176	3	G	1	12	2	Sensitive Habitat	8	335.2378	130.175778	3	4.6798	1	24	3	6
568	642544	896253	340.7989	5.212331	4	1	339.7989	2	G	1	8	2	Sensitive Habitat	8	335.2378	133.7514	3	5.5611	1	24	3	6
569	642532	896254	342.9124	8.620144	6	1.5	341.4124	3	G	1	18	3	Sensitive Habitat	8	341.4248	133.774535	3	1.4876	1	24	3	9
570	643469	896767	225.7496	4.08735	4	2	223.7496	3	G	1	12	2	Site Infrastructure	3	225.7496	0	4	0	1	12	2	4
571	643466	896751	225.9982	2.89722	2	1.2	224.7982	3	G	1	6	2	Site Infrastructure	3	225.9982	0	4	0	1	12	2	4
572	643458	896675	227.9344	2.951045	2	1.1	226.8344	3	G	1	6	2	Site Infrastructure	3	227.9344	0	4	0	1	12	2	4
573	643416	896582	233.6588	5.369735	4	2	231.6588	3	G	1	12	2	Site Infrastructure	3	233.0363	15.157193	3	0.6225	1	9	1	2
574	643350	896538	242.7183	6.18858	4	1.4	241.3183	3	G	1	12	2	Site Infrastructure	3	234.2606	73.787383	3	8.4577	1	9	1	2
575	643357	896579	238.8596	7.981215	4	1	237.8596	2	G	1	8	2	Site Infrastructure	3	235.778	38.416247	3	3.0816	1	9	1	2
576	643359	896583	237.9607	7.419147	4	0.9	237.0607	2	G	1	8	2	Site Infrastructure	3	235.778	34.76896	3	2.1827	1	9	1	2
577	643383	896579	236.3789	6.219201	4	0.9	235.4789	2	R	1.5	12	2	Site Infrastructure	3	234.2606	21.047013	3	2.1183	1	9	1	2
578	643358	896594	237.3563	6.373614	4	0.9	236.4563	2	G	1	8	2	Site Infrastructure	3	235.778	23.543345	3	1.5783	1	9	1	2
579	643341	896582	240.1517	7.243325	4	1.8	238.3517	3	G	1	12	2	Site Infrastructure	3	235.778	42.166011	3	4.3737	1	9	1	2
580	643333	896582	240.1517	7.243325	4	0.9	239.2517	2	G	1	8	2	Site Infrastructure	3	235.778	46.592695	3	4.3737	1	9	1	2
581	643352	896606	237.9254	6.175467	4	1.8	236.1254	3	G	1	12	2	Site Infrastructure	3	235.778	16.73798	3	2.1474	1	9	1	2
582	643422	896604	232.4138	4.906214	4	2.5	229.9138	3	R	1.5	18	3	Site Infrastructure	3	231.8016	0	4	0.6122	1	12	2	6
583	643431	896597	232.4241	4.740374	4	2.2	230.2241	3	G	1	12	2	Site Infrastructure	3	231.8016	12.108579	3	0.6225	1	9	1	2
584	643518	896571	227.8587	4.66889	4	0.6	227.2587	2	G	1	8	2	Minor Watercourse	6	227.8587	5.219185	4	0	1	24	3	6
585	644044	897414	209.7755	7.572745	4	0.2	209.5755	1	G	1	4	1	Minor Watercourse	6	198.722	88.44223	3	11.0535	2	36	4	4
586	644044	897314	207.8449	6.954687	4	1	206.8449	2	G	1	8	2	Minor Watercourse	6	200.3197	75.369714	3	7.5252	1	18	2	4
587	643944	897218	217.8247	5.332123	4	0.2	217.6247	1	G	1	4	1	Site Infrastructure	3	215.592	36.557797	3	2.2327	1	9	1	1
588	643843	897217	225.6356	1.383002	1	0.2	225.4356	1	G	1	1	1	Site Infrastructure	3	222.203	67.704309	3	3.4326	1	9	1	1
589	643946	897316	219.2615	5.958983	4	0.4	218.8615	1	G	1	4	1	Site Infrastructure	3	212.7187	123.961221	3	6.5428	1	9	1	1
590	643941	897419	221.5622	5.054066	4	0.2	221.3622	1	G	1	4	1	Minor Watercourse	6	198.722	187.594416	3	22.8402	2	36	4	4
591	643845	897414	227.6645	1.534257	1	0.7	226.9645	2	G	1	2	1	Minor Watercourse	6	221.064	225.374522	3	6.6005	1	18	2	2
592	643841	897517	228.1817	3.092806	2	0.4	227.7817	1	R	1.5	3	1	Minor Watercourse	6	221.064	143.759743	3	7.1177	1	18	2	2
593	643744	897511	230.8087	0.80158	1	1.4	229.4087	3	G	1	3	1	Minor Watercourse	6	221.064	226.415087	3	9.7447	1	18	2	2
594	643745	897414	231.059	1.085029	1	1	230.059	2	G	1	2	1	Minor Watercourse	6	221.064	283.829475	3	9.995	1	18	2	2
595	643645	897315	230.6487	1.48455	1	3.7	226.9487	8	G	1	8	2	Site Infrastructure	3	224.6579	253.178879	3	5.9908	1	9	1	2
596	643746	897320	230.6081	1.30549	1	1	229.6081	2	G	1	2	1	Site Infrastructure	3	224.2875	202.912243	3	6.3206	1	9	1	1
597	643847	897318	227.4167	2.648253	2	0.8	226.6167	2	G	1	4	1	Site Infrastructure	3	222.203	163.202755	3	5.2137	1	9	1	1
598	643824	897401	228.2053	2.052408	2	0.5	227.7053	1	G	1	2	1	Minor Watercourse	6	221.064	247.03461	3	7.1413	1	18	2	2
599	643824	897389	228.1873	1.978763	1	0.5	227.6873	1	G	1	1	1	Site Infrastructure	3	222.203	237.666389	3	5.9843	1	9	1	1
600	643825	897375	228.1613	1.900763	1	0.7	227.4613	2	G	1	2	1	Site Infrastructure	3	222.203	223.838527	3	5.9583	1	9	1	1
601	643833	897375	227.8659	1.743553	1	0.7	227.1659	2	R	1.5	3	1	Site Infrastructure	3	222.203	221.858825	3	5.6629	1	9	1	1
602	643813	897376	228.4744	1.934282	1	0.5	227.9744	1	G	1	1	1	Site Infrastructure	3	222.203	227.087885	3	6.2714	1	9	1	1
603	643804	897375	228.8046	1.9152	1	0.7	228.1046	2	R	1.5	3	1	Site Infrastructure	3	222.203	228.79692	3	6.6016	1	9	1	1
604	643795	897375	229.1347	1.897665	1	0.9	228.2347	2	R	1.5	3	1	Site Infrastructure	3	222.203	232.294857	3	6.9317	1	9	1	1
605	643827	897351	228.4245	2.132011	2	1.5	226.9245	3	R	1.5	9	2	Site Infrastructure	3	222.203	199.970914	3	6.2215	1	9	1	2
606	643826	897357	228.3368	2.147906	2	2.2	226.1368	3	G	1	6	2	Site Infrastructure	3	222.203	205.334632	3	6.1338	1	9	1	2
607	643826	897364	228.249	2.038031	2	2.1	226.149	3	G	1	6	2	Site Infrastructure	3	222.203	212.361699	3	6.046	1	9	1	2
608	643825	897368	228.249	2.038031	2	0.5	227.749	1	G	1	2	1	Site Infrastructure	3	222.203	217.150149	3	6.046	1	9	1	1
609	643839	897375	227.8659	1.743553	1	1.2	226.6659	3	G	1	3	1	Site Infrastructure	3	222.203	221.02644	3	5.6629	1	9	1	1
610	643850	897375	227.5856	1.619862	1	1.3	226.2856	3	G	1	3	1	Site Infrastructure	3	217.1209	219.708351	3	10.4647	2	18	2	2
611	643145	895597	318.19	5.168738	4	2.5	315.69	3	G	1	12	2	Site Infrastructure	3	288.3722	310.506299	3	29.8178	2	18	2	4
612	643345	895615	306.9592	5.474043	4	2.5	304.4592	3	G	1	12	2	Site Infrastructure	3	287.5669	284.192411	3	19.3923	2	18	2	4
613	643344	895716	298.0949	5.222802	4	2.8	295.2949	3	G	1	12	2	Site Infrastructure	3	287.5669	188.985455	3	10.528	2	18	2	4
614	643244	895716	302.0573	7.158469	4	1.5	300.5573	3	G	1	12	2	Site Infrastructure	3	288.3722	171.121184	3	13.6851	2	18	2	4
615	643145	895716	308.4386	6.263826	4	1.3	307.1386	3	G	1	12	2	Site Infrastructure	3	288.3722	203.161852	3	20.0664	2	18	2	4
616	643046	895717	317.1519	5.814113	4	2.1	315.0519	3	G	1	12	2	Site Infrastructure	3	288.3722	269.001786	3	28.7797	2	18	2	4
617	643144	895817	302.314	6.442655	4	1.9	300.414	3	G	1	12	2	Site Infrastructure	3	288.3722	131.133382	3	13.9418	2	18	2	4
618	643245	895815	293.3337	6.69657	4	0.7	292.6337	2	G	1	8	2	Site Infrastructure	3	288.3722	72.969822	3	4.9615	1	9	1	2
619	643348	895813	288.9809	5.747327	4	2.8	286.1809	3	G	1	12	2	Site Infrastructure	3	282.292	100.433188	3	6.6889	1	9	1	2
620	643280	895859	288.7662	7.445107	4	0.9	287.8662	2	G	1	8	2	Site Infrastructure	3	287.5669	32.225995	3	1.1993	1	9	1	2
621	643264	895858	289.7215	6.403592	4	1.7	288.0215	3	G	1	12	2	Site Infrastructure	3	287.5669	29.21964	3	2.1546	1	9	1	2
622	643245	895835	292.6959	5.200256	4	1.5	291.1959	3	G	1	12	2	Site Infrastructure	3	288.3722	52.764556	3	4.3237	1	9	1	2
623	643227	895857	292.8	5.620048	4	1.8	291	3	G	1	12	2	Site Infrastructure	3	288.3722	41.134877	3	4.4278	1	9	1	2
624	643209	895858	294.5675	6.452086	4	2.3	292.2675	3	R	1.5	18	3	Site Infrastructure	3	288.3722	54.055559	3	6.1953	1	9	1	3
625	643189	895856	296.466	6.399053	4	1.8	294.666	3	G	1	12	2	Site Infrastructure	3	288.3722	72.173268	3	8.0938	1	9	1	2
626	643245	895898	288.4622	6.175768	4	1.7	286.7622	3	G	1	12	2	Site Infrastructure	3	287.657	9.020045	4	0.8052	1	12	2	4
627	643245	895884	289.1774	6.139836	4	1.8	287.3774	3	G	1	12	2	Site Infrastructure	3	288.3722	9.759641	4	0.8052	1	12	2	4
628	643245	895869	290.6094	6.243329	4	1.6	289.0094	3	R	1.5	18	3	Site Infrastructure	3	288.3722	20.446626	3	2.2372	1	9	1	3
629	643245	895857	291.3896	6.035548	4	1.9	289.4896	3	G	1	12	2	Site Infrastructure	3	288.3722	31.29314	3	3.0174	1	9	1	2
630	643297	895859	286.0481	7.358956	4	1.1	284.9481	3	G	1	12	2	Site Infrastructure	3	285.1491	40.541162	3	0.899	1	9	1	2
631	643345	895916	278.793	6.540942	4	0.5	278.293	1	G	1	4	1	Site Infrastructure	3	281.5596	30.927343	3	-2.7666	1	9	1	1
632	643446	895914	279.734	5.260001	4	1.9	277.834	3	G	1	12	2	Minor Watercourse	6	269.3134	93.722672	3	10.4206	2	36	4	8
633	643349	896020	274.2261	5.231471	4	1	273.2261	2	G	1	8	2	Site Infrastructure	3	278.7668	61.562743	3	-4.5407	1	9	1	2
634	643343	896116	270.0891	4.043277	4	0.5	269.5891	1	G	1	4	1	Site Infrastructure	3	271.4834	28.316332	3	-1.3943	1	9	1	1
635	643244	896117	272.3352	4.143799	4	1	271.3352	2	G	1	8	2	Site Infrastructure	3	272.3352	0	4	0	1	12	2	4
636	643146	896118	280.5848	5.546305	4	1	279.5848	2	G	1	8	2	Site Infrastructure	3	280.5848	0	4	0	1	12	2	4
637	643048	896116	291.0227	6.607928	4	1	290.0227	2	G	1	8	2	Site Infrastructure	3	290.3762	10.623497	3	0.6465	1	9	1	2
638	642946	896119	302.125	6.161238	4	1.2	300.925	3	G	1	12	2	Site Infrastructure	3	302.1217	31.700499	3	0.0033	1	9	1	2
639	642844	896115	312.5891	6.090699	4	1.8	310.7891	3	G	1	12	2	Site Infrastructure	3	310.2321	48.517331	3	2.357	1	9	1	2
640	642750	896020	326.59	6.562805	4	1.4	325.19	3	G	1	12	2	Site Infrastructure	3	324.3894	18.034975	3	2.2006	1	9	1	2
641	642750	895916	332.1064	6.584701	4	1.8	330.3064	3	R	1.5	18	3	Site Infrastructure	3	327.9279	114.416617	3	4.1785	1	9	1	3
642	642840	895912	324.2094	6.202927	4	1	323.2094	2	R	1.5	12	2	Site Infrastructure	3	312.7902	100.918629	3	11.4192	2	18	2	4
643	642945	896015	306.0415	6.743255	4	1	305.0415	2	R	1.5	12	2	Site Infrastructure	3	306.0415	2.45753	4	0	1	12	2	4
644	642946	895916	312.703	7.332645	4	1.3	311.403	3	G	1	12	2	Site Infrastructure	3	310.7978	86.958881	3	1.9052	1	9	1	2
645	642948	895815	319.6939	5.681246	4	1.9	317.7939	3	G	1	12	2	Site Infrastructure	3	310.7978	184.858608	3	8.8961	1	9	1	2
646	642945	895716	326.8264	8.488008	6	0.6	326.2264	2	R	1.5	18	3	Site Infrastructure	3	310.7978	283.076366	3	16.0286	2	18	2	6
647	643445	896914	230.3084	2.875587	2	1	229.3084	2	R	1.5	6	2	Site Infrastructure	3	229.896	56.351242	3	0.4124	1	9	1	2
648	643345	896914	236.4074	4.506975	4	0.1	236.3074	1	G	1	4	1	Site Infrastructure	3	233.9796	41.488698	3	2.4278	1	9	1	1
649	643245	896915	241.1735	3.056422	2	1	240.1735	2	G	1	4	1	Site Infrastructure	3	241.1735	0	4	0	1	12	2	2
650	643150	896816	247.7358	6.66713	4	0.7	247.0358	2	R	1.5	12	2	Site Infrastructure	3	245.4123	43.366099	3	2.3235	1	9	1	2
651	643148	896714	253.2152	6.786597	4	0.8	252.4152	2	G	1	8	2	Site Infrastructure	3	243.834	135.346865	3	9.3812	1	9	1	2
652	643045	896714	265.6571	8.347667	6	1	264.6571	2	G	1	12	2	Site Infrastructure	3	273.9231	71.930603	3	-8.266	1	9	1	2
653	643045	896516	273.4283	8.901338	6	0.8	272.6283	2	Slip Material	5	60	5	Site Infrastructure	3	279.372	176.32688	3	-5.9437	1	9	1	5
654	642941	896517	287.5986	8.092203	6	2	285.5986	3	Slip Material	5	90	5	Sensitive Habitat	8	296.5811	89.583035	3	-8.9825	1	24	3	15
655	642945	896415	289.7012	6.368031	4	1.9	287.8012	3	G	1	12	2	Sensitive Habitat	8	296.5811	82.514061	3	-6.8799	1	24	3	6
656	642945	896315	292.0867	8.367628	6	1.1	290.9867	3	G	1	18	3	Sensitive Habitat	8	296.5811	158.98205	3	-4.4944	1	24	3	9
657	643045	896316	280.951	5.833148	4	1.6	279.351	3	R	1.5	18	3	Minor Watercourse	6	267.304	178.669496	3	13.647	2	36	4	12
658	643145	896315	269.8772	6.81893	4	1	268.8772	2	G	1	8	2	Minor Watercourse	6	261.1731	104.005233	3	8.7041	1	18	2	4
659	643246	896316	256.5649	10.01068	6	1	255.5649	2	G	1	12	2	Minor Watercourse	6	249.1111	28.721644	3	7.4538	1	18	2	4
660	643345	896317	248.7425	8.838826	6	0.4	248.3425	1	G	1	6	2	Minor Watercourse	6	244.0009	29.933883	3	4.7416	1	18	2	4
661	643443	896316	250.5709	6.185863	4	0.1	250.4709	1	G	1	4	1	Site Infrastructure	3	251.6205	9.281319	4	-1.0496	1	12	2	2
662	642345	896317	375.5537	8.536716	6	1	374.5537	2	G	1	12	2	Sensitive Habitat	8	367.2726	129.864672	3	8.2811	1	24	3	6
663	642344	896216	380.5957	11.01263	6	1.2	379.3957	3	G	1	18	3	Sensitive Habitat	8	392.8153	112.69435	3	-12.2196	1	24	3	9
664	642246	896219	391.8739	5.122682	4	2.5	389.3739	3	G	1	12	2	Sensitive Habitat	8	396.5241	55.932972	3	-4.6502	1	24	3	6
665	642247	896317	384.3301	6.371158	4	2.5	381.8301	3	R	1.5	18	3	Site Infrastructure	3	383.0437	56.117396	3	1.2864	1	9	1	3
666	642345	896416	369.7872	7.528088	4	2	367.7872	3	Slip Material	5	60	5	Sensitive Habitat	8	367.2726	31.232639	3	2.5146	1	24	3	15
667	642346	896516	360.6753	6.540602	4	0.9	359.7753	2	Slip Material	5	40	4	Sensitive Habitat	8	362.3025	26.235465	3	-1.6272	1	24	3	12
668	642446	896515	356.1375	6.060792	4	2	354.1375	3	Slip Material	5	60	5	Sensitive Habitat	8	356.1375	0	4	0	1	32	4	20
669	642546	896515	343.6405	6.986179	4	2	341.6405	3	G	1	12	2	Sensitive Habitat	8	343.6405	0	4	0	1	32	4	8

670	642646	896516	330.4985	6.566966	4	0.8	329.6985	2	G	1	8	2	Sensitive Habitat	8	330.4985	0	4	0	1	32	4	8
671	642743	896616	313.1195	12.7249	6	1.2	311.9195	3	G	1	18	3	Sensitive Habitat	8	320.9289	34.327353	3	-7.8094	1	24	3	9
672	642745	896717	310.9107	6.42207	4	1.8	309.1107	3	G	1	12	2	Sensitive Habitat	8	322.1909	112.532645	3	-11.2802	1	24	3	6
673	642645	896715	324.2967	11.67679	6	1.4	322.8967	3	R	1.5	27	3	Sensitive Habitat	8	330.5913	41.294302	3	-6.2946	1	24	3	9
674	642545	896616	340.1414	6.954744	4	1.3	338.8414	3	R	1.5	18	3	Sensitive Habitat	8	340.1414	0	4	0	1	32	4	12
675	642350	896617	349.3967	9.918251	6	0.5	348.8967	1	Slip Material	5	30	3	Sensitive Habitat	8	350.3667	24.609988	3	-0.97	1	24	3	9
676	642146	897016	287.2413	7.938124	4	0.4	286.8413	1	G	1	4	1	Site Infrastructure	3	292.8564	59.935818	3	-5.6151	1	9	1	1
677	642047	897017	272.4125	9.823456	6	1	271.4125	2	R	1.5	18	3	Site Infrastructure	3	292.8564	158.160639	3	-20.4439	1	9	1	3
678	641944	897016	259.7719	5.454167	4	0.5	259.2719	1	G	1	4	1	Site Infrastructure	3	251.7681	158.205146	3	8.0038	1	9	1	1
679	642045	897116	268.3757	5.76977	4	0.4	267.9757	1	G	1	4	1	Site Infrastructure	3	256.9893	166.881125	3	11.3864	2	18	2	2
680	642147	897115	276.8506	4.565215	4	1.9	274.9506	3	G	1	12	2	Site Infrastructure	3	289.1495	81.713129	3	-12.2989	1	9	1	2
681	642899	896810	280.7949	9.861048	6	0.1	280.6949	1	Not Proven	2	12	2	Site Infrastructure	3	280.906	36.25687	3	-0.1111	1	9	1	2
682	642918	896823	277.297	8.237684	6	0.01	277.287	1	Not Proven	2	12	2	Site Infrastructure	3	280.906	45.765962	3	-3.609	1	9	1	2
683	642932	896832	275.2818	7.810815	4	0.01	275.2718	1	Not Proven	2	8	2	Site Infrastructure	3	272.1218	41.000749	3	3.16	1	9	1	2
684	643573	896818	221.8403	1.989325	1	0.4	221.4403	1	Not Proven	2	2	1	Major Watercourse	8	220.2877	27.284747	3	1.5526	1	24	3	3
685	643556	896721	222.182	3.364151	2	0.01	222.172	1	Not Proven	2	4	1	Major Watercourse	8	222.0178	13.786401	3	0.1642	1	24	3	3
686	643553	896628	225.1846	10.99094	6	0.01	225.1746	1	Not Proven	2	12	2	Site Infrastructure	3	225.1846	1.002719	4	0	1	12	2	4
687	643545	896544	228.8263	5.066525	4	0.01	228.8163	1	Not Proven	2	8	2	Site Infrastructure	3	228.8263	0	4	0	1	12	2	4
688	643506	896452	235.8324	5.46206	4	0.05	235.7824	1	Not Proven	2	8	2	Site Infrastructure	3	237.0011	0	4	-1.1687	1	12	2	4
689	643470	896358	245.8694	5.974604	4	0.01	245.8594	1	Not Proven	2	8	2	Site Infrastructure	3	245.8694	0	4	0	1	12	2	4
690	643416	896276	255.701	5.551116	4	0.01	255.691	1	Not Proven	2	8	2	Site Infrastructure	3	255.292	7.878105	4	0.409	1	12	2	4
691	643363	896197	263.7843	5.489027	4	0.1	263.6843	1	Not Proven	2	8	2	Site Infrastructure	3	262.0395	20.362977	3	1.7448	1	9	1	2
692	643317	896115	271.4834	4.494529	4	0.1	271.3834	1	Not Proven	2	8	2	Site Infrastructure	3	271.4834	3.999806	4	0	1	12	2	4
693	643239	896052	278.2299	3.846233	2	0.1	278.1299	1	Not Proven	2	4	1	Site Infrastructure	3	278.2416	0	4	-0.0117	1	12	2	2
694	643162	895989	287.4733	11.68831	6	0.1	287.3733	1	Not Proven	2	12	2	Site Infrastructure	3	281.977	82.588394	3	5.4963	1	9	1	2
695	643485	896356	245.294	5.309824	4	0.2	245.094	1	Not Proven	2	8	2	Site Infrastructure	3	244.6464	15.971119	3	0.6476	1	9	1	2
696	641855	897241	255.9514	7.143418	4	0.1	255.8514	1	G	1	4	1	Site Infrastructure	3	254.9998	11.112186	3	0.9516	1	9	1	1
697	641836	897242	254.6631	8.392628	6	0.1	254.5631	1	G	1	6	2	Site Infrastructure	3	254.6631	0	4	0	1	12	2	4
698	641812	897240	250.8127	8.111229	6	0.1	250.7127	1	G	1	6	2	Site Infrastructure	3	252.9284	7.1676	4	-2.1157	1	12	2	4
699	641799	897241	249.7755	8.430967	6	0.2	249.5755	1	G	1	6	2	Site Infrastructure	3	252.9284	16.48802	3	-3.1529	1	9	1	2
700	641823	897194	248.9028	5.415549	4	0.4	248.5028	1	G	1	4	1	Site Infrastructure	3	250.4246	3.818638	4	-1.5218	1	12	2	2
701	641833	897184	251.1985	7.601377	4	0.3	250.8985	1	G	1	4	1	Site Infrastructure	3	251.1985	0	4	0	1	12	2	2
702	641848	897170	250.6987	3.668925	2	1	249.6987	2	G	1	4	1	Site Infrastructure	3	250.6987	0	4	0	1	12	2	2
703	641828	897155	250.5335	2.784322	2	1	249.5335	2	G	1	4	1	Site Infrastructure	3	250.5335	3.892467	4	0	1	12	2	2
704	641793	897142	253.1359	4.542771	4	1.1	252.0359	3	G	1	12	2	Site Infrastructure	3	252.5727	0	4	0.5632	1	12	2	4
705	641787	897154	252.1228	5.83272	4	0.6	251.5228	2	G	1	8	2	Site Infrastructure	3	252.1228	0	4	0	1	12	2	4
706	641779	897168	251.3498	5.536505	4	0.8	250.5498	2	G	1	8	2	Site Infrastructure	3	252.1228	12.932125	3	-0.773	1	9	1	2
707	641752	897158	252.8312	5.836021	4	0.7	252.1312	2	G	1	8	2	Site Infrastructure	3	252.8312	0	4	0	1	12	2	4
708	641748	897123	255.4826	2.853785	2	0.7	254.7826	2	G	1	4	1	Site Infrastructure	3	255.4826	0	4	0	1	12	2	2
709	641759	897100	256.5676	1.989746	1	0.5	256.0676	1	G	1	1	1	Site Infrastructure	3	256.5676	0	4	0	1	12	2	2
710	641739	897068	256.4422	2.692097	2	0.5	255.9422	1	G	1	2	1	Site Infrastructure	3	257.1305	16.484483	3	-0.6883	1	9	1	1
711	641739	897078	256.9162	2.284986	2	0.3	256.6162	1	G	1	2	1	Site Infrastructure	3	257.0709	9.429203	4	-0.1547	1	12	2	2
712	641739	897088	257.0709	1.384185	1	0.3	256.7709	1	G	1	1	1	Site Infrastructure	3	257.0709	0	4	0	1	12	2	2
713	641739	897098	256.8065	2.131303	2	0.4	256.4065	1	G	1	2	1	Site Infrastructure	3	256.8065	0	4	0	1	12	2	2
714	641739	897108	256.3838	2.480257	2	0.8	255.5838	2	G	1	4	1	Site Infrastructure	3	256.3838	0	4	0	1	12	2	2
715	641739	897118	255.9617	2.398675	2	0.1	255.8617	1	G	1	2	1	Site Infrastructure	3	255.9617	0	4	0	1	12	2	2
716	641739	897128	255.5697	2.99132	2	0.5	255.0697	1	G	1	2	1	Site Infrastructure	3	255.5697	0	4	0	1	12	2	2
717	641739	897138	254.9346	4.758893	4	0.1	254.8346	1	G	1	4	1	Site Infrastructure	3	254.9346	0	4	0	1	12	2	2
718	641739	897148	253.9055	5.839908	4	0.2	253.7055	1	G	1	4	1	Site Infrastructure	3	253.9055	0	4	0	1	12	2	2
719	641728	897148	253.9634	5.785922	4	0.2	253.7634	1	G	1	4	1	Site Infrastructure	3	253.9634	0	4	0	1	12	2	2
720	641730	897138	254.9798	4.83858	4	0.2	254.7798	1	G	1	4	1	Site Infrastructure	3	254.9346	0	4	0.0452	1	12	2	2
721	641729	897128	255.6569	3.127516	2	0.3	255.3569	1	G	1	2	1	Site Infrastructure	3	255.6569	0	4	0	1	12	2	2
722	641728	897119	256.0722	2.416878	2	0.3	255.7722	1	G	1	2	1	Site Infrastructure	3	256.0722	0	4	0	1	12	2	2
723	641729	897109	256.4948	2.446017	2	0.8	255.6948	2	G	1	4	1	Site Infrastructure	3	256.4948	0	4	0	1	12	2	2
724	641728	897099	256.9175	2.352051	2	0.4	256.5175	1	G	1	2	1	Site Infrastructure	3	256.9175	0	4	0	1	12	2	2
725	641729	897088	257.3402	1.004786	1	0.4	256.9402	1	G	1	1	1	Site Infrastructure	3	257.3402	0	4	0	1	12	2	2
726	641726	897079	257.1305	2.089803	2	0.3	256.8305	1	G	1	2	1	Site Infrastructure	3	257.1305	0	4	0	1	12	2	2
727	641729	897068	256.6565	2.885744	2	0.01	256.6465	1	G	1	2	1	Site Infrastructure	3	257.1305	9.429203	4	-0.474	1	12	2	2
728	641719	897068	256.7853	2.826606	2	0.5	256.2853	1	G	1	2	1	Site Infrastructure	3	257.283	9.429113	4	-0.4977	1	12	2	2
729	641719	897078	257.283	1.496603	1	0.4	256.883	1	G	1	1	1	Site Infrastructure	3	257.283	0	4	0	1	12	2	2
730	641719	897088	257.366	1.282517	1	0.4	256.966	1	G	1	1	1	Site Infrastructure	3	257.366	0	4	0	1	12	2	2
731	641719	897098	256.9562	2.556406	2	0.6	256.3562	2	G	1	4	1	Site Infrastructure	3	256.9562	0	4	0	1	12	2	2
732	641719	897108	256.5464	2.542635	2	0.5	256.0464	1	G	1	2	1	Site Infrastructure	3	256.5464	0	4	0	1	12	2	2
733	641718	897118	256.1366	2.581877	2	0.3	255.8366	1	G	1	2	1	Site Infrastructure	3	256.1366	0	4	0	1	12	2	2
734	641719	897128	255.7267	3.40963	2	0.7	255.0267	2	G	1	4	1	Site Infrastructure	3	255.7267	0	4	0	1	12	2	2
735	641719	897139	255.0145	5.012337	4	0.7	254.3145	2	G	1	8	2	Site Infrastructure	3	255.0145	0	4	0	1	12	2	4
736	641719	897148	254.0196	5.831517	4	0.6	253.4196	2	G	1	8	2	Site Infrastructure	3	253.9634	6.054739	4	0.0562	1	12	2	4
737	641710	897149	253.5659	6.2183	4	0.6	252.9659	2	G	1	8	2	Site Infrastructure	3	255.0145	13.085622	3	-1.4486	1	9	1	2
738	641709	897139	254.5608	5.564369	4	0.4	254.1608	1	G	1	4	1	Site Infrastructure	3	254.5608	0	4	0	1	12	2	2
739	641709	897128	255.289	4.38589	4	0.5	254.789	1	G	1	4	1	Site Infrastructure	3	255.289	0	4	0	1	12	2	2
740	641708	897118	255.7588	3.50225	2	0.7	255.0588	2	G	1	4	1	Site Infrastructure	3	255.7588	0	4	0	1	12	2	2
741	641709	897108	256.1686	3.190128	2	0.7	255.4686	2	G	1	4	1	Site Infrastructure	3	256.1686	0	4	0	1	12	2	2
742	641709	897098	256.5785	3.190112	2	0.6	255.9785	2	G	1	4	1	Site Infrastructure	3	256.5785	0	4	0	1	12	2	2
743	641709	897088	256.9883	2.534014	2	0.6	256.3883	2	G	1	4	1	Site Infrastructure	3	256.9883	0	4	0	1	12	2	2
744	641709	897077	257.2415	1.283682	1	0.4	256.8415	1	G	1	1	1	Site Infrastructure	3	257.2415	0	4	0	1	12	2	2
745	641699	897078	256.9513	1.607721	1	0.6	256.3513	2	G	1	2	1	Site Infrastructure	3	256.9513	0	4	0	1	12	2	2
746	641699	897089	256.6097	2.973399	2	0.6	256.0097	2	G	1	4	1	Site Infrastructure	3	256.6097	0	4	0	1	12	2	2
747	641699	897098	256.2007	3.188896	2	0.7	255.5007	2	G	1	4	1	Site Infrastructure	3	256.2007	0	4	0	1	12	2	2
748	641699	897108	255.7909	3.345004	2	0.7	255.0909	2	G	1	4	1	Site Infrastructure	3	255.7909	0	4	0	1	12	2	2
749	641699	897118	255.3811	4.038584	4	0.4	254.9811	1	G	1	4	1	Site Infrastructure	3	255.3811	0	4	0	1	12	2	2
750	641699	897128	254.7245	4.840884	4	0.6	254.1245	2	G	1	8	2	Site Infrastructure	3	254.7245	0	4	0	1	12	2	4
751	641699	897138	254.0347	5.501963	4	0.2	253.8347	1	G	1	4	1	Site Infrastructure	3	254.5608	6.054764	4	-0.5261	1	12	2	2
752	641699	897148	253.1122	5.969358	4	0.4	252.7122	1	G	1	4	1	Site Infrastructure	3	254.5608	12.932214	3	-1.4486	1	9	1	1
753	641689	897150	252.6585	5.34956	4	0.5	252.1585	1	G	1	4	1	Site Infrastructure	3	254.5608	20.150573	3	-1.9023	1	9	1	1
754	641689	897138	253.4702	5.309671	4	0.2	253.2702	1	G	1	4	1	Site Infrastructure	3	254.16	12.250395	3	-0.6898	1	9	1	1
755	641689	897128	254.16	5.060328	4	0.9	253.26	2	G	1	8	2	Site Infrastructure	3	254.16	0	4	0	1	12	2	4
756	641689	897118	254.8498	4.611238	4	0.5	254.3498	1	G	1	4	1	Site Infrastructure	3	254.8498	0	4	0	1	12	2	2
757	641689	897108	255.4131	3.753272	2	0.3	255.1131	1	G	1	2	1	Site Infrastructure	3	255.4131	0	4	0	1	12	2	2
758	641689	897098	255.8229	3.235318	2	0.4	255.4229	1	G	1	2	1	Site Infrastructure	3	255.8229	0	4	0	1	12	2	2
759	641689	897088	256.2194	3.061638	2	0.5	255.7194	1	G	1	2	1	Site Infrastructure	3	256.2194	0	4	0	1	12	2	2
760	641688	897078	256.5611	2.166287	2	0.4	256.1611	1	G	1	2	1	Site Infrastructure	3	256.5611	0	4	0	1	12	2	2
761	641679	897088	255.8292	3.037101	2	0.1	255.7292	1	G	1	2	1	Site Infrastructure	3	256.2194	6.054764	4	-0.3902	1	12	2	2
762	641679	897098	255.4452	3.46042	2	0.3	255.1452	1	G	1	2	1	Site Infrastructure	3	255.4452	0	4	0	1	12	2	2
763	641679	897108	254.9751	4.44594	4	0.8	254.1751	2	G	1	8	2	Site Infrastructure	3	254.9751	0	4	0	1	12	2	4
764	641679	897118	254.2853	5.471241	4	0.6	253.6853	2	G	1	8	2	Site Infrastructure	3	254.2853	0	4	0	1	12	2	4
765	641679	897128	253.5955	6.142635	4	0.5	253.0955	1	G	1	4	1	Site Infrastructure	3	253.5955	4.414733	4	0	1	12	2	2
766	641679	897138	252.9057	6.33094	4	0.4	252.5057	1	G	1	4	1	Site Infrastructure	3	253.5955	12.250301	3	-0.6898	1	9	1	1
767	641679	897148	252.1678	5.865517	4	0.7	251.4678	2	G	1	8	2	Site Infrastructure	3	253.5955	21.923827	3	-1.4277	1	9	1	2
768	641669	897148	251.1279	7.957232	4	0.4	250.7279	1	G	1	4	1	Site Infrastructure	3	253.5955	22.311877	3	-2.4676	1	9	1	1
769	641669	897138	251.6666	8.097035	6	0.7	250.9666	2	G	1	12	2	Site Infrastructure	3	253.5955	12.932214	3	-1.9289	1	9	1	2
770	641669	897128	252.6348	8.049549	6	0.6	252.0348	2	G	1	12	2	Site Infrastructure	3	253.5955	6.054764	4	-0.9607	1	12	2	4
771	641669	897118	253.603	7.276435	4	0.8	252.803	2	G	1	8	2	Site Infrastructure	3	253.603	0	4	0	1	12	2	4
772	641669	897108	254.4106	6.160624	4	0.7	253.7106	2	G	1	8	2	Site Infrastructure	3	254.4106	4.414733	4	0	1	12	2	4
773	641669	897098	255.0674	4.615201	4	0.1	254.9674	1	G	1	4	1	Site Infrastructure	3	255.0674	4.414733	4	0	1	12	2	2
774	641668	897088	255.4389	3.489972	2	0.4	255.0389	1	G	1	2	1	Site Infrastructure	3	255.0674	9.390807	4	0.3715	1	12	2	2
775	641669	897078	255.7805	3.242726	2	0.7	255.0805	2	G	1	4	1	Site Infrastructure	3	256.5611	15.932048	3	-0.7806	1	9	1	1
776	641659	897078	255.2672	4.113366	4	0.5	254.7672	1	G	1	4	1	Site Infrastructure	3	254.3584	18.929505	3	0.9088	1	9	1	1
777	641659	897090	254.9246	4.641072	4	0.1	254.8246	1	G	1	4	1	Site Infrastructure	3	254.3584	8.332108	4	0.5662	1	12	2	2
778	641658	897099	254.3584	6.095254	4	0.1	254.2584	1	G	1	4	1	Site Infrastructure	3	254.3584	0	4	0	1	12	2	2
779	641659	897108	253.3791	7.333068	4	0.9	252.4791	2	G	1	8	2	Site Infrastructure	3	254.4106	6.054739	4	-1.0315	1	12	2	4
780	641659	897118	252.3999	7.82548	4	0.6	251.7999	2	G	1	8	2	Site Infrastructure	3	253.603	6.054739	4	-1.2031	1	12	2	4
781	641659	897128	251.4207	8.072021	6	0.8	250.6207	2	G	1	12	2	Site Infrastructure	3	253.603	12.932214	3	-2.1823	1	9	1	2
782	641660	897138	250.4311	7.941794	4	0.6	249.8311	2	G	1	8	2	Site Infrastructure	3	253.5955	18.664164	3	-3.1644	1	9	1	2
783	641659	897148	249.7139	8.073008	6	0.5	249.2139	1	G	1	6	2	Site Infrastructure	3	253.5955	26.739294	3	-3.8816	1	9	1	2
784	641649	897148	248.593	7.474928	4	0.9	247.693	2	G	1	8	2	Site Infrastructure	3	253.5955	33.647647	3	-5.0025	1	9	1	2
785	641646	897138	249.5754	7.505192	4	0.5	249.0754	1	G	1	4	1	Site Infrastructure	3	253.603	28.404096	3	-4.0276	1	9	1	1
786	641649	897128	250.6096	7.407977	4	1	249.6096	2	G	1	8	2	Site Infrastructure	3	253.603	19.606373	3	-2.9934	1	9	1	2
787	641648	897109	252.568	7.194419	4	0.8	251.768	2	G	1	8	2	Site Infrastructure	3	253.4509	12.410007	3	-0.8829	1	9	1	2
788	641649	897098	253.4509	6.722161	4	0.3	253.1509	1	G	1	4	1	Site Infrastructure	3	253.4509	4.414767	4	0	1	12	2	2
789	641649	897088	254.1751	5.490638	4	0.01	254.1651	1	G	1	4	1	Site Infrastructure	3	253.4509	9.429203	4	0.7242	1	12	2	2
790	641649	897078	254.5177	4.775855	4	0.5	254.0177	1	G	1	4	1	Site Infrastructure	3	253.3876	16.484534	3	1.1301	1	9	1	1
791	641649	897068	254.8426	4.763376	4	0.5	254.3426	1	G	1	4	1	Site Infrastructure	3	253.3876	23.262764	3	1.455	1	9	1	1
792	641659	897068	255.6098	3.742983	2	0.7	254.9098	2	G	1	4	1	Site Infrastructure	3	256.5611	27.210657	3	-0.9513	1	9	1	1
793	641668	897067	256.1222	2.291394	2	0.9	255.2222	2	G	1	4	1	Site Infrastructure	3	256.5611	19.171813	3	-0.4389	1	9	1	1
794	641679	897068	256.5124	1.393888	1	0.6	255.9124	2	G	1	2	1	Site Infrastructure	3	256.5611	10.299426	3	-0.0487	1	9	1	1
795	641691	897067	256.6607	1.446697	1	0.8	255.8607	2	G	1	2	1	Site Infrastructure	3	256.7022	0	4	-0.0415	1	12	2	2
796	641698	897068	256.7022	2.171453	2	0.6	256.1022	2	G	1	4	1	Site Infrastructure	3	256.7022	0	4	0	1	12	2	2
797	641710	897066	256.7437	2.703981	2	0.5	256.2437	1	G	1	2	1	Site Infrastructure	3	257.283	11.495201	3	-0.5393	1	9	1	1
798	641739	897058	256.0032	1.738736	1	0.7	255.3032	2	G	1	2	1	Site Infrastructure	3	257.1305	23.262764	3	-1.1273	1	9	1	1
799	641729	897058	256.1825	2.330053	2	1	255.1825	2	G	1	4	1	Site Infrastructure	3	257.1305	18.929603	3	-0.948	1	9	1	1
800	641719	897058	256.2875	2.682671	2	0.6	255.6875	2	G	1	4	1	Site Infrastructure	3	257.283	18.929505	3	-0.9955	1	9	1	1
801	641709	897058	256.246	2.799014	2	0.4	255.846	1	G	1	2	1	Site Infrastructure	3	256.7022	16.484534	3	-0.4562	1	9	1	1
802	641699	897058	256.2044	2.77812	2	0.1	256.1044	1	G	1	2	1	Site Infrastructure	3	256.7022	9.429113	4	-0.4978	1	12	2	2
803	641687	897058	256.1629	2.691957	2	0.8	255.3629	2	G	1	4	1	Site Infrastructure	3	256.7022	11.407141	3	-0.5393	1	9	1	1
804	641677	897059	256.1214	2.320842	2	0.8	255.3214	2	G	1	4	1	Site Infrastructure	3	256.7022	19.774829	3	-0.5808	1	9	1	1
805	641669	897058	256.0836	1.941887	1	0.8	255.2836	2	G	1	2	1	Site Infrastructure	3	256.5611	24.344736	3	-0.4775	1	9	1	1
806	641659	897058	255.832	3.14274	2	0.4	255.432	1	G	1	2	1	Site Infrastructure	3	256.5611	31.77792	3	-0.7291	1	9	1	1
807	641648	897059	255.0581	4.440961	4	0.6	254.4581	2	G	1	8	2	Site Infrastructure	3	253.3876	30.643588	3	1.6705	1	9	1	2
808	641623	897025	251.7302	4.695362	4	0.7	251.0302	2	G	1	8	2	Site Infrastructure	3	251.7302	8.326545	4	0	1	12	2	4
809	641611	897046	252.0302	4.811785	4	0.4	251.6302	1	G	1	4	1	Site Infrastructure	3	252.0302	6.583482	4	0	1	12	2	2
810	641589	897069	248.0157	8.021358	6	0.9	247.1157	2	G	1	12	2	Site Infrastructure	3	248.0157	0	4	0	1	12	2	4
811	641573	897081	245.2975	6.000523	4	0.9	244.3975	2	G	1	8	2	Site Infrastructure	3	248.0157	18.043596	3	-2.7182	1	9	1	2
812	641543	897051	244.7808	7.99243	4	0.8	243.9808	2	G	1	8	2	Site Infrastructure	3	246.1652	12.075438	3	-1.3844	1	9	1	2
813	641558	897032	246.3734	7.529242	4	0.1	246.2734	1	G	1	4	1	Site Infrastructure	3	246.3734	0	4	0	1	12	2	2
814	641574	897015	248.0402	6.719108	4	0.4	247.6402	1	G	1	4	1	Site Infrastructure	3	248.0402	0	4	0	1	12	2	2
815	641588	896996	248.0081	5.693764	4	0.4	247.6081	1	G	1	4	1	Site Infrastructure	3	248.0081	3.862935	4	0	1	12	2	2
816	641537	896989	243.2982	7.607464	4	1	242.2982	2	G	1	8	2	Site Infrastructure	3	241.8308	12.637822	3	1.4674	1	9	1	2
817	641527	896990	241.8308	9.145752	6	0.7	241.1308	2	G	1	12	2	Site Infrastructure	3	241.8308	0	4	0	1	12	2	4
818	641513	896991	238.6893	9.305593	6	1.1	237.5893	3	G	1	18	3	Site Infrastructure	3	241.8308	12.383435	3	-3.1415	1	9	1	3
819	641523	896942	239.2873	8.009985	6	0.3	238.9873	1	G	1	6	2	Site Infrastructure	3	239.2873	0	4	0	1	12	2	4
820	641506	896941	236.1688	7.965839	4	0.5	235.6688	1	G	1	4	1	Site Infrastructure	3	238.8291	18.848503	3	-2.6603	1	9	1	1
821	641510	896894	234.9773	9.303668	6	0.9	234.0773	2	G	1	12	2	Site Infrastructure	3	237.3255	14.606169	3	-2.3482	1	9	1	2
822	641528	896892	237.3255	6.952142	4	0.7	236.6255	2	G	1	8	2	Site Infrastructure	3	236.8834	0	4	0.4421	1	12	2	4
823	641549	896890	239.1565	5.766021	4	0.8	238.3565	2	G	1	8	2	Site Infrastructure	3	236.8834	24.658764	3	2.2731	1	9	1	2
824	641542	896845	237.4459	5.024067	4	0.9	236.5459	2	G	1	8	2	Site Infrastructure	3	237.4459	8.062793	4	0	1	12	2	4
825	641532	896846	236.6072	5.395592	4	0.7	235.9072	2	G	1	8	2	Site Infrastructure	3	237.4459	0	4	-0.8387	1	12	2	4
826	641518	896849	235.5856	6.17039	4	2	233.5856	3	G	1	12	2	Site Infrastructure	3	237.4459	16.460033	3	-1.8603	1	9	1	2
827	641528	896813	236.7514	5.682996	4	1.7	235.0514	3	G	1	12	2	Site Infrastructure	3	237.2637	0	4	-0.5123	1	12	2	4
828	641512	896818	235.0771	5.271723	4	2	233.0771	3	G	1	12	2	Site Infrastructure	3	237.2637	16.154782	3	-2.1866	1	9	1	2
829	641496	896795	235.0188	5.094049	4	1.5	233.5188	3	G	1	12	2	Site Infrastructure	3	235.4103	7.7272	4	-0.3915	1	12	2	4

830	641502	896779	235.7688	5.491012	4	1.9	233.8688	3	G	1	12	2	Site Infrastructure	3	236.7128	0	4	-0.944	1	12	2	4
831	641461	896787	232.4021	4.227892	4	1.1	231.3021	3	G	1	12	2	Site Infrastructure	3	233.1101	3.204038	4	-0.708	1	12	2	4
832	641468	896768	233.6835	4.960914	4	1.6	232.0835	3	G	1	12	2	Site Infrastructure	3	233.6835	0	4	0	1	12	2	4
833	641472	896753	234.0119	5.049749	4	2.1	231.9119	3	G	1	12	2	Site Infrastructure	3	234.8339	4.634518	4	-0.822	1	12	2	4
834	641504	896760	237.4119	5.46333	4	2.2	235.2119	3	G	1	12	2	Site Infrastructure	3	237.0712	7.463696	4	0.3407	1	12	2	4
835	641539	896749	240.275	4.730917	4	1.3	238.975	3	G	1	12	2	Site Infrastructure	3	240.7183	9.717277	4	-0.4433	1	12	2	4
836	641556	896751	241.7204	4.531148	4	1	240.7204	2	G	1	8	2	Site Infrastructure	3	241.7204	0	4	0	1	12	2	4
837	641569	896754	242.1603	4.476857	4	0.6	241.5603	2	G	1	8	2	Site Infrastructure	3	242.4625	8.14137	4	-0.3022	1	12	2	4
838	641591	896705	245.1036	6.169435	4	1.5	243.6036	3	G	1	12	2	Site Infrastructure	3	245.1036	6.749664	4	0	1	12	2	4
839	641578	896699	244.4554	4.684447	4	1.7	242.7554	3	R	1.5	18	3	Site Infrastructure	3	245.2817	6.850247	4	-0.8263	1	12	2	6
840	641566	896688	243.9554	4.535617	4	1.6	242.3554	3	G	1	12	2	Site Infrastructure	3	245.2817	21.028346	3	-1.3263	1	9	1	2
841	642206	896410	372.8585	6.512019	4	2.3	370.5585	3	G	1	12	2	Site Infrastructure	3	372.8585	0	4	0	1	12	2	4
842	642194	896414	371.8047	9.332695	6	2.5	369.3047	3	G	1	18	3	Site Infrastructure	3	371.8047	0	4	0	1	12	2	6
843	642183	896415	370.7285	10.9448	6	2.1	368.6285	3	G	1	18	3	Site Infrastructure	3	370.7285	0	4	0	1	12	2	6
844	642174	896414	369.6306	10.93884	6	2	367.6306	3	G	1	18	3	Site Infrastructure	3	369.6306	0	4	0	1	12	2	6
845	642164	896414	368.5328	11.56092	6	1.9	366.6328	3	G	1	18	3	Site Infrastructure	3	368.5328	0	4	0	1	12	2	6
846	642154	896414	367.0508	12.45731	6	0.8	366.2508	2	G	1	12	2	Site Infrastructure	3	367.0508	0	4	0	1	12	2	4
847	642141	896412	363.8511	12.6904	6	1.4	362.4511	3	G	1	18	3	Site Infrastructure	3	365.4509	0	4	-1.5998	1	12	2	6
848	642132	896412	362.2513	12.65815	6	0.7	361.5513	2	G	1	12	2	Site Infrastructure	3	365.4482	5.767279	4	-3.1969	1	12	2	4
849	642120	896411	362.2843	13.72344	6	0.9	361.3843	2	G	1	12	2	Site Infrastructure	3	365.484	15.019921	3	-3.1997	1	9	1	2
850	642123	896401	365.484	12.8135	6	1.2	364.284	3	G	1	18	3	Site Infrastructure	3	365.484	4.338951	4	0	1	12	2	6
851	642122	896395	363.902	13.73334	6	1.4	362.502	3	G	1	18	3	Site Infrastructure	3	365.484	0	4	-1.582	1	12	2	6
852	642121	896383	365.4801	13.30821	6	1.7	363.7801	3	G	1	18	3	Site Infrastructure	3	367.1311	0	4	-1.651	1	12	2	6
853	642124	896374	368.6176	12.72197	6	2	366.6176	3	G	1	18	3	Site Infrastructure	3	368.6176	3.575593	4	0	1	12	2	6
854	642126	896362	371.146	12.13645	6	1	370.146	2	R	1.5	18	3	Site Infrastructure	3	372.9631	10.009135	3	-1.8171	1	9	1	3
855	642122	896350	370.7453	12.80932	6	2	368.7453	3	G	1	18	3	Site Infrastructure	3	372.9631	14.002077	3	-2.2178	1	9	1	3
856	642124	896344	372.3232	11.99251	6	1.9	370.4232	3	G	1	18	3	Site Infrastructure	3	372.9631	17.302375	3	-0.6399	1	9	1	3
857	642124	896332	373.8391	11.14778	6	1.7	372.1391	3	G	1	18	3	Site Infrastructure	3	375.4789	25.14046	3	-1.6398	1	9	1	3
858	642126	896322	376.2453	9.803999	6	1.4	374.8453	3	G	1	18	3	Site Infrastructure	3	380.447	28.496699	3	-4.2017	1	9	1	3
859	642124	896312	376.2453	9.803999	6	0.9	375.3453	2	G	1	12	2	Site Infrastructure	3	380.447	33.746065	3	-4.2017	1	9	1	2
860	642132	896313	376.2453	9.803999	6	0.8	375.4453	2	G	1	12	2	Site Infrastructure	3	380.447	26.581004	3	-4.2017	1	9	1	2
861	642144	896314	378.6773	15.55802	8	0.7	377.9773	2	G	1	16	3	Site Infrastructure	3	380.447	17.302375	3	-1.7697	1	9	1	3
862	642144	896324	377.1433	13.28878	6	0.6	376.5433	2	G	1	12	2	Site Infrastructure	3	380.447	11.399775	3	-3.3037	1	9	1	2
863	642134	896324	376.0564	8.954479	6	0.8	375.2564	2	G	1	12	2	Site Infrastructure	3	380.447	21.145311	3	-4.3906	1	9	1	2
864	642134	896334	375.4169	9.467995	6	0.9	374.5169	2	G	1	12	2	Site Infrastructure	3	375.4789	17.302453	3	-0.062	1	9	1	2
865	642144	896334	376.2665	10.33193	6	0.1	376.1665	1	G	1	6	2	Site Infrastructure	3	377.4856	11.399744	3	-1.2191	1	9	1	2
866	642144	896344	375.4789	8.932688	6	0.2	375.2789	1	G	1	6	2	Site Infrastructure	3	375.4789	0	4	0	1	12	2	4
867	642135	896343	373.9011	10.86258	6	1.9	372.0011	3	G	1	18	3	Site Infrastructure	3	375.4789	9.903321	4	-1.5778	1	12	2	6
868	642134	896354	372.9631	11.6873	6	1.6	371.3631	3	G	1	18	3	Site Infrastructure	3	372.9631	3.575496	4	0	1	12	2	6
869	642144	896354	374.7802	10.7027	6	0.9	373.8802	2	G	1	12	2	Site Infrastructure	3	374.7802	0	4	0	1	12	2	4
870	642154	896354	376.5972	7.74226	4	2.3	374.2972	3	G	1	12	2	Site Infrastructure	3	376.5972	0	4	0	1	12	2	4
871	642164	896364	376.846	6.379541	4	3	373.846	3	G	1	12	2	Site Infrastructure	3	376.846	0	4	0	1	12	2	4
872	642174	896374	376.3022	5.937299	4	1	375.3022	2	G	1	8	2	Site Infrastructure	3	376.3022	0	4	0	1	12	2	4
873	642182	896385	374.9748	9.063381	6	2.7	372.2748	3	G	1	18	3	Site Infrastructure	3	375.4273	0	4	-0.4525	1	12	2	6
874	642194	896394	374.2455	5.882326	4	0.3	373.9455	1	G	1	4	1	Site Infrastructure	3	374.2455	0	4	0	1	12	2	2
875	642204	896404	372.8585	6.512019	4	0.8	372.0585	2	G	1	8	2	Site Infrastructure	3	372.8585	0	4	0	1	12	2	4
876	642194	896404	373.4164	7.204471	4	3.1	370.3164	8	G	1	32	4	Site Infrastructure	3	373.4164	0	4	0	1	12	2	8
877	642184	896404	372.3185	10.55709	6	2.2	370.1185	3	G	1	18	3	Site Infrastructure	3	372.3185	0	4	0	1	12	2	6
878	642174	896404	371.2206	11.39289	6	2	369.2206	3	G	1	18	3	Site Infrastructure	3	371.2206	0	4	0	1	12	2	6
879	642164	896404	370.1228	11.80291	6	0.8	369.3228	2	G	1	12	2	Site Infrastructure	3	370.1228	0	4	0	1	12	2	4
880	642154	896404	368.6314	12.55143	6	0.9	367.7314	2	R	1.5	18	3	Site Infrastructure	3	368.6314	0	4	0	1	12	2	6
881	642144	896404	367.0316	12.71026	6	0.9	366.1316	2	G	1	12	2	Site Infrastructure	3	367.0316	0	4	0	1	12	2	4
882	642134	896404	365.4482	12.7276	6	1.1	364.3482	3	G	1	18	3	Site Infrastructure	3	365.4482	0	4	0	1	12	2	6
883	642135	896391	368.721	12.94867	6	1.1	367.621	3	G	1	18	3	Site Infrastructure	3	368.721	0	4	0	1	12	2	6
884	642134	896384	368.721	12.94867	6	1.7	367.021	3	G	1	18	3	Site Infrastructure	3	368.721	0	4	0	1	12	2	6
885	642133	896372	370.3932	12.85333	6	0.8	369.5932	2	G	1	12	2	Site Infrastructure	3	371.7551	0	4	-1.3619	1	12	2	4
886	642134	896364	371.7551	12.57146	6	1.8	369.9551	3	G	1	18	3	Site Infrastructure	3	371.7551	0	4	0	1	12	2	6
887	642144	896364	373.6173	12.51738	6	1.4	372.2173	3	G	1	18	3	Site Infrastructure	3	373.6173	0	4	0	1	12	2	6
888	642154	896364	375.2451	10.15208	6	1.4	373.8451	3	G	1	18	3	Site Infrastructure	3	375.2451	0	4	0	1	12	2	6
889	642165	896374	375.3199	9.716514	6	1.9	373.4199	3	G	1	18	3	Site Infrastructure	3	375.3199	0	4	0	1	12	2	6
890	642174	896384	374.9748	9.063381	6	1.8	373.1748	3	G	1	18	3	Site Infrastructure	3	374.9748	0	4	0	1	12	2	6
891	642183	896395	374.1779	8.429271	6	2	372.1779	3	G	1	18	3	Site Infrastructure	3	374.1779	0	4	0	1	12	2	6
892	642174	896394	372.9756	11.74047	6	2.1	370.8756	3	G	1	18	3	Site Infrastructure	3	372.9756	0	4	0	1	12	2	6
893	642162	896395	370.2298	12.88983	6	1.4	368.8298	3	G	1	18	3	Site Infrastructure	3	371.7733	0	4	-1.5435	1	12	2	6
894	642152	896392	368.6479	12.8435	6	1.2	367.4479	3	G	1	18	3	Site Infrastructure	3	370.2298	0	4	-1.5819	1	12	2	6
895	642144	896394	368.6479	12.8435	6	2	366.6479	3	G	1	18	3	Site Infrastructure	3	368.6479	0	4	0	1	12	2	6
896	642142	896383	368.721	12.94867	6	1.9	366.821	3	G	1	18	3	Site Infrastructure	3	370.3108	0	4	-1.5898	1	12	2	6
897	642144	896374	371.983	12.95234	6	1	370.983	2	G	1	12	2	Site Infrastructure	3	371.983	0	4	0	1	12	2	4
898	642154	896374	373.5729	13.15059	6	1.9	371.6729	3	R	1.5	27	3	Site Infrastructure	3	373.5729	0	4	0	1	12	2	6
899	642154	896384	371.9007	13.21666	6	1.9	370.0007	3	G	1	18	3	Site Infrastructure	3	371.9007	0	4	0	1	12	2	6
900	642164	896384	373.578	12.69019	6	2	371.578	3	G	1	18	3	Site Infrastructure	3	373.578	0	4	0	1	12	2	6
901	642194	896324	384.446	8.150999	6	2.8	381.646	3	G	1	18	3	Site Infrastructure	3	383.5587	9.77825	4	0.8873	1	12	2	6
902	642194	896334	383.0437	8.16499	6	2.5	380.5437	3	G	1	18	3	Site Infrastructure	3	383.0437	3.575593	4	0	1	12	2	6
903	642194	896344	381.6413	7.808022	4	2.5	379.1413	3	G	1	12	2	Site Infrastructure	3	381.6413	0	4	0	1	12	2	4
904	642184	896334	382.1564	8.915605	6	2.5	379.6564	3	G	1	18	3	Site Infrastructure	3	382.1564	0	4	0	1	12	2	6
905	642185	896323	383.5587	9.047338	6	2.6	380.9587	3	G	1	18	3	Site Infrastructure	3	383.5587	4.074089	4	0	1	12	2	6
906	642204	896324	384.3938	7.925331	4	2.3	382.0938	3	G	1	12	2	Site Infrastructure	3	383.0437	16.279809	3	1.3501	1	9	1	2
907	642204	896334	382.9334	7.558167	4	2.5	380.4334	3	G	1	12	2	Site Infrastructure	3	383.0437	9.778285	4	-0.1103	1	12	2	4
908	642204	896344	381.6723	7.014147	4	2.8	378.8723	3	G	1	12	2	Site Infrastructure	3	381.6413	9.778285	4	0.031	1	12	2	4
909	642204	896354	380.481	7.764986	4	2.4	378.081	3	G	1	12	2	Site Infrastructure	3	380.481	3.575496	4	0	1	12	2	4
910	642224	896446	369.7676	6.50541	4	3	366.7676	3	G	1	12	2	Site Infrastructure	3	369.7676	1.219756	4	0	1	12	2	4
911	642199	896434	368.5927	10.40118	6	1.2	367.3927	3	G	1	18	3	Site Infrastructure	3	368.5927	0	4	0	1	12	2	6
912	642177	896449	364.9237	10.09056	6	2.3	362.6237	3	G	1	18	3	Site Infrastructure	3	364.9237	0	4	0	1	12	2	6
913	642197	896474	363.0004	9.368011	6	1.9	361.1004	3	G	1	18	3	Site Infrastructure	3	366.7411	17.955178	3	-3.7407	1	9	1	3
914	642211	896461	366.7411	9.300887	6	2.1	364.6411	3	R	1.5	27	3	Site Infrastructure	3	367.5561	0	4	-0.815	1	12	2	6
915	642232	896513	360.826	10.52485	6	1.8	359.026	3	G	1	18	3	Site Infrastructure	3	363.8807	13.511805	3	-3.0547	1	9	1	3
916	642244	896505	363.8807	7.354893	4	2.1	361.7807	3	G	1	12	2	Site Infrastructure	3	363.8807	0	4	0	1	12	2	4
917	642255	896503	363.3754	6.642068	4	2	361.3754	3	G	1	12	2	Site Infrastructure	3	363.3754	3.963105	4	0	1	12	2	4
918	642267	896552	357.126	7.401163	4	2	355.126	3	G	1	12	2	Site Infrastructure	3	357.8642	0	4	-0.7382	1	12	2	4
919	642256	896560	356.2339	8.305569	6	1.5	354.7339	3	G	1	18	3	Site Infrastructure	3	357.126	9.241115	4	-0.8921	1	12	2	6
920	642272	896615	348.3526	8.774836	6	2.6	345.7526	3	G	1	18	3	Site Infrastructure	3	348.3664	12.624369	3	-0.0138	1	9	1	3
921	642285	896615	348.3664	7.110966	4	2.4	345.9664	3	G	1	12	2	Site Infrastructure	3	348.3664	0	4	0	1	12	2	4
922	642282	896888	312.6686	5.083059	4	1.6	311.0686	3	G	1	12	2	Site Infrastructure	3	312.2535	0	4	0.4151	1	12	2	4
923	642291	896887	312.2535	5.822413	4	0.8	311.4535	2	G	1	8	2	Site Infrastructure	3	312.2535	6.144444	4	0	1	12	2	4
924	642323	896933	306.9053	6.552931	4	1.1	305.8053	3	G	1	12	2	Site Infrastructure	3	307.291	9.580218	4	-0.3857	1	12	2	4
925	642314	896934	307.291	5.964912	4	2.2	305.091	3	G	1	12	2	Site Infrastructure	3	307.291	0	4	0	1	12	2	4
926	642299	896936	306.5909	7.477012	4	1.1	305.4909	3	R	1.5	18	3	Site Infrastructure	3	307.9562	10.451222	3	-1.3653	1	9	1	3
927	642317	896979	301.0292	9.236907	6	1.5	299.5292	3	G	1	18	3	Site Infrastructure	3	302.2787	14.08006	3	-1.2495	1	9	1	3
928	642332	896974	300.4786	8.926038	6	1.7	298.7786	3	G	1	18	3	Site Infrastructure	3	300.095	0	4	0.3836	1	12	2	6
929	642355	896961	302.3474	9.547712	6	1	301.3474	2	G	1	12	2	Site Infrastructure	3	300.7116	5.756516	4	1.6358	1	12	2	4
930	642363	896979	299.69	5.825356	4	1.7	297.99	3	G	1	12	2	Site Infrastructure	3	299.69	0	4	0	1	12	2	4
931	642371	896994	297.4958	6.739729	4	1.8	295.6958	3	G	1	12	2	Site Infrastructure	3	298.6726	9.497767	4	-1.1768	1	12	2	4
932	642347	897006	296.5501	7.134975	4	1.1	295.4501	3	G	1	12	2	Site Infrastructure	3	296.5501	0	4	0	1	12	2	4
933	642333	897013	295.3085	7.650353	4	1.3	294.0085	3	G	1	12	2	Site Infrastructure	3	296.5501	12.777316	3	-1.2416	1	9	1	2
934	642333	897041	292.5539	8.582337	6	1.8	290.7539	3	G	1	18	3	Site Infrastructure	3	291.0292	10.024501	3	1.5247	1	9	1	3
935	642357	897036	292.2485	8.440662	6	1.2	291.0485	3	G	1	18	3	Site Infrastructure	3	292.2485	0	4	0	1	12	2	6
936	642373	897028	293.7285	8.278209	6	1.1	292.6285	3	G	1	18	3	Site Infrastructure	3	293.7209	19.037131	3	0.0076	1	9	1	3
937	642388	897081	286.2159	11.23089	6	0.6	285.6159	2	R	1.5	18	3	Site Infrastructure	3	283.9647	7.038624	4	2.2512	1	12	2	6
938	642379	897083	283.4636	11.90903	6	0.9	282.5636	2	R	1.5	18	3	Site Infrastructure	3	283.4636	0	4	0	1	12	2	6
939	642357	897089	283.626	7.227915	4	1.3	282.326	3	G	1	12	2	Site Infrastructure	3	284.8985	12.672088	3	-1.2725	1	9	1	2
940	642360	897076	284.8985	10.77494	6	0.9	283.9985	2	G	1	12	2	Site Infrastructure	3	285.4918	0	4	-0.5933	1	12	2	4
941	642365	897061	289.3899	8.548369	6	1	288.3899	2	G	1	12	2	Site Infrastructure	3	289.3899	0	4	0	1	12	2	4
942	642309	897050	290.8772	8.693921	6	2	288.8772	3	G	1	18	3	Site Infrastructure	3	290.8772	0	4	0	1	12	2	6
943	642302	897062	287.7293	7.420932	4	1	286.7293	2	G	1	8	2	Site Infrastructure	3	289.3579	0	4	-1.6286	1	12	2	4
944	642295	897077	286.543	6.961159	4	1.9	284.643	3	G	1	12	2	Site Infrastructure	3	286.543	0	4	0	1	12	2	4
945	642281	897054	288.792	7.270406	4	1	287.792	2	G	1	8	2	Site Infrastructure	3	288.914	0	4	-0.122	1	12	2	4
946	642288	897019	294.6666	7.973935	4	0.9	293.7666	2	G	1	8	2	Site Infrastructure	3	294.6666	0	4	0	1	12	2	4
947	642269	896988	298.709	7.902479	4	0.5	298.209	1	G	1	4	1	Site Infrastructure	3	296.7716	16.484534	3	1.9374	1	9	1	1
948	642259	896988	298.3396	9.077582	6	0.9	297.4396	2	G	1	12	2	Site Infrastructure	3	296.7716	9.429203	4	1.568	1	12	2	4
949	642259	897000	296.7716	8.225641	6	1.2	295.5716	3	G	1	18	3	Site Infrastructure	3	296.7716	0	4	0	1	12	2	6
950	642269	896998	297.1162	8.350254	6	0.6	296.5162	2	G	1	12	2	Site Infrastructure	3	295.5499	9.429113	4	1.5663	1	12	2	4
951	642269	897008	295.5499	7.69639	4	1	294.5499	2	G	1	8	2	Site Infrastructure	3	295.5499	0	4	0	1	12	2	4
952	642259	897008	295.4	7.37513	4	0.8	294.6	2	G	1	8	2	Site Infrastructure	3	295.4	0	4	0	1	12	2	4
953	642269	897018	294.3538	7.513386	4	1.2	293.1538	3	R	1.5	18	3	Site Infrastructure	3	294.3538	0	4	0	1	12	2	6
954	642249	897018	294.0791	7.04084	4	0.8	293.2791	2	G	1	8	2	Site Infrastructure	3	294.0791	0	4	0	1	12	2	4
955	642238	897018	294.1291	6.978078	4	0.9	293.2291	2	G	1	8	2	Site Infrastructure	3	294.1291	0	4	0	1	12	2	4
956	642226	897028	292.7143	7.3603	4	1.7	291.0143	3	G	1	12	2	Site Infrastructure	3	292.7143	0	4	0	1	12	2	4
957	642239	897028	292.8214	7.218919	4	1.5	291.3214	3	G	1	12	2	Site Infrastructure	3	292.8214	0	4	0	1	12	2	4
958	642249	897028	292.8645	7.404188	4	0.9	291.9645	2	G	1	8	2	Site Infrastructure	3	292.8645	0	4	0	1	12	2	4
959	642259	897028	292.9133	7.732679	4	0.8	292.1133	2	G	1	8	2	Site Infrastructure	3	292.9133	0	4	0	1	12	2	4
960	642269	897028	292.9621	7.990235	4	0.2	292.7621	1	G	1	4	1	Site Infrastructure	3	292.9621	0	4	0	1	12	2	2
961	642269	897038	291.5359	8.007597	6	0.7	290.8359	2	G	1	12	2	Site Infrastructure	3	291.5359	0	4	0	1	12	2	4
962	642259	897039	291.4871	7.651708	4	0.8	290.6871	2	G	1	8	2	Site Infrastructure	3	291.4871	0	4	0	1	12	2	4
963	642248	897039	291.5045	7.178107	4	1.1	290.4045	3	G	1	12	2	Site Infrastructure	3	291.5045	0	4	0	1	12	2	4
964	642239	897039	291.6126	6.794008	4	1.5	290.1126	3	G	1	12	2	Site Infrastructure	3	291.6126	0	4	0	1	12	2	4
965	642229	897038	291.5637	6.146256	4	1.2	290.3637	3	G	1	12	2	Site Infrastructure	3	291.5637	0	4	0	1	12	2	4
966	642219	897038	291.3168	5.681019	4	0.1	291.2168	1	G	1	4	1	Site Infrastructure	3	291.3168	0	4	0	1	12	2	2
967	642218	897048	290.4294	5.956289	4	0.3	290.1294	1	G	1	4	1	Site Infrastructure	3	290.4294	0	4	0	1	12	2	2
968	642229	897048	290.4114	6.20589	4	1.9	288.5114	3	G	1	12	2	Site Infrastructure	3	290.4114	0	4	0	1	12	2	4
969	642239	897048	290.4603	6.546122	4	1.5	288.9603	3	G	1	12	2	Site Infrastructure	3	290.4603	0	4	0	1	12	2	4
970	642249	897048	290.3587	6.659255	4	1.3	289.0587	3	G	1	12	2	Site Infrastructure	3	290.3587	0	4	0	1	12	2	4
971	642259	897048	290.2187	6.949771	4	1.2	289.0187	3	G	1	12	2	Site Infrastructure	3	290.2187	0	4	0	1	12	2	4
972	642269	897048	290.1097	7.419092	4	1.6	288.5097	3	G	1	12	2	Site Infrastructure	3	290.1097	0	4	0	1	12	2	4
973	642269	897059	288.9329	6.837505	4	1.4	287.5329	3	G	1	12	2	Site Infrastructure	3	288.9329	0	4	0	1	12	2	4
974	642259	897058	289.0729	6.637123	4	1.9	287.1729	3	G	1	12	2	Site Infrastructure	3	289.0729	0	4	0	1	12	2	4
975	642249	897058	289.2129	6.587194	4	1.7	287.5129	3	R	1.5	18	3	Site Infrastructure	3	289.2129	0	4	0	1	12	2	6
976	642239	897058	289.308	6.411407	4	1.6	287.708	3	R	1.5	18	3	Site Infrastructure	3	289.308	0	4	0	1	12	2	6
977	642229	897058	289.2875	6.03021	4	1.5	287.7875	3	G	1	12	2	Site Infrastructure	3	289.2875	0	4	0	1	12	2	4
978	642219	897058	289.4767	6.390817	4	0.5	288.9767	1	G	1	4	1	Site Infrastructure	3	289.4767	0	4	0	1	12	2	2
979	642219	897068	288.4582	7.505715	4	1	287.4582	2	G	1	8	2	Site Infrastructure	3	288.4582	4.414767	4	0	1	12	2	4
980	642228	897070	288.3348	6.436142	4	0.8	287.5348	2	G	1	8	2	Site Infrastructure	3	288.3348	4.294033	4	0	1	12	2	4
981	642239	897068	288.1557	6.471757	4	1.4	286.7557	3	G	1	12	2	Site Infrastructure	3	288.1557	0	4	0	1	12	2	4
982	642247	897067	288.0672	6.634354	4	1.8	286.2672	3	G	1	12	2	Site Infrastructure	3	288.0672	0	4	0	1	12	2	4
983	642259	897068	287.9171	6.725908	4	1.6	286.3171	3	G	1	12	2	Site Infrastructure	3	287.9171	0	4	0	1	12	2	4
984	642269	897068	287.7624	6.769424	4	1.3	286.4624	3	G	1	12	2	Site Infrastructure	3	287.7624	0	4	0	1	12	2	4
985	642269	897079	286.578	6.804596	4	1.4	285.178	3	G	1	12	2	Site Infrastructure	3	286.578	0	4	0	1	12	2	4
986	642259	897078	286.7327	6.775746	4	1.7	285.0327	3	R	1.5	18	3	Site Infrastructure	3	286.7327	4.706113	4	0	1	12	2	6
987	642249	897078	286.8906	6.687357	4	1.7	285.1906	3	G	1	12	2	Site Infrastructure	3	286.7327	6.054739	4	0.1579	1	12	2	4
988	642238	897080	287.0444	6.610151	4	1.6	285.4444	3	G	1	12	2	Site Infrastructure	3	288.1557	13.186995	3	-1.1113	1	9	1	2
989	642229	897078	287.0991	6.690351	4	1.5	285.5991	3	G	1	12	2	Site Infrastructure	3	288.3348	12.250395	3	-1.2357	1	9	1	2

990	642219	897078	287.134	7.282565	4	1.8	285.334	3	G	1	12	2	Site Infrastructure	3	288.4582	12.250301	3	-1.3242	1	9	1	2
991	642198	897078	285.8784	7.830909	4	0.1	285.7784	1	G	1	4	1	Site Infrastructure	3	288.4582	19.454059	3	-2.5798	1	9	1	1
992	642189	897078	284.6962	9.459904	6	0.01	284.6862	1	R	1.5	9	2	Site Infrastructure	3	289.1495	26.739294	3	-4.4533	1	9	1	2
993	642178	897078	283.5159	9.508283	6	0.9	282.6159	2	G	1	12	2	Site Infrastructure	3	289.1495	33.781372	3	-5.6336	1	9	1	2
994	642179	897068	284.6322	9.893902	6	0.4	284.2322	1	R	1.5	9	2	Site Infrastructure	3	289.1495	28.312186	3	-4.5173	1	9	1	2
995	642189	897069	285.847	10.365	6	1	284.847	1	G	1	12	2	Site Infrastructure	3	289.1495	19.840465	3	-3.3025	1	9	1	2
996	642197	897067	287.1439	9.334702	6	0.5	286.6439	1	Not Proven	2	12	2	Site Infrastructure	3	289.1495	12.429402	3	-2.0056	1	9	1	2
997	642199	897058	288.7829	9.519203	6	0.1	288.6829	1	G	1	6	2	Site Infrastructure	3	289.1495	6.054764	4	-0.3666	1	12	2	4
998	642189	897058	287.2639	11.15632	6	1.1	286.1639	1	G	1	18	3	Site Infrastructure	3	289.1495	15.932039	3	-1.8856	1	9	1	3
999	642179	897058	285.7615	10.38347	6	1.2	284.5615	3	G	1	18	3	Site Infrastructure	3	289.1495	25.903665	3	-3.388	1	9	1	3
1000	642179	897048	286.9685	10.71009	6	1.2	285.7685	3	G	1	18	3	Site Infrastructure	3	290.2354	25.291645	3	-3.2669	1	9	1	3
1001	642189	897048	288.4961	11.1879	6	0.6	287.8961	1	R	1.5	18	3	Site Infrastructure	3	290.2354	15.932048	3	-1.7393	1	9	1	3
1002	642198	897048	290.1043	8.643497	6	0.5	289.6043	1	R	1.5	9	2	Site Infrastructure	3	290.2354	6.598895	4	-0.1311	1	12	2	4
1003	642206	897037	291.5229	6.218204	4	0.1	291.4229	1	G	1	4	1	Site Infrastructure	3	291.5229	0	4	0	1	12	2	2
1004	642199	897038	291.2788	8.203982	6	1	290.2788	1	G	1	12	2	Site Infrastructure	3	291.5229	6.054764	4	-0.2441	1	12	2	4
1005	642189	897038	289.7319	10.72533	6	0.7	289.0319	2	G	1	12	2	Site Infrastructure	3	291.5229	15.932048	3	-1.791	1	9	1	2
1006	642179	897039	288.225	10.87254	6	1.2	287.025	3	G	1	18	3	Site Infrastructure	3	291.5229	25.565906	3	-3.2979	1	9	1	3
1007	642179	897028	289.3602	10.14011	6	0.5	288.8602	1	G	1	12	2	Site Infrastructure	3	292.8564	25.903665	3	-3.4962	1	9	1	2
1008	642189	897029	290.9884	8.88018	6	0.4	290.5884	1	G	1	6	2	Site Infrastructure	3	292.8564	15.80919	3	-1.868	1	9	1	2
1009	642199	897028	292.0572	6.738236	4	1.2	290.8572	3	R	1.5	18	3	Site Infrastructure	3	292.8564	5.244091	4	-0.7992	1	12	2	6
1010	642208	897028	292.8564	5.341671	4	1.9	290.9564	3	G	1	12	2	Site Infrastructure	3	292.8564	0	4	0	1	12	2	4
1011	642209	897018	293.4192	5.981587	4	1.8	291.6192	3	G	1	12	2	Site Infrastructure	3	293.8152	0	4	-0.396	1	12	2	4
1012	642199	897018	292.3589	6.316925	4	1.1	291.2589	2	G	1	12	2	Site Infrastructure	3	292.8564	10.299426	3	-0.4975	1	9	1	2
1013	642188	897020	291.5098	7.158328	4	1.3	290.2098	3	G	1	12	2	Site Infrastructure	3	292.8564	17.914904	3	-1.3466	1	9	1	2
1014	642179	897019	290.1965	8.333249	6	1.2	288.9965	3	G	1	18	3	Site Infrastructure	3	292.8564	26.577114	3	-2.6599	1	9	1	2
1015	642179	897008	290.7468	7.726526	4	1.5	289.2468	3	R	1.5	18	3	Site Infrastructure	3	292.8564	31.77792	3	-2.1096	1	9	1	3
1016	642190	897009	291.8228	7.779912	4	1.3	290.5228	3	G	1	12	2	Site Infrastructure	3	292.8564	23.348528	3	-1.0336	1	9	1	2
1017	642199	897008	292.9598	7.980505	4	1	291.9598	2	G	1	8	2	Site Infrastructure	3	295.2338	15.932048	3	-2.274	1	9	1	2
1018	642207	897008	294.0968	8.372036	6	0.8	293.2968	2	G	1	12	2	Site Infrastructure	3	295.2338	7.514317	4	-1.137	1	12	2	4
1019	642217	897009	295.2338	7.630079	4	0.4	294.8338	1	G	1	4	1	Site Infrastructure	3	295.2338	0	4	0	1	12	2	2
1020	642229	896998	296.8276	7.490724	4	1.6	295.2276	3	G	1	12	2	Site Infrastructure	3	296.8276	0	4	0	1	12	2	2
1021	642219	896998	296.5042	7.812517	4	1.3	295.2042	3	G	1	12	2	Site Infrastructure	3	296.5042	0	4	0	1	12	2	4
1022	642209	896998	295.3249	9.472576	6	0.9	294.4249	2	G	1	12	2	Site Infrastructure	3	296.5042	0	4	-1.1793	1	12	2	4
1023	642199	896998	294.1438	9.815428	6	0.5	293.6438	1	G	1	6	2	Site Infrastructure	3	296.5042	15.932039	3	-2.3604	1	9	1	2
1024	642188	896998	292.9627	9.590547	6	0.9	292.0627	2	G	1	12	2	Site Infrastructure	3	296.5042	26.194103	3	-3.5415	1	9	1	2
1025	642179	896998	291.7878	8.814216	6	0.1	291.6878	1	G	1	6	2	Site Infrastructure	3	296.5042	35.891083	3	-4.7164	1	9	1	2
1026	642189	896990	294.2604	9.907193	6	0.4	293.8604	1	G	1	6	2	Site Infrastructure	3	296.5042	26.287295	3	-2.2438	1	9	1	2
1027	642199	896988	295.5099	10.02419	6	0.7	294.8099	2	G	1	12	2	Site Infrastructure	3	296.5042	17.979151	3	-0.9943	1	9	1	2
1028	642209	896988	296.691	9.325916	6	1.2	295.491	3	G	1	18	3	Site Infrastructure	3	296.5042	10.299508	3	0.1868	1	9	1	2
1029	642219	896988	297.4299	8.096921	6	1	296.4299	2	G	1	12	2	Site Infrastructure	3	296.5042	9.429203	4	0.9257	1	12	2	4
1030	642229	896987	297.7533	8.922957	6	1.9	295.8533	3	G	1	18	3	Site Infrastructure	3	296.8276	10.581359	3	0.9257	1	9	1	3
1031	642239	896988	298.0325	10.87574	6	0.01	298.0225	1	G	1	6	2	Site Infrastructure	3	295.8543	9.429203	4	2.1782	1	12	2	4
1032	642385	896951	303.237	8.223842	6	0.8	302.437	2	G	1	12	2	Site Infrastructure	3	302.1424	10.795478	3	1.0946	1	9	1	2
1033	642390	896965	300.931	6.237779	4	1.2	299.731	3	R	1.5	18	3	Site Infrastructure	3	301.0424	0	4	-0.1114	1	12	2	6
1034	642398	896983	298.8756	6.588022	4	1.2	297.6756	3	G	1	12	2	Site Infrastructure	3	301.0424	16.560281	3	-2.1668	1	9	1	2
1035	642440	896965	300.7607	6.333572	4	0.7	300.0607	2	G	1	8	2	Site Infrastructure	3	303.035	19.340647	3	-2.2743	1	9	1	2
1036	642434	896942	303.035	7.437974	4	1.3	301.735	3	G	1	12	2	Site Infrastructure	3	303.035	0	4	0	1	12	2	4
1037	642428	896928	306.0383	9.236875	6	0.9	305.1383	2	G	1	12	2	Site Infrastructure	3	306.0355	0	4	0.0028	1	12	2	4
1038	642479	896899	310.745	8.274225	6	0.4	310.345	1	G	1	6	2	Site Infrastructure	3	309.473	8.770719	4	1.272	1	12	2	4
1039	642483	896875	313.6475	6.866036	4	1.1	312.5475	3	G	1	12	2	Site Infrastructure	3	313.6475	0	4	0	1	12	2	4
1040	642499	896819	320.2642	9.399162	6	2	318.2642	3	G	1	18	3	Site Infrastructure	3	314.5004	38.693279	3	5.7638	1	9	1	3
1041	642509	896819	319.7787	9.961334	6	1.8	317.9787	3	G	1	18	3	Site Infrastructure	3	310.9237	38.461147	3	8.855	1	9	1	3
1042	642519	896819	318.9082	12.55872	6	1	317.9082	2	G	1	12	2	Site Infrastructure	3	314.2823	31.77792	3	4.6259	1	9	1	2
1043	642529	896819	317.1983	11.29731	6	0.9	316.2983	2	R	1.5	18	3	Site Infrastructure	3	314.2823	24.344812	3	2.916	1	9	1	3
1044	642539	896819	317.4089	9.472467	6	1.1	316.3089	3	G	1	18	3	Site Infrastructure	3	314.2823	19.377724	3	3.1266	1	9	1	3
1045	642549	896819	317.8213	6.417602	4	1.5	316.3213	3	G	1	12	2	Site Infrastructure	3	314.2823	18.929603	3	3.539	1	9	1	2
1046	642559	896817	317.459	5.576542	4	1.4	316.059	3	G	1	12	2	Site Infrastructure	3	315.1441	20.37274	3	2.3149	1	9	1	2
1047	642569	896818	316.4041	6.782073	4	0.7	315.7041	2	G	1	8	2	Site Infrastructure	3	315.1441	23.262764	3	1.26	1	9	1	2
1048	642580	896818	315.4459	6.858248	4	0.7	314.7459	2	G	1	8	2	Site Infrastructure	3	315.1441	31.82274	3	0.3018	1	9	1	2
1049	642588	896820	314.4877	6.956086	4	1	313.4877	2	G	1	8	2	Site Infrastructure	3	315.1441	37.940933	3	-0.6564	1	9	1	2
1050	642589	896828	313.7548	7.079855	4	0.9	312.8548	2	G	1	8	2	Site Infrastructure	3	315.1441	35.977888	3	-1.3893	1	9	1	2
1051	642569	896829	315.6713	7.17674	4	0.6	315.0713	2	G	1	8	2	Site Infrastructure	3	315.1441	16.484534	3	0.5272	1	9	1	2
1052	642558	896830	316.6812	7.175112	4	0.9	315.7812	2	G	1	8	2	Site Infrastructure	3	315.1441	8.015951	4	1.5371	1	12	2	4
1053	642548	896828	316.527	10.013	6	0.5	316.027	1	G	1	6	2	Site Infrastructure	3	314.2823	9.996928	4	2.2447	1	12	2	4
1054	642539	896830	315.4103	11.43065	6	1.3	314.1103	3	G	1	18	3	Site Infrastructure	3	314.2823	9.162347	4	1.128	1	12	2	6
1055	642529	896829	315.1063	12.08471	6	1.4	313.7063	3	G	1	18	3	Site Infrastructure	3	314.2823	17.979151	3	0.824	1	9	1	3
1056	642519	896829	317.046	13.74	6	2	315.046	3	G	1	18	3	Site Infrastructure	3	310.9237	24.344812	3	6.1223	1	9	1	3
1057	642509	896829	318.2555	11.15212	6	1.6	316.6555	3	G	1	18	3	Site Infrastructure	3	314.0057	28.770543	3	4.2498	1	9	1	3
1058	642499	896829	318.6912	9.421176	6	1.9	316.7912	3	G	1	18	3	Site Infrastructure	3	314.5004	28.216062	3	4.1908	1	9	1	3
1059	642499	896839	317.2218	9.544533	6	2.2	315.0218	3	G	1	18	3	Site Infrastructure	3	314.5004	18.929603	3	2.7214	1	9	1	3
1060	642508	896838	316.2641	11.32085	6	2.6	313.6641	3	G	1	18	3	Site Infrastructure	3	314.0057	19.613051	3	2.2584	1	9	1	3
1061	642519	896839	314.8543	13.32172	6	3	311.8543	3	G	1	18	3	Site Infrastructure	3	310.9237	17.979104	3	3.9306	1	9	1	3
1062	642530	896837	313.2728	11.93317	6	1.2	312.0728	3	G	1	18	3	Site Infrastructure	3	310.9237	10.982189	3	2.3491	1	9	1	3
1063	642548	896839	314.2823	13.15664	6	0.5	313.7823	1	G	1	6	2	Site Infrastructure	3	314.2823	0	4	0	1	12	2	4
1064	642558	896839	315.1441	9.870544	6	0.4	314.7441	1	G	1	6	2	Site Infrastructure	3	315.1441	4.312832	4	0	1	12	2	4
1065	642569	896837	314.8365	7.11376	4	0.7	314.1365	2	G	1	8	2	Site Infrastructure	3	315.1441	15.139538	3	-0.3076	1	9	1	2
1066	642579	896839	313.8726	7.237998	4	0.8	313.0726	2	G	1	8	2	Site Infrastructure	3	315.1441	24.189871	3	-1.2715	1	9	1	2
1067	642590	896839	312.9086	7.111022	4	0.5	312.4086	1	G	1	4	1	Site Infrastructure	3	315.1441	35.776215	3	-2.2355	1	9	1	1
1068	642589	896849	312.1238	7.699552	4	0.5	311.6238	1	G	1	4	1	Site Infrastructure	3	310.1128	30.397141	3	2.011	1	9	1	1
1069	642579	896849	313.014	8.337881	6	0.7	312.314	2	G	1	12	2	Site Infrastructure	3	310.1128	23.262843	3	2.9012	1	9	1	2
1070	642568	896850	313.905	8.494886	6	0.4	313.505	1	G	1	6	2	Site Infrastructure	3	312.998	13.772655	3	0.907	1	9	1	2
1071	642556	896850	312.998	11.73271	6	0.3	312.698	1	G	1	6	2	Site Infrastructure	3	312.998	0	4	0	1	12	2	4
1072	642549	896849	311.9208	12.33652	6	1.2	310.7208	3	G	1	18	3	Site Infrastructure	3	311.9208	0	4	0	1	12	2	6
1073	642538	896850	310.9237	9.08992	6	1.3	309.6237	3	G	1	18	3	Site Infrastructure	3	310.9237	0	4	0	1	12	2	6
1074	642529	896847	311.4844	9.189799	6	0.8	310.6844	2	G	1	12	2	Site Infrastructure	3	310.9237	5.532329	4	0.5607	1	12	2	4
1075	642518	896848	313.4454	10.43356	6	2.5	310.9454	3	G	1	18	3	Site Infrastructure	3	312.8128	9.997638	4	0.6326	1	12	2	6
1076	642509	896849	314.7916	9.052437	6	1.6	313.1916	3	G	1	18	3	Site Infrastructure	3	314.0057	9.429203	4	0.7859	1	12	2	6
1077	642499	896847	315.7866	8.928355	6	1.9	313.8866	3	R	1.5	27	3	Site Infrastructure	3	314.5004	10.787828	3	1.2862	1	9	1	3
1078	642498	896859	314.5004	6.741411	4	0.9	313.6004	2	G	1	8	2	Site Infrastructure	3	314.5004	0	4	0	1	12	2	4
1079	642509	896858	314.0057	5.995524	4	1.6	312.4057	3	R	1.5	18	3	Site Infrastructure	3	314.0057	0	4	0	1	12	2	6
1080	642520	896856	312.8128	7.429602	4	2.1	310.7128	3	G	1	12	2	Site Infrastructure	3	311.3898	0	4	1.423	1	12	2	4
1081	642530	896857	311.3898	7.592922	4	1.7	309.6898	3	G	1	12	2	Site Infrastructure	3	310.1076	0	4	1.2822	1	12	2	4
1082	642539	896858	310.1076	5.106468	4	1.5	308.6076	3	G	1	12	2	Site Infrastructure	3	310.1076	0	4	0	1	12	2	4
1083	642549	896857	309.8944	7.974051	4	1.2	308.6944	3	G	1	12	2	Site Infrastructure	3	309.8944	0	4	0	1	12	2	4
1084	642557	896858	311.1175	11.31272	6	1	310.1175	2	G	1	12	2	Site Infrastructure	3	311.1175	0	4	0	1	12	2	4
1085	642569	896859	312.0749	10.17321	6	0.5	311.5749	1	G	1	6	2	Site Infrastructure	3	310.1128	9.429203	4	1.9621	1	12	2	4
1086	642579	896857	311.5041	10.2125	6	0.8	310.7041	2	G	1	12	2	Site Infrastructure	3	310.1128	17.401653	3	1.3913	1	9	1	2
1087	642590	896857	310.8182	9.620574	6	0.2	310.6182	1	G	1	6	2	Site Infrastructure	3	308.1019	25.259319	3	2.7163	1	9	1	2
1088	642589	896870	309.0626	9.399445	6	0.5	308.5626	1	G	1	6	2	Site Infrastructure	3	308.1019	16.300661	3	0.9607	1	9	1	2
1089	642579	896869	309.7484	9.990357	6	0.5	309.2484	1	G	1	6	2	Site Infrastructure	3	308.1019	9.429203	4	1.6465	1	12	2	4
1090	642568	896869	310.1128	9.895846	6	0.5	309.6128	1	G	1	6	2	Site Infrastructure	3	310.1128	4.219104	4	0	1	12	2	4
1091	642559	896869	309.5279	8.675762	6	1.4	308.1279	3	G	1	18	3	Site Infrastructure	3	309.5279	0	4	0	1	12	2	6
1092	642549	896869	308.6712	4.549954	4	1.5	307.1712	3	R	1.5	18	3	Site Infrastructure	3	308.6712	0	4	0	1	12	2	6
1093	642537	896868	310.2166	7.477232	4	1.8	308.4166	3	G	1	12	2	Site Infrastructure	3	310.2166	0	4	0	1	12	2	4
1094	642528	896870	311.7621	7.886197	4	1.4	310.3621	3	G	1	12	2	Site Infrastructure	3	311.7621	0	4	0	1	12	2	4
1095	642519	896869	312.9277	5.577048	4	0.2	312.7277	1	G	1	4	1	Site Infrastructure	3	312.9277	0	4	0	1	12	2	2
1096	642509	896869	313.4398	3.819718	2	0.2	313.2398	1	G	1	2	1	Site Infrastructure	3	313.4398	0	4	0	1	12	2	2
1097	642498	896870	313.8218	4.534185	4	0.8	313.0218	2	G	1	8	2	Site Infrastructure	3	313.8218	0	4	0	1	12	2	4
1098	642498	896880	313.3093	6.300069	4	1	312.3093	2	G	1	8	2	Site Infrastructure	3	313.3093	0	4	0	1	12	2	4
1099	642509	896880	312.9712	5.587174	4	0.5	312.4712	1	G	1	4	1	Site Infrastructure	3	312.9712	0	4	0	1	12	2	2
1100	642520	896878	312.669	6.307046	4	0.5	312.169	1	G	1	4	1	Site Infrastructure	3	311.2658	0	4	1.4032	1	12	2	2
1101	642529	896879	311.2658	8.452392	6	0.4	310.8658	1	G	1	6	2	Site Infrastructure	3	311.2658	0	4	0	1	12	2	4
1102	642539	896878	309.7411	8.051374	6	2.1	307.6411	3	G	1	18	3	Site Infrastructure	3	309.7411	0	4	0	1	12	2	6
1103	642550	896879	308.6546	5.857275	4	2	306.6546	3	G	1	12	2	Site Infrastructure	3	307.968	0	4	0.6866	1	12	2	4
1104	642559	896879	307.968	6.495566	4	1.6	306.368	3	G	1	12	2	Site Infrastructure	3	307.968	0	4	0	1	12	2	4
1105	642567	896879	308.3892	8.27973	6	0.9	307.4892	2	G	1	12	2	Site Infrastructure	3	308.3892	0	4	0	1	12	2	4
1106	642576	896878	308.1019	7.977668	4	0.9	307.5019	2	G	1	8	2	Site Infrastructure	3	308.1019	2.186973	4	0	1	12	2	4
1107	642589	896878	307.7844	7.65092	4	0.6	307.1844	2	G	1	8	2	Site Infrastructure	3	306.5734	9.561955	4	1.211	1	12	2	4
1108	642589	896889	306.5734	6.637671	4	0.9	305.6734	2	G	1	8	2	Site Infrastructure	3	306.5734	4.414767	4	0	1	12	2	4
1109	642578	896889	307.1214	7.015659	4	0.5	306.6214	1	G	1	4	1	Site Infrastructure	3	307.1214	0	4	0	1	12	2	2
1110	642568	896889	306.9618	7.865508	4	0.5	306.4618	1	G	1	4	1	Site Infrastructure	3	306.9618	0	4	0	1	12	2	2
1111	642560	896890	306.8405	7.493729	4	1.5	305.3405	3	G	1	12	2	Site Infrastructure	3	306.9618	0	4	-0.1213	1	12	2	4
1112	642549	896887	308.091	8.391563	6	1.9	306.191	3	G	1	18	3	Site Infrastructure	3	308.091	0	4	0	1	12	2	6
1113	642539	896888	309.2573	8.336082	6	1.5	307.7573	3	G	1	18	3	Site Infrastructure	3	309.2573	0	4	0	1	12	2	6
1114	642529	896888	310.4237	8.548651	6	0.2	310.2237	1	G	1	6	2	Site Infrastructure	3	310.4237	0	4	0	1	12	2	4
1115	642518	896890	311.397	7.997584	4	0.3	311.097	1	G	1	4	1	Site Infrastructure	3	311.397	0	4	0	1	12	2	2
1116	642506	896889	311.552	7.92905	4	0.3	311.252	1	G	1	4	1	Site Infrastructure	3	311.552	0	4	0	1	12	2	2
1117	642497	896888	311.707	8.283259	6	0.8	310.907	2	G	1	12	2	Site Infrastructure	3	311.707	0	4	0	1	12	2	4
1118	642499	896898	310.435	7.40231	4	0.3	310.135	1	G	1	4	1	Site Infrastructure	3	310.435	0	4	0	1	12	2	2
1119	642509	896898	310.2801	7.59012	4	0.4	309.8801	1	G	1	4	1	Site Infrastructure	3	310.2801	0	4	0	1	12	2	2
1120	642518	896900	309.9248	7.977191	4	0.5	309.4248	1	G	1	4	1	Site Infrastructure	3	309.9248	0	4	0	1	12	2	2
1121	642529	896898	309.3338	8.42231	6	0.4	308.9338	1	G	1	6	2	Site Infrastructure	3	309.3338	0	4	0	1	12	2	4
1122	642540	896897	308.2464	9.301269	6	0.2	308.0464	1	G	1	6	2	Site Infrastructure	3	306.9444	0	4	1.302	1	12	2	4
1123	642549	896898	306.9444	9.934969	6	1.8	305.1444	3	G	1	18	3	Site Infrastructure	3	306.9444	0	4	0	1	12	2	6
1124	642560	896899	305.5816	9.341072	6	1.1	304.4816	3	G	1	18	3	Site Infrastructure	3	305.237	0	4	0.3446	1	12	2	6
1125	642569	896898	305.237	9.59481	6	1.5	303.737	3	G	1	18	3	Site Infrastructure	3	305.237	0	4	0	1	12	2	6
1126	642578	896900	305.7768	9.66076	6	0.7	305.0768	2	G	1	12	2	Site Infrastructure	3	305.7768	0	4	0	1	12	2	4
1127	642589	896898	305.7778	8.337363	6	0.6	305.1778	2	G	1	12	2	Site Infrastructure	3	305.7778	4.414767	4	0	1	12	2	4
1128	642589	896908	303.7463	10.79787	6	0.9	302.8463	2	G	1	12	2	Site Infrastructure	3	305.7778	12.250301	3	-2.0315	1	9	1	2
1129	642578	896912	301.4737	9.966448	6	1	300.4737	2	G	1	12	2	Site Infrastructure	3	303.6576	6.091079	4	-2.1839	1	12	2	4
1130	642568	896910	303.1586	10.00216	6	0.9	302.2586	2	G	1	12	2	Site Infrastructure	3	303.1586	0	4	0	1	12	2	4
1131	642559	896908	304.3873	10.23796	6	1.7	302.6873	3	G	1	18	3	Site Infrastructure	3	304.3873	0	4	0	1	12	2	6
1132	642549	896908	305.7323	10.14757	6	1.5	304.2323	3	G	1	18	3	Site Infrastructure	3	305.7323	0	4	0	1	12	2	6
1133	642538	896910	307.0772	9.636429	6	0.3	306.7772	1	G	1	6	2	Site Infrastructure	3	307.0772	0	4	0	1	12	2	4
1134	642529	896908	308.1486	8.404507	6	0.3	307.8486	1	G	1	6	2	Site Infrastructure	3	308.1486	0	4	0	1	12	2	4
1135	642519	896911	308.5476	7.764311	4	0.6	307.9476	2	G	1	8	2	Site Infrastructure	3	308.5476	0	4	0	1	12	2	4
1136	642508	896909	309.0081	7.476645	4	0.5	308.5081	1	G	1	4	1	Site Infrastructure	3	309.0081	0	4	0	1	12	2	2
1137	642499	896909	309.1631	7.456111	4	0.5	308.6631	1	G	1	4	1	Site Infrastructure	3	309.1631	0	4	0	1	12	2	2
1138	642486	896916	307.8486	8.952579	6	0.6	307.2486	2	G	1	12	2	Site Infrastructure	3	307.8486	0	4	0	1	12	2	4
1139	642493	896933	304.9154	7.670405	4	0.7	304.2154	2	G	1	8	2	Site Infrastructure	3	304.9154	0	4	0	1	12	2	4
1140	642467	896943	303.1926	8.095463	6	1.2	301.9926	3	G	1	18	3	Site Infrastructure	3	304.4923	14.279614	3	-1.2997	1	9	1	3
1141	642461	896929	306.0458	9.247965	6	1.1	304.9458	3	G	1	18	3	Site Infrastructure	3	306.0741	0	4	-0.0283	1	12	2	6
1142	642410	897123	277.0586	8.031326	6	0.9	276.1586	2	G	1	12	2	Site Infrastructure	3	277.0421	16.461758	3	0.0165	1	9	1	2
1143	642398	897127	277.0421	7.255735	4	1	276.0421	2	G	1	8	2	Site Infrastructure	3	277.0421	0	4	0	1	12	2	4
1144	642383	897129	277.5705	7.431914	4	0.7	276.8705	2	G	1	8	2	Site Infrastructure	3	277.0421	11.204514	3	0.5284	1	9	1	2
1145	642377	897160	274.784	5.981343	4	0.6	274.184	2	G	1	8	2	Site Infrastructure	3	274.0267	17.235985	3	0.7573	1	9	1	2
1146	642393	897161	274.0267	4.999268	4	0.8	273.2267	2	G	1	8	2	Site Infrastructure	3	274.0267	0	4	0	1	12	2	4
1147	642411	897163	273.2864	5.514647	4	1	272.2864	2	G	1	8	2	Site Infrastructure	3	273.162	17.234842	3	0.1244	1	9	1	2
1148	642394	897208	268.8895	6.248246	4	0.8	268.0895	2	G	1	8	2	Site Infrastructure	3	270.3107	22.509253	3	-1.4212	1	9	1	2
1149	642368	897239	266.3453	5.373682	4	0.6	265.7453	2	G	1	8	2	Site Infrastructure	3	266.6241	13.811376	3	-0.2788	1	9	1	2

1150	642341	897243	265.6245	5.406713	4	0.5	265.1245	1	G	1	4	1	Site Infrastructure	3	266.5913	6.914998	4	-0.9668	1	12	2	2
1151	642356	897211	269.5603	6.051243	4	0.6	268.9603	2	G	1	8	2	Site Infrastructure	3	269.5603	0	4	0	1	12	2	4
1152	642336	897205	269.4074	6.045499	4	0.8	268.6074	2	G	1	8	2	Site Infrastructure	3	268.5012	14.581546	3	0.9062	1	9	1	2
1153	642294	897229	265.7817	5.697286	4	0.3	265.4817	1	G	1	4	1	Site Infrastructure	3	265.2044	13.497476	3	0.5773	1	9	1	1
1154	642404	896114	370.5428	13.43745	6	0.8	369.7428	2	G	1	12	2	Site Infrastructure	3	369.7194	19.776708	3	0.8234	1	9	1	2
1155	642405	896103	371.2908	12.84713	6	1.3	369.9908	3	G	1	18	3	Site Infrastructure	3	369.7194	11.500295	3	1.5714	1	9	1	3
1156	642406	896094	371.8662	12.56661	6	1.6	370.2662	3	G	1	18	3	Site Infrastructure	3	372.4896	7.033064	4	-0.6234	1	12	2	6
1157	642405	896083	372.4896	11.43096	6	0.2	372.2896	1	G	1	6	2	Site Infrastructure	3	372.4896	0	4	0	1	12	2	4
1158	642414	896075	371.1221	9.610323	6	0.2	370.9221	1	G	1	6	2	Site Infrastructure	3	371.1221	0	4	0	1	12	2	4
1159	642414	896084	370.3329	11.52174	6	1.7	368.6329	3	G	1	18	3	Site Infrastructure	3	370.3329	0	4	0	1	12	2	6
1160	642414	896095	369.7194	12.41745	6	1.5	368.2194	3	G	1	18	3	Site Infrastructure	3	369.7194	0	4	0	1	12	2	6
1161	642414	896104	369.1393	13.08421	6	1.6	367.5393	3	G	1	18	3	Site Infrastructure	3	369.7194	6.5852	4	-0.5801	1	12	2	6
1162	642414	896114	368.2656	13.60269	6	0.9	367.3656	2	G	1	12	2	Site Infrastructure	3	366.8714	12.946573	3	1.3942	1	9	1	2
1163	642425	896152	363.439	12.46561	6	1.3	362.139	3	G	1	18	3	Site Infrastructure	3	361.5639	39.874993	3	1.8751	1	9	1	3
1164	642424	896144	363.439	12.46561	6	1.3	362.139	3	G	1	18	3	Site Infrastructure	3	361.5639	33.747072	3	1.8751	1	9	1	3
1165	642424	896134	364.2223	13.07062	6	1.6	362.6223	3	G	1	18	3	Site Infrastructure	3	366.8714	26.542887	3	-2.6491	1	9	1	3
1166	642424	896124	365.1054	13.57244	6	1.2	363.9054	3	G	1	18	3	Site Infrastructure	3	366.8714	16.55128	3	-1.766	1	9	1	3
1167	642424	896114	365.9884	13.60747	6	0.8	365.1884	2	G	1	12	2	Site Infrastructure	3	366.8714	6.585299	4	-0.883	1	12	2	4
1168	642426	896102	366.8714	13.30124	6	0.9	365.9714	2	G	1	12	2	Site Infrastructure	3	366.8714	0	4	0	1	12	2	4
1169	642424	896094	367.6118	12.43505	6	0.6	367.0118	2	R	1.5	18	3	Site Infrastructure	3	367.6118	0	4	0	1	12	2	6
1170	642424	896084	368.6352	11.45679	6	1.8	366.8352	3	G	1	18	3	Site Infrastructure	3	368.6352	0	4	0	1	12	2	6
1171	642426	896075	369.6604	9.689692	6	0.6	369.0604	2	G	1	12	2	Site Infrastructure	3	369.6604	0	4	0	1	12	2	4
1172	642433	896073	367.8612	10.74592	6	0.1	367.7612	1	G	1	6	2	Site Infrastructure	3	367.8612	0	4	0	1	12	2	4
1173	642433	896083	366.8613	12.94872	6	0.7	366.1613	2	G	1	12	2	Site Infrastructure	3	366.8613	0	4	0	1	12	2	4
1174	642433	896092	366.8613	12.94872	6	2.2	364.6613	3	G	1	18	3	Site Infrastructure	3	366.8613	0	4	0	1	12	2	6
1175	642434	896103	364.5549	13.31417	6	1.1	363.4549	3	G	1	18	3	Site Infrastructure	3	364.5549	0	4	0	1	12	2	6
1176	642433	896114	363.7685	13.34517	6	0.7	363.0685	2	G	1	12	2	Site Infrastructure	3	364.5549	7.388607	4	-0.7864	1	12	2	4
1177	642433	896123	362.8883	12.67979	6	1.8	361.0883	3	G	1	18	3	Site Infrastructure	3	361.5639	12.734553	3	1.3244	1	9	1	3
1178	642433	896134	364.2223	13.07062	6	1.7	362.5223	3	R	1.5	27	3	Site Infrastructure	3	361.5639	20.339116	3	2.6584	1	9	1	3
1179	642434	896142	362.0081	10.94669	6	1.4	360.6081	3	G	1	18	3	Site Infrastructure	3	361.5639	26.637689	3	0.4442	1	9	1	3
1180	642435	896152	361.0476	10.61841	6	1.3	359.7476	3	G	1	18	3	Site Infrastructure	3	361.5639	35.999879	3	-0.5163	1	9	1	3
1181	642444	896153	359.521	10.0809	6	1.8	357.721	3	R	1.5	27	3	Site Infrastructure	3	361.5639	36.144432	3	-2.0429	1	9	1	3
1182	642448	896145	360.2403	9.027249	6	2.5	357.7403	3	G	1	18	3	Site Infrastructure	3	361.5639	27.996825	3	-1.3236	1	9	1	3
1183	642446	896135	360.6083	9.297523	6	1.9	358.7083	3	G	1	18	3	Site Infrastructure	3	361.5639	17.5182	3	-0.9556	1	9	1	3
1184	642444	896124	360.6837	11.28344	6	1.8	358.8837	3	G	1	18	3	Site Infrastructure	3	361.5639	6.585299	4	-0.8802	1	12	2	6
1185	642447	896103	362.4495	13.33181	6	2.2	360.2495	3	G	1	18	3	Site Infrastructure	3	362.4495	0	4	0	1	12	2	6
1186	642444	896094	363.3759	14.01595	6	2.5	360.8759	3	G	1	18	3	Site Infrastructure	3	363.3759	0	4	0	1	12	2	6
1187	642445	896084	364.6165	14.08157	6	1.2	363.4165	3	G	1	18	3	Site Infrastructure	3	364.6165	0	4	0	1	12	2	6
1188	642446	896074	365.857	10.78691	6	0.5	365.357	1	G	1	6	2	Site Infrastructure	3	365.857	0	4	0	1	12	2	4
1189	642454	896074	363.8313	10.7968	6	0.2	363.6313	1	G	1	6	2	Site Infrastructure	3	363.8313	0	4	0	1	12	2	4
1190	642454	896083	362.4308	13.69667	6	0.6	361.8308	2	G	1	12	2	Site Infrastructure	3	362.4308	0	4	0	1	12	2	4
1191	642453	896094	361.0946	13.11249	6	2.2	358.8946	3	R	1.5	27	3	Site Infrastructure	3	361.0946	0	4	0	1	12	2	6
1192	642454	896104	360.213	12.5152	6	2	358.213	3	R	1.5	27	3	Site Infrastructure	3	360.213	0	4	0	1	12	2	6
1193	642455	896113	359.457	12.04446	6	2.4	357.057	3	G	1	18	3	Site Infrastructure	3	359.457	0	4	0	1	12	2	6
1194	642454	896124	358.7545	10.993	6	1.5	357.2545	3	G	1	18	3	Site Infrastructure	3	359.457	6.569319	4	-0.7025	1	12	2	6
1195	642455	896133	359.1337	10.64309	6	2	357.1337	3	G	1	18	3	Site Infrastructure	3	359.457	15.417535	3	-0.3233	1	9	1	3
1196	642455	896142	358.7138	10.66428	6	2.1	356.6138	3	G	1	18	3	Site Infrastructure	3	359.457	25.062756	3	-0.7432	1	9	1	3
1197	642454	896154	358.0419	11.1952	6	2.3	355.7419	3	G	1	18	3	Site Infrastructure	3	359.457	36.539187	3	-1.4151	1	9	1	3
1198	642465	896153	356.026	13.70458	6	1.4	354.626	3	G	1	18	3	Site Infrastructure	3	359.457	37.617731	3	-3.431	1	9	1	3
1199	642466	896145	356.6493	13.99967	6	2	354.6493	3	G	1	18	3	Site Infrastructure	3	359.457	29.623085	3	-2.8077	1	9	1	3
1200	642464	896134	356.764	13.29509	6	2.5	354.264	3	G	1	18	3	Site Infrastructure	3	359.457	19.801752	3	-2.693	1	9	1	3
1201	642463	896125	356.9522	12.31171	6	0.9	356.0522	2	G	1	12	2	Site Infrastructure	3	359.457	11.656323	3	-2.5048	1	9	1	2
1202	642464	896114	357.5092	12.06622	6	2.6	354.9092	3	R	1.5	27	3	Site Infrastructure	3	358.3351	6.5852	4	-0.8259	1	12	2	6
1203	642464	896104	358.3351	11.61054	6	2	356.3351	3	R	1.5	27	3	Site Infrastructure	3	358.3351	0	4	0	1	12	2	6
1204	642466	896092	359.2787	11.59306	6	2.1	357.1787	3	G	1	18	3	Site Infrastructure	3	359.2787	0	4	0	1	12	2	6
1205	642466	896087	360.4607	12.79131	6	1.2	359.2607	3	G	1	18	3	Site Infrastructure	3	360.4607	0	4	0	1	12	2	6
1206	642466	896075	361.8618	12.2989	6	0.1	361.7618	1	G	1	6	2	Site Infrastructure	3	361.8618	0	4	0	1	12	2	4
1207	642474	896073	359.8145	13.25977	6	2.9	356.9145	3	G	1	18	3	Site Infrastructure	3	359.8145	0	4	0	1	12	2	6
1208	642476	896085	358.486	12.8984	6	2.2	356.286	3	G	1	18	3	Site Infrastructure	3	358.486	0	4	0	1	12	2	6
1209	642472	896094	359.2787	11.59306	6	1.1	358.1787	3	G	1	18	3	Site Infrastructure	3	357.7908	0	4	1.4879	1	12	2	6
1210	642472	896103	358.3351	11.61054	6	1.7	356.6351	3	G	1	18	3	Site Infrastructure	3	357.7908	0	4	0.5443	1	12	2	6
1211	642474	896113	355.3641	11.48391	6	1.6	353.7641	3	G	1	18	3	Site Infrastructure	3	358.3351	11.322409	3	-2.971	1	9	1	3
1212	642475	896122	354.6071	11.2649	6	0.7	353.9071	2	G	1	12	2	Site Infrastructure	3	358.3351	18.127849	3	-3.728	1	9	1	2
1213	642474	896134	354.3002	11.96064	6	1	353.3002	2	G	1	12	2	Site Infrastructure	3	359.457	25.29041	3	-5.1568	1	9	1	2
1214	642475	896141	354.3002	11.96064	6	1.6	352.7002	3	G	1	18	3	Site Infrastructure	3	359.457	31.746383	3	-5.1568	1	9	1	3
1215	642475	896152	353.6891	12.60378	6	0.7	352.9891	2	G	1	12	2	Site Infrastructure	3	359.457	40.159266	3	-5.7679	1	9	1	2
1216	642483	896156	351.7008	8.82956	6	0.9	350.8008	2	G	1	12	2	Site Infrastructure	3	359.457	48.015284	3	-7.7562	1	9	1	2
1217	642487	896143	352.1428	8.932639	6	1.3	350.8428	3	G	1	18	3	Site Infrastructure	3	359.457	42.138591	3	-7.3142	1	9	1	3
1218	642484	896134	352.5849	9.076536	6	1.7	350.8849	3	G	1	18	3	Site Infrastructure	3	358.3351	32.71368	3	-5.7502	1	9	1	3
1219	642484	896124	353.1678	9.331545	6	1.8	351.3678	3	G	1	18	3	Site Infrastructure	3	358.3351	25.29041	3	-5.1673	1	9	1	3
1220	642484	896112	353.8763	10.34055	6	1.1	352.7763	3	G	1	18	3	Site Infrastructure	3	355.4009	14.944301	3	-1.5246	1	9	1	3
1221	642484	896104	354.6884	11.65715	6	1.2	353.4884	3	G	1	18	3	Site Infrastructure	3	355.4009	6.435055	4	-0.7125	1	12	2	6
1222	642485	896095	355.4009	12.48265	6	1.5	353.9009	3	G	1	18	3	Site Infrastructure	3	355.4009	0	4	0	1	12	2	6
1223	642486	896083	356.4563	12.95323	6	1.7	354.7563	3	G	1	18	3	Site Infrastructure	3	356.4563	0	4	0	1	12	2	6
1224	642485	896075	357.8187	12.57997	6	2.3	355.5187	3	G	1	18	3	Site Infrastructure	3	357.8187	0	4	0	1	12	2	6
1225	642485	896064	358.8616	12.83987	6	2.5	356.3616	3	G	1	18	3	Site Infrastructure	3	358.8616	0	4	0	1	12	2	6
1226	642492	896063	358.8616	12.83987	6	2	356.8616	3	G	1	18	3	Site Infrastructure	3	357.1607	0	4	1.7009	1	12	2	6
1227	642495	896073	356.1616	12.40997	6	1.7	354.4616	3	G	1	18	3	Site Infrastructure	3	356.1616	0	4	0	1	12	2	6
1228	642494	896085	354.5583	12.00161	6	0.5	354.0583	1	R	1.5	9	2	Site Infrastructure	3	354.5583	0	4	0	1	12	2	4
1229	642493	896093	353.5331	10.24932	6	0.7	352.8331	2	R	1.5	18	3	Site Infrastructure	3	354.5583	5.833477	4	-1.0252	1	12	2	6
1230	642495	896104	352.847	9.293934	6	1.2	351.647	3	G	1	18	3	Site Infrastructure	3	355.4009	12.429508	3	-2.5539	1	9	1	3
1231	642493	896115	352.1608	8.912922	6	1.8	350.3608	3	G	1	18	3	Site Infrastructure	3	355.4009	19.727534	3	-3.2401	1	9	1	3
1232	642494	896124	351.6184	8.656355	6	1.6	350.0184	3	G	1	18	3	Site Infrastructure	3	355.4009	28.578632	3	-3.7825	1	9	1	3
1233	642494	896135	351.1775	8.457233	6	2	349.1775	3	G	1	18	3	Site Infrastructure	3	355.4009	39.183616	3	-4.2234	1	9	1	3
1234	642494	896145	350.7365	8.369979	6	2.5	348.2365	3	G	1	18	3	Site Infrastructure	3	358.3351	48.254547	3	-7.5986	1	9	1	3
1235	642495	896152	350.2955	8.384917	6	1.5	348.7955	3	G	1	18	3	Site Infrastructure	3	359.457	53.664831	3	-9.1615	1	9	1	3
1236	642504	896154	348.8947	8.391385	6	2.2	346.6947	3	G	1	18	3	Site Infrastructure	3	355.4009	59.681864	3	-6.5062	1	9	1	3
1237	642503	896144	349.3356	8.358794	6	2.5	346.8356	3	G	1	18	3	Site Infrastructure	3	355.4009	50.761882	3	-6.0653	1	9	1	3
1238	642504	896133	349.7766	8.222545	6	2.5	347.2766	3	G	1	18	3	Site Infrastructure	3	355.4009	40.464302	3	-5.6243	1	9	1	3
1239	642503	896123	350.3062	7.899841	4	1.4	348.9062	3	G	1	12	2	Site Infrastructure	3	355.4009	31.975265	3	-5.0947	1	9	1	2
1240	642505	896114	351.1387	7.33907	4	1.1	350.0387	3	G	1	12	2	Site Infrastructure	3	355.4009	26.476285	3	-4.2622	1	9	1	2
1241	642504	896103	351.6755	7.059203	4	2	349.6755	3	R	1.5	18	3	Site Infrastructure	3	354.5583	18.876486	3	-2.8828	1	9	1	3
1242	642508	896093	352.2123	7.741135	4	0.9	351.3123	2	G	1	8	2	Site Infrastructure	3	354.5583	14.643005	3	-2.346	1	9	1	2
1243	642504	896084	352.863	9.927477	6	0.7	352.163	2	G	1	12	2	Site Infrastructure	3	354.1951	7.347304	4	-1.3321	1	12	2	4
1244	642505	896074	354.1951	11.98178	6	1.8	352.3951	3	G	1	18	3	Site Infrastructure	3	354.1951	0	4	0	1	12	2	6
1245	642503	896063	355.1313	14.2902	6	2.2	352.9313	3	G	1	18	3	Site Infrastructure	3	355.1313	0	4	0	1	12	2	6
1246	642404	896025	376.1262	10.45097	6	1.8	374.3262	3	G	1	18	3	Site Infrastructure	3	376.1262	0	4	0	1	12	2	6
1247	642403	896034	375.9665	13.51155	6	1.5	374.4665	3	G	1	18	3	Site Infrastructure	3	375.9665	0	4	0	1	12	2	6
1248	642404	896041	375.9665	13.51155	6	1.7	374.2665	3	G	1	18	3	Site Infrastructure	3	375.9665	0	4	0	1	12	2	6
1249	642413	896041	373.9634	14.4863	6	1.1	372.8634	3	G	1	18	3	Site Infrastructure	3	373.9634	0	4	0	1	12	2	6
1250	642414	896034	373.9634	14.4863	6	1.4	372.5634	3	G	1	18	3	Site Infrastructure	3	373.9634	0	4	0	1	12	2	6
1251	642415	896025	374.3937	10.84685	6	1.8	372.5937	3	G	1	18	3	Site Infrastructure	3	374.3937	0	4	0	1	12	2	6
1252	642424	896024	372.6744	11.03935	6	1.6	371.0744	3	G	1	18	3	Site Infrastructure	3	372.6744	0	4	0	1	12	2	6
1253	642437	896038	370.0839	9.790956	6	1.8	368.2839	3	G	1	18	3	Site Infrastructure	3	370.0839	0	4	0	1	12	2	6
1254	642444	896044	367.7356	11.04623	6	0.1	367.6356	1	G	1	6	2	Site Infrastructure	3	367.7356	0	4	0	1	12	2	4
1255	642444	896034	368.4798	10.73938	6	1.9	366.5798	3	G	1	18	3	Site Infrastructure	3	368.4798	0	4	0	1	12	2	6
1256	642448	896025	369.017	10.66632	6	2	367.017	3	G	1	18	3	Site Infrastructure	3	369.017	0	4	0	1	12	2	6
1257	642455	896022	367.2753	10.85171	6	1.9	365.3753	3	G	1	18	3	Site Infrastructure	3	367.9208	0	4	-0.6455	1	12	2	6
1258	642456	896034	366.5528	10.91446	6	0.1	366.4528	1	G	1	6	2	Site Infrastructure	3	366.5528	0	4	0	1	12	2	4
1259	642454	896043	365.8087	10.76085	6	0.01	365.7987	1	R	1.5	9	2	Site Infrastructure	3	365.8087	0	4	0	1	12	2	4
1260	642454	896051	365.8087	10.76085	6	2.1	363.7087	3	G	1	18	3	Site Infrastructure	3	365.8087	0	4	0	1	12	2	6
1261	642466	896052	363.48	9.143377	6	1.8	361.68	3	G	1	18	3	Site Infrastructure	3	364.1491	0	4	-0.6691	1	12	2	6
1262	642465	896045	364.1491	9.53784	6	1.5	362.6491	3	G	1	18	3	Site Infrastructure	3	364.1491	0	4	0	1	12	2	6
1263	642464	896034	364.8546	10.53214	6	1.9	362.9546	3	G	1	18	3	Site Infrastructure	3	364.8546	0	4	0	1	12	2	6
1264	642463	896021	366.0221	11.49565	6	1.4	364.6221	3	G	1	18	3	Site Infrastructure	3	366.0221	0	4	0	1	12	2	6
1265	642474	896025	363.4869	11.37567	6	0.9	362.5869	2	G	1	12	2	Site Infrastructure	3	363.4869	0	4	0	1	12	2	4
1266	642474	896034	363.0747	10.87444	6	1.1	361.9747	3	R	1.5	27	3	Site Infrastructure	3	363.0747	0	4	0	1	12	2	6
1267	642474	896044	362.5454	9.883476	6	2	360.5454	3	G	1	18	3	Site Infrastructure	3	362.5454	0	4	0	1	12	2	6
1268	642476	896050	362.5454	9.883476	6	2	360.5454	3	G	1	18	3	Site Infrastructure	3	362.5454	0	4	0	1	12	2	6
1269	642485	896045	360.7042	10.30623	6	2	358.7042	3	R	1.5	27	3	Site Infrastructure	3	360.7042	0	4	0	1	12	2	6
1270	642484	896034	361.1164	10.83007	6	2.1	359.0164	3	G	1	18	3	Site Infrastructure	3	361.1164	0	4	0	1	12	2	6
1271	642485	896023	361.5286	11.30109	6	1.7	359.8286	3	G	1	18	3	Site Infrastructure	3	361.5286	0	4	0	1	12	2	6
1272	642494	896025	359.5703	10.22514	6	1.9	357.6703	3	G	1	18	3	Site Infrastructure	3	359.5703	0	4	0	1	12	2	6
1273	642494	896034	359.2821	10.18071	6	2.1	357.1821	3	G	1	18	3	Site Infrastructure	3	359.2821	0	4	0	1	12	2	6
1274	642495	896046	359.0602	10.58405	6	2	357.0602	3	G	1	18	3	Site Infrastructure	3	359.0602	0	4	0	1	12	2	6
1275	642516	896029	356.5152	13.22344	6	2.4	354.1152	3	G	1	18	3	Site Infrastructure	3	356.5152	0	4	0	1	12	2	6
1276	642529	896047	354.0275	11.22143	6	0.3	353.7275	1	G	1	6	2	Site Infrastructure	3	354.0275	0	4	0	1	12	2	4
1277	642538	896065	350.5311	8.127698	6	1.6	348.9311	3	G	1	18	3	Site Infrastructure	3	350.6791	8.679385	4	-0.148	1	12	2	6
1278	642549	896084	348.0566	8.992303	6	2	346.0566	3	G	1	18	3	Site Infrastructure	3	351.6306	29.80875	3	-3.574	1	9	1	3
1279	642592	896039	343.1133	8.607355	6	1.8	341.3133	3	G	1	18	3	Site Infrastructure	3	345.1619	21.662772	3	-2.0486	1	9	1	3
1280	642581	896021	345.5719	9.725654	6	2.8	342.7719	3	G	1	18	3	Site Infrastructure	3	343.9424	0	4	1.6295	1	12	2	6
1281	642568	896000	347.8959	10.27711	6	2	345.8959	3	G	1	18	3	Site Infrastructure	3	345.9307	9.539746	4	1.9652	1	12	2	6
1282	642621	895993	340.8932	9.223764	6	2	338.8932	3	G	1	18	3	Site Infrastructure	3	339.1375	14.734786	3	1.7557	1	9	1	3
1283	642619	896011	340.4601	8.092959	6	3	337.4601	3	G	1	18	3	Site Infrastructure	3	339.1375	0	4	1.3226	1	12	2	6
1284	642627	896032	338.348	7.823058	4	2.3	336.048	3	G	1	12	2	Site Infrastructure	3	337.3843	16.257612	3	0.9637	1	9	1	2
1285	642678	896046	332.3329	7.030554	4	2.1	330.2329	3	G	1	12	2	Site Infrastructure	3	332.375	19.995412	3	-0.0421	1	9	1	2
1286	642687	896023	332.375	6.319339	4	1.7	330.675	3	G	1	12	2	Site Infrastructure	3	332.375	0	4	0	1	12	2	4
1287	642698	896003	332.0761	6.239762	4	1.5	330.5761	3	G	1	12	2	Site Infrastructure	3	331.3539	24.222119	3	0.7222	1	9	1	2
1288	642746	896036	325.3631	6.343831	4	1.4	323.9631	3	G	1	12	2	Site Infrastructure	3	325.3631	0	4	0	1	12	2	4
1289	642750	896062	324.7116	6.296165	4	1.6	323.1116	3	G	1	12	2	Site Infrastructure	3	324.3894	24.942612	3	0.3222	1	9	1	2
1290	642783	896063	320.1921	6.357403	4	2	318.1921	3	G	1	12	2	Site Infrastructure	3	321.4495	25.808556	3	-1.2574	1	9	1	2
1291	642783	896035	321.4495	6.570057	4	1.3	320.1495	3	G	1	12	2	Site Infrastructure	3	321.4495	0	4	0	1	12	2	4
1292	642788	896014	322.6288	6.682489	4	1.1	321.5288	3	R	1.5	18	3	Site Infrastructure	3	321.4495	23.699946	3	1.1793	1	9	1	3
1293	642833	896012	317.2379	7.17482	4	1.9	315.3379	3	G	1	12	2	Site Infrastructure	3	316.5771	15.379163	3	0.6608	1	9	1	2
1294	642836	896028	316.5771	7.046654	4	1.2	315.3771	3	G	1	12	2	Site Infrastructure	3	316.5771	0	4	0	1	12	2	4
1295	642837	896057	315.2687	6.551554	4	1.7	313.5687	3	G	1	12	2	Site Infrastructure	3	316.5771	30.244608	3	-1.3084	1	9	1	2
1296	642838	896078	314.4943	6.397515	4	1	313.4943	2	G	1	8	2	Site Infrastructure	3	310.2321	36.301235	3	4.2622	1	9	1	2
1297	642863	896093	310.9641	5.934729	4	1.4	309.5641	3	C	2	24	3	Site Infrastructure	3	310.2321	19.644459	3	0.732	1	9	1	3
1298	642863	896084	311.1465	5.960076	4	1.9	309.2465	3	C	2	24	3	Site Infrastructure	3	310.2321	12.670235	3	0.9144	1	9	1	3
1299	642863	896074	311.2709	6.143054	4	1	310.2709	2	R	1.5	12	2	Site Infrastructure	3	310.2321	11.399744	3	1.0388	1	9	1	2
1300	642863	896064	311.5514	6.530297	4	1.1	310.4514	3	R	1.5	18	3	Site Infrastructure	3	310.4387	11.989936	3	1.1127	1	9	1	3
1301	642863	896054	311.9435	6.690093	4	0.9	311.0435	2	C	2	16	3	Site Infrastructure	3	310.4387	17.302375	3	1.5048	1	9	1	3
1302	642863	896044	312.3357	6.648992	4	1	311.3357	2	G	1	8	2	Site Infrastructure	3	311.9366	12.670287	3	0.3991	1	9	1	2
1303	642863	896034	312.9213	6.676671	4	1	311.9213	2	G	1	8	2	Site Infrastructure	3	313.559	6.585299	4	-0.6377	1	12	2	4
1304	642863	896024	313.559	6.728715	4	1.1	312.459	3	G	1	12	2	Site Infrastructure	3	313.559	0	4	0	1	12	2	4
1305	642863	896014	314.2177	6.808118	4	1.1	313.1177	3	G	1	12	2	Site Infrastructure	3	313.2239	11.399775	3	0.9938	1	9	1	2
1306	642863	896004	314.8907	6.837554	4	2	312.8907	3	R	1.5	18	3	Site Infrastructure	3	313.8969	11.399775	3	0.9938	1	9	1	3
1307	642873	896004	313.8969	6.845353	4	2.1	311.7969	3	G	1	12	2	Site Infrastructure	3	313.8969	3.575496	4	0	1	12	2	4
1308	642873	896013	313.2239	6.78383	4	1.1	312.1239	3	R	1.5	18	3	Site Infrastructure	3	313.2239	3.982479	4	0	1	12	2	6
1309	642874	896024	312.5766	6.712368	4	1	311.5766	2	G	1	8	2	Site Infrastructure	3	312.5766	0	4	0	1	12	2	4

1310	642873	896034	311.9366	6.677537	4	0.9	311.0366	2	R	1.5	12	2	Site Infrastructure	3	311.9366	0	4	0	1	12	2	4
1311	642873	896044	311.3127	6.64865	4	0.9	310.4127	2	R	1.5	12	2	Site Infrastructure	3	311.9366	6.5852	4	-0.6239	1	12	2	4
1312	642873	896054	310.8309	6.684054	4	0.8	310.0309	2	G	1	8	2	Site Infrastructure	3	309.7182	11.399744	3	1.1127	1	9	1	2
1313	642873	896064	310.4387	6.471999	4	1	309.4387	2	G	1	8	2	Site Infrastructure	3	310.4387	3.575593	4	0	1	12	2	4
1314	642873	896074	310.2321	6.108197	4	1.5	308.7321	3	G	1	12	2	Site Infrastructure	3	310.2321	3.575593	4	0	1	12	2	4
1315	642873	896084	310.1077	5.953474	4	1.2	308.9077	3	C	2	24	3	Site Infrastructure	3	310.2321	6.585299	4	-0.1244	1	12	2	6
1316	642873	896094	309.948	5.965382	4	1.6	308.348	3	C	2	24	3	Site Infrastructure	3	310.2321	16.55138	3	-0.2841	1	9	1	3
1317	642873	896114	309.3826	6.57987	4	1.8	307.5826	3	G	1	12	2	Site Infrastructure	3	310.2321	36.539087	3	-0.8495	1	9	1	2
1318	642883	896094	308.932	6.055545	4	1.5	307.432	3	C	2	24	3	Site Infrastructure	3	309.1933	16.55138	3	-0.2613	1	9	1	3
1319	642883	896084	309.0689	5.953021	4	1.6	307.4689	3	C	2	24	3	Site Infrastructure	3	309.1933	6.585299	4	-0.1244	1	12	2	6
1320	642883	896074	309.1933	6.039183	4	1.3	307.8933	3	G	1	12	2	Site Infrastructure	3	309.1933	0	4	0	1	12	2	4
1321	642883	896064	309.3261	6.271672	4	0.8	308.5261	2	G	1	8	2	Site Infrastructure	3	309.3261	0	4	0	1	12	2	4
1322	642883	896054	309.7182	6.585615	4	0.8	308.9182	2	R	1.5	12	2	Site Infrastructure	3	309.7182	0	4	0	1	12	2	4
1323	642883	896044	310.328	6.671343	4	0.7	309.628	2	G	1	8	2	Site Infrastructure	3	310.328	0	4	0	1	12	2	4
1324	642883	896034	310.9531	6.670191	4	0.8	310.1531	2	R	1.5	12	2	Site Infrastructure	3	310.9531	0	4	0	1	12	2	4
1325	642883	896024	311.5943	6.696965	4	1	310.5943	2	R	1.5	12	2	Site Infrastructure	3	311.5943	0	4	0	1	12	2	4
1326	642883	896014	312.2355	6.749063	4	2	310.2355	3	G	1	12	2	Site Infrastructure	3	312.2355	0	4	0	1	12	2	4
1327	642883	896004	312.9031	6.90333	4	1.6	311.3031	3	G	1	12	2	Site Infrastructure	3	312.9031	3.575593	4	0	1	12	2	4
1328	642893	896004	311.9268	7.054156	4	1.3	310.6268	3	G	1	12	2	Site Infrastructure	3	311.9268	0	4	0	1	12	2	4
1329	642893	896014	311.2531	6.822328	4	2.1	309.1531	3	G	1	12	2	Site Infrastructure	3	311.2531	0	4	0	1	12	2	4
1330	642894	896024	310.6119	6.781859	4	2.3	308.3119	3	G	1	12	2	Site Infrastructure	3	310.6119	0	4	0	1	12	2	4
1331	642893	896034	309.9707	6.688074	4	1	308.9707	2	G	1	8	2	Site Infrastructure	3	309.9707	0	4	0	1	12	2	4
1332	642893	896044	309.3433	6.587265	4	0.8	308.5433	2	G	1	8	2	Site Infrastructure	3	309.3433	0	4	0	1	12	2	4
1333	642893	896054	308.7194	6.53224	4	0.7	308.0194	2	G	1	8	2	Site Infrastructure	3	308.7194	0	4	0	1	12	2	4
1334	642893	896074	308.1545	6.320286	4	1.1	307.0545	3	G	1	12	2	Site Infrastructure	3	308.1545	0	4	0	1	12	2	4
1335	642893	896084	308.0301	6.31123	4	1.8	306.2301	3	C	2	24	3	Site Infrastructure	3	308.1545	0	4	-0.1244	1	12	2	6
1336	642893	896094	307.9058	6.321269	4	1.8	306.1058	3	G	1	12	2	Site Infrastructure	3	306.8659	12.670235	3	1.0399	1	9	1	2
1337	642903	896094	306.7462	6.506391	4	1.6	305.1462	3	G	1	12	2	Site Infrastructure	3	306.8659	6.585299	4	-0.1197	1	12	2	4
1338	642903	896084	306.8659	6.754962	4	1.2	305.6659	3	G	1	12	2	Site Infrastructure	3	306.8659	0	4	0	1	12	2	4
1339	642903	896074	306.9947	6.637195	4	0.4	306.5947	1	G	1	4	1	Site Infrastructure	3	306.9947	0	4	0	1	12	2	2
1340	642903	896064	307.1236	6.45464	4	0.6	306.5236	2	G	1	8	2	Site Infrastructure	3	307.1236	0	4	0	1	12	2	4
1341	642903	896054	307.7699	6.543848	4	0.7	307.0699	2	G	1	8	2	Site Infrastructure	3	307.7699	0	4	0	1	12	2	4
1342	642903	896044	308.3924	6.41777	4	1	307.3924	2	G	1	8	2	Site Infrastructure	3	308.3924	0	4	0	1	12	2	4
1343	642903	896034	308.9552	6.583199	4	1.5	307.4552	3	G	1	12	2	Site Infrastructure	3	308.9552	0	4	0	1	12	2	4
1344	642903	896024	309.5873	6.865062	4	2	307.5873	3	R	1.5	18	3	Site Infrastructure	3	309.5873	0	4	0	1	12	2	6
1345	642903	896014	310.2304	7.035558	4	1.8	308.4304	3	C	2	24	3	Site Infrastructure	3	310.2304	0	4	0	1	12	2	6
1346	642903	896004	310.9545	7.333135	4	2.2	308.7545	3	G	1	12	2	Site Infrastructure	3	310.9545	0	4	0	1	12	2	4
1347	642913	896004	309.9171	7.520551	4	2	307.9171	3	R	1.5	18	3	Site Infrastructure	3	309.9171	0	4	0	1	12	2	6
1348	642913	896014	309.1758	7.149793	4	1	308.1758	2	G	1	8	2	Site Infrastructure	3	309.1758	0	4	0	1	12	2	4
1349	642913	896024	308.5327	6.770923	4	1	307.5327	2	G	1	8	2	Site Infrastructure	3	308.5327	0	4	0	1	12	2	4
1350	642913	896034	307.9873	6.370281	4	1.9	306.0873	3	G	1	12	2	Site Infrastructure	3	307.9873	0	4	0	1	12	2	4
1351	642913	896044	307.4607	6.292666	4	1.4	306.0607	3	G	1	12	2	Site Infrastructure	3	307.4607	0	4	0	1	12	2	4
1352	642913	896064	306.1638	6.507156	4	0.6	305.5638	2	R	1.5	12	2	Site Infrastructure	3	306.1638	0	4	0	1	12	2	4
1353	642913	896074	305.787	6.686385	4	0.8	304.987	2	G	1	8	2	Site Infrastructure	3	305.787	0	4	0	1	12	2	4
1354	642913	896084	305.6582	6.838851	4	1	304.6582	2	C	2	16	3	Site Infrastructure	3	305.6582	0	4	0	1	12	2	6
1355	642913	896094	305.5886	6.525043	4	2	303.5886	3	C	2	24	3	Site Infrastructure	3	305.6582	6.585299	4	-0.0696	1	12	2	6
1356	642913	896114	305.1322	6.052973	4	1.9	303.2322	3	G	1	12	2	Site Infrastructure	3	305.6582	26.542987	3	-0.526	1	9	1	2
1357	642923	896094	304.4311	6.615747	4	1.5	302.9311	3	C	2	24	3	Site Infrastructure	3	304.4504	6.585299	4	-0.0193	1	12	2	6
1358	642923	896084	304.4504	6.685676	4	1.1	303.3504	3	G	1	12	2	Site Infrastructure	3	304.4504	0	4	0	1	12	2	4
1359	642923	896074	304.5792	6.593498	4	0.7	303.8792	2	G	1	8	2	Site Infrastructure	3	304.5792	0	4	0	1	12	2	4
1360	642923	896064	305.2145	6.691378	4	0.7	304.5145	2	G	1	8	2	Site Infrastructure	3	305.2145	0	4	0	1	12	2	4
1361	642923	896054	305.904	6.553002	4	1	304.904	2	G	1	8	2	Site Infrastructure	3	305.904	0	4	0	1	12	2	4
1362	642923	896044	306.5291	6.288961	4	1.4	305.1291	3	G	1	12	2	Site Infrastructure	3	306.5291	0	4	0	1	12	2	4
1363	642923	896034	307.0195	6.21857	4	1	306.0195	2	G	1	8	2	Site Infrastructure	3	307.0195	0	4	0	1	12	2	4
1364	642923	896024	307.4983	6.543767	4	1.2	306.2983	3	G	1	12	2	Site Infrastructure	3	307.4983	0	4	0	1	12	2	4
1365	642923	896014	308.1212	7.07605	4	1.3	306.8212	3	G	1	12	2	Site Infrastructure	3	308.1212	0	4	0	1	12	2	4
1366	642923	896004	308.8797	7.557626	4	1	307.8797	2	G	1	8	2	Site Infrastructure	3	308.8797	0	4	0	1	12	2	4
1367	642933	896004	307.8423	7.571852	4	1.2	306.6423	3	G	1	12	2	Site Infrastructure	3	307.8423	3.575496	4	0	1	12	2	4
1368	642933	896014	307.0666	6.929898	4	0.9	306.1666	2	G	1	8	2	Site Infrastructure	3	307.0666	0	4	0	1	12	2	4
1369	642933	896024	306.5305	6.33668	4	1	305.5305	2	G	1	8	2	Site Infrastructure	3	306.5305	0	4	0	1	12	2	4
1370	642933	896034	306.0516	6.159399	4	0.8	305.2516	2	G	1	8	2	Site Infrastructure	3	306.0516	0	4	0	1	12	2	4
1371	642933	896044	305.5728	6.314306	4	1.3	304.2728	3	G	1	12	2	Site Infrastructure	3	305.5728	0	4	0	1	12	2	4
1372	642933	896054	304.9546	6.601718	4	1.1	303.8546	3	G	1	12	2	Site Infrastructure	3	304.9546	0	4	0	1	12	2	4
1373	642933	896064	304.2652	6.735809	4	0.9	303.3652	2	R	1.5	12	2	Site Infrastructure	3	304.2652	0	4	0	1	12	2	4
1374	642933	896074	303.5757	6.491036	4	1	302.5757	2	R	1.5	12	2	Site Infrastructure	3	303.5757	0	4	0	1	12	2	4
1375	642933	896084	303.2495	6.417698	4	0.9	302.3495	2	R	1.5	12	2	Site Infrastructure	3	303.2495	0	4	0	1	12	2	4
1376	642933	896094	303.2736	6.55008	4	1.8	301.4736	3	C	2	24	3	Site Infrastructure	3	303.2495	6.585299	4	0.0241	1	12	2	6
1377	642943	896094	302.1458	6.185325	4	1.3	300.8458	3	C	2	24	3	Site Infrastructure	3	302.1217	6.585299	4	0.0241	1	12	2	6
1378	642943	896084	302.1217	6.198961	4	0.9	301.2217	2	G	1	8	2	Site Infrastructure	3	302.1217	0	4	0	1	12	2	4
1379	642943	896074	302.6054	6.709105	4	0.7	301.9054	2	G	1	8	2	Site Infrastructure	3	302.6054	0	4	0	1	12	2	4
1380	642943	896064	303.3036	6.990626	4	0.9	302.4036	2	R	1.5	12	2	Site Infrastructure	3	303.3036	0	4	0	1	12	2	4
1381	642943	896054	304.0019	6.833818	4	1.5	302.5019	3	G	1	12	2	Site Infrastructure	3	304.0019	0	4	0	1	12	2	4
1382	642943	896044	304.6049	6.463421	4	1.1	303.5049	3	G	1	12	2	Site Infrastructure	3	304.6049	0	4	0	1	12	2	4
1383	642943	896034	305.0838	6.23487	4	1.2	303.8838	3	G	1	12	2	Site Infrastructure	3	305.0838	0	4	0	1	12	2	4
1384	642943	896024	305.5626	6.269908	4	0.9	304.6626	2	G	1	8	2	Site Infrastructure	3	305.5626	0	4	0	1	12	2	4
1385	642943	896004	306.7604	7.435656	4	1.1	305.6604	3	C	2	24	3	Site Infrastructure	3	307.8423	9.77825	4	-1.0819	1	12	2	6
1386	642953	896004	305.6732	7.135965	4	0.6	305.0732	2	R	1.5	12	2	Site Infrastructure	3	306.0415	16.279891	3	-0.3683	1	9	1	2
1387	642953	896014	305.0555	6.562704	4	0.8	304.2555	2	R	1.5	12	2	Site Infrastructure	3	306.0415	9.77825	4	-0.986	1	12	2	4
1388	642953	896024	304.5746	6.281847	4	1	303.5746	2	G	FALSE	0	1	Site Infrastructure	3	304.5746	0	4	0	1	12	2	2
1389	642953	896034	304.0937	6.378181	4	1.2	302.8937	3	R	1.5	18	3	Site Infrastructure	3	304.0937	0	4	0	1	12	2	6
1390	642953	896044	303.598	6.7254	4	1.4	302.198	3	G	1	12	2	Site Infrastructure	3	303.598	0	4	0	1	12	2	4
1391	642953	896054	302.9444	7.105443	4	1	301.9444	2	G	1	8	2	Site Infrastructure	3	302.9444	0	4	0	1	12	2	4
1392	642953	896064	302.2462	7.0984	4	1.3	300.9462	3	R	1.5	18	3	Site Infrastructure	3	302.2462	0	4	0	1	12	2	6
1393	642953	896074	301.548	6.606499	4	0.5	301.048	1	R	1.5	6	2	Site Infrastructure	3	301.548	0	4	0	1	12	2	4
1394	642953	896084	301.0825	5.88201	4	0.9	300.1825	2	G	1	8	2	Site Infrastructure	3	301.0825	0	4	0	1	12	2	4
1395	642953	896094	301.1066	5.861684	4	1.4	299.7066	3	G	1	12	2	Site Infrastructure	3	301.0825	6.5852	4	0.0241	1	12	2	4
1396	642964	896093	300.0674	5.850263	4	0.6	299.4674	2	G	1	8	2	Site Infrastructure	3	300.1443	0	4	-0.0769	1	12	2	4
1398	642993	896116	296.4856	6.467904	4	1	295.4856	2	G	1	8	2	Site Infrastructure	3	295.3962	35.61302	3	1.0894	1	9	1	2
1399	643003	896094	295.8881	6.258725	4	0.6	295.2881	2	G	1	8	2	Site Infrastructure	3	295.3962	12.670287	3	0.4919	1	9	1	2
1400	643003	896066	297.3177	6.209417	4	1.2	296.1177	3	G	1	12	2	Site Infrastructure	3	297.3177	0	4	0	1	12	2	4
1401	643490	896850	225.1169	8.63373	6	0.01	225.1069	1	G	1	6	2	Site Infrastructure	3	227.6807	17.827365	3	-2.5638	1	9	1	2
1402	643473	896854	227.6807	6.523953	4	2.1	225.5807	3	G	1	12	2	Site Infrastructure	3	227.6807	0	4	0	1	12	2	4
1403	643448	896867	229.184	4.96467	4	2.1	227.084	3	G	1	12	2	Site Infrastructure	3	228.911	17.521473	3	0.273	1	9	1	2
1404	643423	896877	230.3918	6.241178	4	0.5	229.8918	1	R	1.5	6	2	Site Infrastructure	3	229.896	13.870117	3	0.4958	1	9	1	2
1405	643396	896886	231.8893	5.519011	4	1.6	230.2893	3	G	1	12	2	Site Infrastructure	3	231.689	9.630236	4	0.2003	1	12	2	4
1406	643374	896895	233.403	3.744748	2	1.2	232.203	3	G	1	6	2	Site Infrastructure	3	233.3725	18.003518	3	0.0305	1	9	1	2
1407	643354	896860	234.364	2.902097	2	0.7	233.664	2	G	1	4	1	Site Infrastructure	3	233.8538	10.138258	3	0.5102	1	9	1	1
1408	643340	896839	235.2517	3.1931	2	1.7	233.5517	3	G	1	6	2	Site Infrastructure	3	234.1888	14.81533	3	1.0629	1	9	1	2
1409	643369	896830	233.5505	3.545313	2	1.7	231.8505	3	G	1	6	2	Site Infrastructure	3	233.0018	8.213484	4	0.5487	1	12	2	4
1410	643382	896855	233.2039	4.164063	4	1.9	231.3039	3	G	1	12	2	Site Infrastructure	3	232.4188	0	4	0.7851	1	12	2	4
1411	643408	896844	230.8415	4.501915	4	0.4	230.4415	1	R	1.5	6	2	Site Infrastructure	3	230.8415	0	4	0	1	12	2	4
1412	643397	896815	231.1219	4.688118	4	1	230.1219	2	G	1	8	2	Site Infrastructure	3	230.3171	7.368928	4	0.8048	1	12	2	4
1413	643422	896806	229.4038	4.658235	4	1.5	227.9038	3	R	1.5	18	3	Site Infrastructure	3	228.5669	2.133314	4	0.8369	1	12	2	6
1414	643435	896829	228.6009	4.293675	4	1.1	227.5009	3	G	1	12	2	Site Infrastructure	3	228.6009	0	4	0	1	12	2	4
1415	643456	896823	227.022	4.934791	4	1.2	225.822	3	G	1	12	2	Site Infrastructure	3	227.022	0	4	0	1	12	2	4
1416	643461	896796	225.9424	4.581722	4	1.5	224.4424	3	R	1.5	18	3	Site Infrastructure	3	225.9424	6.444014	4	0	1	12	2	6
1417	643479	896799	224.3672	3.850392	2	1.4	222.9672	3	G	1	6	2	Site Infrastructure	3	225.9424	24.76014	3	-1.5752	1	9	1	2
1418	643504	896761	223.7077	3.582339	2	1.3	222.4077	3	G	1	6	2	Site Infrastructure	3	224.5605	17.053193	3	-0.8528	1	9	1	2
1419	643513	896718	223.9747	4.759182	4	2	221.9747	3	G	1	12	2	Major Watercourse	8	222.2832	21.017425	3	1.6915	1	24	3	6
1420	643485	896737	225.2013	2.917047	2	1.3	223.9013	3	G	1	6	2	Site Infrastructure	3	225.2013	0	4	0	1	12	2	4
1421	643450	896753	227.0635	3.314263	2	2	225.0635	3	G	1	6	2	Site Infrastructure	3	226.5012	6.147962	4	0.5623	1	12	2	4
1422	643430	896761	228.1882	3.470057	2	2	226.1882	3	C	2	12	2	Site Infrastructure	3	226.5012	24.369975	3	1.687	1	9	1	2
1423	643422	896721	229.1407	4.108359	4	0.9	228.2407	2	G	1	8	2	Site Infrastructure	3	229.3936	16.187489	3	-0.2529	1	9	1	2
1424	643437	896711	228.2412	3.163741	2	1.1	227.1412	3	G	1	6	2	Site Infrastructure	3	227.7416	7.810037	4	0.4996	1	12	2	4
1425	643448	896690	228.2135	3.01772	2	1.5	226.7135	3	G	1	6	2	Site Infrastructure	3	228.2135	0	4	0	1	12	2	4
1426	643438	896689	228.6864	2.963437	2	1.4	227.2864	3	G	1	6	2	Site Infrastructure	3	228.6864	0	4	0	1	12	2	4
1427	643428	896689	229.1594	3.541407	2	1.3	227.8594	3	G	1	6	2	Site Infrastructure	3	229.1594	0	4	0	1	12	2	4
1428	643418	896691	229.8569	4.246073	4	2.1	227.7569	3	R	1.5	18	3	Site Infrastructure	3	229.8569	0	4	0	1	12	2	6
1429	643412	896700	230.366	4.325661	4	1.8	228.566	3	G	1	12	2	Site Infrastructure	3	229.65	0	4	0.716	1	12	2	4
1430	643406	896689	230.5904	4.343522	4	1.7	228.8904	3	G	1	12	2	Site Infrastructure	3	230.5904	0	4	0	1	12	2	4
1431	643397	896687	231.3239	4.345003	4	2.4	228.9239	3	G	1	12	2	Site Infrastructure	3	231.3239	0	4	0	1	12	2	4
1432	643389	896689	232.0481	4.332428	4	1.6	230.4481	3	G	1	12	2	Site Infrastructure	3	231.3239	0	4	0.7242	1	12	2	4
1433	643379	896689	232.7545	4.432789	4	0.8	231.9545	2	G	1	8	2	Site Infrastructure	3	232.0481	5.474722	4	0.7064	1	12	2	4
1434	643370	896689	233.5106	4.754416	4	1.1	232.4106	3	G	1	12	2	Site Infrastructure	3	232.9979	12.956123	3	0.5127	1	9	1	2
1435	643359	896689	234.3548	4.949646	4	1.9	232.4548	3	G	1	12	2	Site Infrastructure	3	232.9979	19.285472	3	1.3569	1	9	1	2
1436	643346	896690	235.199	4.898627	4	1.5	233.699	3	G	1	12	2	Site Infrastructure	3	234.0764	29.198458	3	1.1226	1	9	1	2
1437	643349	896681	235.35	4.643493	4	1.5	233.85	3	G	1	12	2	Site Infrastructure	3	234.0764	20.681285	3	1.2736	1	9	1	2
1438	643358	896678	234.5479	4.678837	4	0.7	233.8479	2	G	1	8	2	Site Infrastructure	3	234.0764	12.483839	3	0.4715	1	9	1	2
1439	643368	896677	233.7458	4.660622	4	0.9	232.8458	2	Not Proven	2	16	3	Site Infrastructure	3	232.9979	6.369365	4	0.7479	1	12	2	6
1440	643378	896679	232.9979	4.539146	4	2	230.9979	3	G	1	12	2	Site Infrastructure	3	232.9979	0	4	0	1	12	2	4
1441	643390	896679	232.2644	4.468378	4	1.8	230.4644	3	G	1	12	2	Site Infrastructure	3	231.5309	0	4	0.7335	1	12	2	4
1442	643398	896677	231.5309	4.426167	4	1	230.5309	2	G	1	8	2	Site Infrastructure	3	231.5309	0	4	0	1	12	2	4
1443	643407	896681	230.7974	4.379652	4	1.3	229.4974	3	G	1	12	2	Site Infrastructure	3	230.7974	0	4	0	1	12	2	4
1444	643419	896679	230.0639	4.290388	4	1.5	228.5639	3	R	1.5	18	3	Site Infrastructure	3	230.0639	0	4	0	1	12	2	6
1445	643428	896679	229.3533	3.569308	2	1.4	227.9533	3	G	1	6	2	Site Infrastructure	3	229.3533	0	4	0	1	12	2	4
1446	643441	896678	228.8803	2.926318	2	1.3	227.5803	3	R	1.5	9	2	Site Infrastructure	3	228.4073	0	4	0.473	1	12	2	4
1447	643440	896667	229.0742	2.9365	2	1.4	227.6742	3	G	1	6	2	Site Infrastructure	3	228.6012	0	4	0.473	1	12	2	4
1448	643429	896666	229.5472	3.626673	2	1.5	228.0472	3	G	1	6	2	Site Infrastructure	3	229.5472	0	4	0	1	12	2	4
1449	643418	896667	230.2708	4.434298	4	1.7	228.5708	3	G	1	12	2	Site Infrastructure	3	230.2708	0	4	0	1	12	2	4
1450	643408	896668	231.0043	4.542953	4	1.8	229.2043	3	G	1	12	2	Site Infrastructure	3	231.0043	0	4	0	1	12	2	4
1451	643397	896668	231.7621	4.650259	4	1.1	230.6621	3	G	1	12	2	Site Infrastructure	3	231.7621	0	4	0	1	12	2	4
1452	643387	896667	232.5423	4.727604	4	0.9	231.6423	2	G	1	8	2	Site Infrastructure	3	232.5423	0	4	0	1	12	2	4
1453	643378	896668	233.3225	4.726219	4	1	232.3225	2	R	1.5	12	2	Site Infrastructure	3	233.3225	0	4	0	1	12	2	4
1454	643366	896669	234.0764	4.624229	4	1.4	232.6764	3	R	1.5	18	3	Site Infrastructure	3	234.0764	3.080768	4	0	1	12	2	6
1455	643357	896669	234.7861	4.49842	4	0.1	234.6861	1	G	1	4	1	Site Infrastructure	3	234.0764	7.630447	4	0.7097	1	12	2	2
1456	643348	896669	235.4957	4.504697	4	1.6	233.8957	3	G	1	12	2	Site Infrastructure	3	235.1207	12.932125	3	0.375	1	9	1	2
1457	643348	896657	235.8303	4.604948	4	1.5	234.3303	3	G	1	12	2	Site Infrastructure	3	235.1207	6.256346	4	0.7096	1	12	2	4
1458	643359	896657	235.1207	4.486087	4	1	234.1207	2	G	1	8	2	Site Infrastructure	3	234.411	0	4	0.7097	1	12	2	4
1459	643368	896659	234.411	4.603712	4	1.3	233.111	3	G	1	12	2	Site Infrastructure	3	234.411	0	4	0	1	12	2	4
1460	643381	896659	233.6555	4.785259	4	0.9	232.7555	2	G	1	8	2	Site Infrastructure	3	232.8753	0	4	0.7802	1	12	2	4
1461	643389	896659	232.8753	4.848858	4	1.1	231.7753	3	R	1.5	18	3	Site Infrastructure	3	232.0951	0	4	0.7802	1	12	2	6
1462	643398	896659	232.0951	4.826995	4	1.9	230.1951	3	G	1	12	2	Site Infrastructure	3	232.0951	0	4	0	1	12	2	4
1463	643408	896659	231.3149	4.771329	4	1.7	229.6149	3	R	1.5	18	3	Site Infrastructure	3	231.3149	0	4	0	1	12	2	6
1464	643418	896659	230.5347	4.704744	4	1.5	229.0347	3	G	1	12	2	Site Infrastructure	3	230.5347	0	4	0	1	12	2	4
1465	643429	896659	229.755	3.770866	2	0.9	228.855	2	R	1.5	6	2	Site Infrastructure	3	229.3504	0	4	0.4046	1	12	2	4
1466	643442	896658	229.3504	3.001896	2	1.3	228.0504	3	R	1.5	9	2	Site Infrastructure	3	228.9451	0	4	0.4053	1	12	2	4
1467	643439	896650	229.711	2.98972	2	1.5	228.211	3	R	1.5	9	2	Site Infrastructure	3	229.711	0	4	0	1	12	2	4
1468	643429	896649	230.0957	3.873878	2	1.8	228.2957	3	G	1	6	2	Site Infrastructure	3	230.0957	0	4	0	1	12	2	4
1469	643418	896648	230.8729	4.851336	4	1.3	229.5729	3	G	1	12	2	Site Infrastructure	3	230.8729	0	4	0	1	12	2	4
1470	643408	896649	231.6502	4.84934	4	1.3	230.3502	3	G	1	12	2	Site Infrastructure	3	231.6502	0	4	0	1	12	2	4

1471	643397	896649	232.4281	4.849765	4	1.1	231.3281	3	R	1.5	18	3	Site Infrastructure	3	232.4281	0	4	0	1	12	2	6
1472	643388	896648	233.2083	4.849681	4	1.4	231.8083	3	G	1	12	2	Site Infrastructure	3	233.2083	0	4	0	1	12	2	4
1473	643378	896649	233.9886	4.790079	4	0.7	233.2886	2	G	1	8	2	Site Infrastructure	3	233.9886	0	4	0	1	12	2	4
1474	643368	896649	234.7457	4.735914	4	0.9	233.8457	2	G	1	8	2	Site Infrastructure	3	234.7457	0	4	0	1	12	2	4
1475	643358	896648	235.4553	4.829439	4	1.1	234.3553	3	G	1	12	2	Site Infrastructure	3	235.4553	0	4	0	1	12	2	4
1476	643349	896645	236.1649	5.142439	4	1	235.1649	2	R	1.5	12	2	Site Infrastructure	3	235.4553	0	4	0.7096	1	12	2	4
1477	643347	896636	236.7683	5.738767	4	0.9	235.8683	2	Not Proven	2	16	3	Site Infrastructure	3	236.7683	0	4	0	1	12	2	6
1478	643349	896627	237.2921	5.658796	4	1.1	236.1921	3	R	1.5	18	3	Site Infrastructure	3	236.3767	5.568305	4	0.9154	1	12	2	6
1479	643348	896599	238.4436	6.830059	4	1.1	237.3436	3	G	1	12	2	Site Infrastructure	3	235.778	24.302543	3	2.6656	1	9	1	2
1480	643348	896588	239.0562	7.524439	4	0.9	238.1562	2	G	1	8	2	Site Infrastructure	3	235.778	33.002494	3	3.2782	1	9	1	2
1481	643358	896589	237.9607	7.419147	4	1.1	236.8607	3	G	1	12	2	Site Infrastructure	3	235.778	29.067505	3	2.1827	1	9	1	2
1482	643359	896611	237.01	5.729533	4	2.1	234.91	3	G	1	12	2	Site Infrastructure	3	235.778	8.205884	4	1.232	1	12	2	4
1483	643358	896619	236.6933	5.532389	4	2.2	234.4933	3	G	1	12	2	Site Infrastructure	3	235.778	6.054764	4	0.9153	1	12	2	4
1484	643360	896630	236.3767	5.575027	4	0.8	235.5767	2	G	1	8	2	Site Infrastructure	3	235.4613	0	4	0.9154	1	12	2	4
1485	643358	896640	235.9251	5.412196	4	0.9	235.0251	2	G	1	8	2	Site Infrastructure	3	235.9251	0	4	0	1	12	2	4
1486	643370	896638	235.0818	5.052489	4	0.7	234.3818	2	G	1	8	2	Site Infrastructure	3	234.3227	0	4	0.7591	1	12	2	4
1487	643369	896629	235.4613	5.241977	4	1.8	233.6613	3	G	1	12	2	Site Infrastructure	3	235.4613	0	4	0	1	12	2	4
1488	643366	896618	235.778	5.249482	4	1.9	233.878	3	G	1	12	2	Site Infrastructure	3	235.778	0	4	0	1	12	2	4
1489	643371	896608	236.0946	5.268391	4	1.2	234.8946	3	G	1	12	2	Site Infrastructure	3	234.9689	9.926405	4	1.1257	1	12	2	4
1490	643371	896602	236.4112	5.566141	4	1.2	235.2112	3	G	1	12	2	Site Infrastructure	3	234.5173	14.293549	3	1.8939	1	9	1	2
1491	643368	896588	236.8652	6.540483	4	1.1	235.7652	3	R	1.5	18	3	Site Infrastructure	3	234.5173	24.679676	3	2.3479	1	9	1	3
1492	643380	896587	236.1304	5.727287	4	1.5	234.6304	3	G	1	12	2	Site Infrastructure	3	234.2606	17.785856	3	1.8698	1	9	1	2
1493	643378	896599	235.6083	4.953116	4	1.6	234.0083	3	G	1	12	2	Site Infrastructure	3	234.5173	10.299426	3	1.091	1	9	1	2
1494	643378	896610	235.2886	4.84847	4	1.4	233.8886	3	G	1	12	2	Site Infrastructure	3	234.5173	6.932752	4	0.7713	1	12	2	4
1495	643379	896619	234.9689	4.870557	4	1.6	233.3689	3	G	1	12	2	Site Infrastructure	3	234.9689	0	4	0	1	12	2	4
1496	643378	896628	234.6492	4.869835	4	1.2	233.4492	3	G	1	12	2	Site Infrastructure	3	234.6492	0	4	0	1	12	2	4
1497	643377	896638	234.3227	4.829385	4	1.8	232.5227	3	G	1	12	2	Site Infrastructure	3	234.3227	0	4	0	1	12	2	4
1498	643389	896639	233.5454	4.833611	4	2.1	231.4454	3	R	1.5	18	3	Site Infrastructure	3	233.5454	0	4	0	1	12	2	6
1499	643389	896627	233.8779	4.794713	4	0.7	233.1779	2	G	1	8	2	Site Infrastructure	3	233.8779	0	4	0	1	12	2	4
1500	643388	896619	234.1976	4.772932	4	0.7	233.4976	2	G	1	8	2	Site Infrastructure	3	234.1976	0	4	0	1	12	2	4
1501	643388	896609	234.5173	4.723047	4	1.6	232.9173	3	G	1	12	2	Site Infrastructure	3	234.5173	0	4	0	1	12	2	4
1502	643388	896599	234.8728	4.823512	4	2	232.8728	3	G	1	12	2	Site Infrastructure	3	234.2606	6.374015	4	0.6122	1	12	2	4
1503	643390	896589	235.4953	5.580354	4	1.9	233.5953	3	G	1	12	2	Site Infrastructure	3	234.2606	9.035382	4	1.2347	1	12	2	4
1504	643398	896589	234.8831	5.505122	4	2	232.8831	3	R	1.5	18	3	Site Infrastructure	3	234.2606	9.429203	4	0.6225	1	12	2	6
1505	643400	896598	234.2606	4.892734	4	1.3	232.9606	3	G	1	12	2	Site Infrastructure	3	233.6485	0	4	0.6121	1	12	2	4
1506	643398	896610	233.7459	4.750588	4	1.9	231.8459	3	G	1	12	2	Site Infrastructure	3	233.7459	0	4	0	1	12	2	4
1507	643397	896619	233.4262	4.756902	4	1.4	232.0262	3	G	1	12	2	Site Infrastructure	3	233.4262	0	4	0	1	12	2	4
1508	643397	896630	233.1066	4.806179	4	1.6	231.5066	3	G	1	12	2	Site Infrastructure	3	233.1066	0	4	0	1	12	2	4
1509	643398	896639	232.7681	4.842745	4	1.6	231.1681	3	G	1	12	2	Site Infrastructure	3	232.7681	0	4	0	1	12	2	4
1510	643408	896639	231.9909	4.84888	4	1	230.9909	2	G	1	8	2	Site Infrastructure	3	231.9909	0	4	0	1	12	2	4
1511	643408	896628	232.3315	4.820443	4	1.4	230.9315	3	Not Proven	2	24	3	Site Infrastructure	3	232.3315	0	4	0	1	12	2	6
1512	643408	896619	232.6549	4.738468	4	1.2	231.4549	3	R	1.5	18	3	Site Infrastructure	3	232.6549	0	4	0	1	12	2	6
1513	643408	896610	233.0259	4.808614	4	1.4	231.6259	3	Not Proven	2	24	3	Site Infrastructure	3	233.0259	0	4	0	1	12	2	6
1514	643411	896598	233.6485	4.989993	4	2.4	231.2485	3	G	1	12	2	Site Infrastructure	3	233.0363	0	4	0.6122	1	12	2	4
1515	643408	896589	234.271	5.441137	4	2.4	231.871	3	G	1	12	2	Site Infrastructure	3	233.6485	9.429113	4	0.6225	1	12	2	4
1516	643420	896591	233.6588	5.369735	4	2.3	231.3588	3	G	1	12	2	Site Infrastructure	3	233.0363	8.535734	4	0.6225	1	12	2	4
1517	643418	896599	233.0363	4.989796	4	2.7	230.3363	3	G	1	12	2	Site Infrastructure	3	233.0363	0	4	0	1	12	2	4
1518	643417	896618	231.8836	4.775	4	1.7	230.1836	3	G	1	12	2	Site Infrastructure	3	231.8836	0	4	0	1	12	2	4
1519	643419	896629	231.5543	4.805768	4	1.9	229.6543	3	G	1	12	2	Site Infrastructure	3	231.5543	0	4	0	1	12	2	4
1520	643417	896640	231.2136	4.850835	4	1.4	229.8136	3	G	1	12	2	Site Infrastructure	3	231.2136	0	4	0	1	12	2	4
1521	643429	896638	230.4363	3.859497	2	1.6	228.8363	3	G	1	6	2	Site Infrastructure	3	230.4363	0	4	0	1	12	2	4
1522	643428	896627	230.777	3.891913	2	1.5	229.277	3	R	1.5	9	2	Site Infrastructure	3	230.777	0	4	0	1	12	2	4
1523	643428	896619	231.1791	4.228963	4	0.7	230.4791	2	G	1	8	2	Site Infrastructure	3	231.1791	0	4	0	1	12	2	4
1524	643429	896609	231.8016	4.659337	4	1.3	230.5016	3	G	1	12	2	Site Infrastructure	3	231.8016	5.211474	4	0	1	12	2	4
1525	643430	896589	233.0466	4.914413	4	2.8	230.2466	3	G	1	12	2	Site Infrastructure	3	233.0363	17.545226	3	0.0103	1	9	1	2
1526	643438	896600	231.935	4.442215	4	1.7	230.235	3	G	1	12	2	Site Infrastructure	3	231.8016	15.730888	3	0.1334	1	9	1	2
1527	643439	896608	231.3224	4.19556	4	2	229.3224	3	G	1	12	2	Site Infrastructure	3	231.8016	14.975842	3	-0.4792	1	9	1	2
1528	643438	896619	230.7669	3.545909	2	2.3	228.4669	3	G	1	6	2	Site Infrastructure	3	230.3848	8.891349	4	0.3821	1	12	2	4
1529	643439	896629	230.3848	3.033556	2	1.2	229.1848	3	G	1	6	2	Site Infrastructure	3	230.3848	5.554184	4	0	1	12	2	4
1530	643439	896639	230.0479	2.923012	2	0.7	229.3479	2	G	1	4	1	Site Infrastructure	3	230.0479	0	4	0	1	12	2	2
1531	643478	896697	226.4799	3.244701	2	1.6	224.8799	3	G	1	6	2	Site Infrastructure	3	225.9608	6.663515	4	0.5191	1	12	2	4
1532	643464	896705	226.7419	3.193477	2	2	224.7419	3	G	1	6	2	Site Infrastructure	3	226.7419	0	4	0	1	12	2	4
1533	643456	896714	226.998	3.114386	2	0.5	226.498	1	G	1	2	1	Site Infrastructure	3	226.998	0	4	0	1	12	2	2
1534	643470	896725	226.3115	2.890399	2	1.7	224.6115	3	R	1.5	9	2	Site Infrastructure	3	225.8422	0	4	0.4693	1	12	2	4
1535	643493	896713	225.0121	3.004092	2	1.5	223.5121	3	G	1	6	2	Site Infrastructure	3	225.7172	10.919397	3	-0.7051	1	9	1	2
1536	643487	896700	225.9608	3.279755	2	1.2	224.7608	3	G	1	6	2	Site Infrastructure	3	225.9608	0	4	0	1	12	2	4
1537	643518	896656	225.5964	4.46737	4	0.9	224.6964	2	G	1	8	2	Site Infrastructure	3	224.8506	5.847995	4	0.7458	1	12	2	4
1538	643523	896666	224.2962	5.574271	4	0.9	223.3962	2	G	1	8	2	Site Infrastructure	3	224.2962	0	4	0	1	12	2	4
1539	643534	896680	223.0962	2.152706	2	1.1	221.9962	3	G	1	6	2	Major Watercourse	8	223.0962	3.307671	4	0	1	32	4	8
1540	643569	896637	228.2057	12.16506	6	1	227.2057	2	G	1	12	2	Site Infrastructure	3	228.2057	4.862846	4	0	1	12	2	4
1541	643584	896604	230.3136	4.913964	4	0.9	229.4136	2	G	1	8	2	Site Infrastructure	3	230.3136	0	4	0	1	12	2	4
1542	643601	896619	231.1084	4.865757	4	1	230.1084	2	C	2	16	3	Site Infrastructure	3	231.1718	14.366493	3	-0.0634	1	9	1	3
1543	643602	896593	231.0098	4.942033	4	0.8	230.2098	2	C	2	16	3	Site Infrastructure	3	231.8804	0	4	-0.8706	1	12	2	6
1544	643635	896623	234.7294	6.304447	4	0.9	233.8294	2	G	1	8	2	Site Infrastructure	3	234.8623	15.507865	3	-0.1329	1	9	1	2
1545	643637	896601	234.7903	7.134225	4	0.7	234.0903	2	G	1	8	2	Site Infrastructure	3	234.7903	0	4	0	1	12	2	4
1546	643643	896577	236.0664	8.031447	6	2	234.0664	3	G	1	18	3	Site Infrastructure	3	236.0717	19.887683	3	-0.0053	1	9	1	3
1547	643609	896566	231.3849	7.46415	4	0.2	231.1849	1	G	1	4	1	Site Infrastructure	3	231.5564	12.074631	3	-0.1715	1	9	1	1
1548	643591	896567	228.3333	9.868281	6	0.3	228.0333	1	G	1	6	2	Site Infrastructure	3	229.9829	0	4	-1.6496	1	12	2	4
1549	643576	896558	227.0588	2.168921	2	0.1	226.9588	1	G	1	2	1	Major Watercourse	8	227.0588	1.759486	4	0	1	32	4	4
1550	643584	896523	230.0961	7.954556	4	0.6	229.4961	2	G	1	8	2	Site Infrastructure	3	230.7161	11.009252	3	-0.62	1	9	1	2
1551	643592	896523	230.0961	7.954556	4	1.3	228.7961	3	R	1.5	18	3	Site Infrastructure	3	230.7161	0	4	-0.62	1	12	2	6
1552	643605	896523	232.0708	8.889365	6	1	231.0708	2	C	2	24	3	Site Infrastructure	3	230.7161	11.910767	3	1.3547	1	9	1	3
1553	643623	896494	235.3862	6.339355	4	1.2	234.1862	3	G	1	12	2	Site Infrastructure	3	234.0827	10.930278	3	1.3035	1	9	1	2
1554	643602	896484	231.3243	8.509369	6	1.6	229.7243	3	R	1.5	27	3	Site Infrastructure	3	233.0167	0	4	-1.6924	1	12	2	6
1555	643592	896481	230.6027	3.107527	2	0.01	230.5927	1	G	1	2	1	Major Watercourse	8	230.8296	4.302859	4	-0.2269	1	32	4	4
1556	643637	896407	237.4788	6.906215	4	0.4	237.0788	1	G	1	4	1	Site Infrastructure	3	237.4788	0	4	0	1	12	2	2
1557	643655	896417	239.6233	6.196016	4	0.6	239.0233	2	G	1	8	2	Site Infrastructure	3	239.6233	0	4	0	1	12	2	4
1558	643679	896414	241.4381	6.208222	4	0.6	240.8381	2	R	1.5	12	2	Site Infrastructure	3	242.398	0	4	-0.9599	1	12	2	4
1559	643645	896397	238.7219	7.089601	4	0.6	238.1219	2	G	1	8	2	Site Infrastructure	3	238.7219	0	4	0	1	12	2	4
1560	643643	896384	238.7274	7.082705	4	1.2	237.5274	3	G	1	12	2	Site Infrastructure	3	238.7274	0	4	0	1	12	2	4
1561	643643	896374	238.7329	7.080946	4	2.6	236.1329	3	G	1	12	2	Site Infrastructure	3	238.7329	0	4	0	1	12	2	4
1562	643646	896365	238.5811	7.211186	4	2.3	236.2811	3	C	2	24	3	Site Infrastructure	3	238.5811	0	4	0	1	12	2	6
1563	643645	896355	238.3993	7.038223	4	1	237.3993	2	G	1	8	2	Site Infrastructure	3	238.3993	2.761129	4	0	1	12	2	4
1564	643645	896346	238.4973	6.403994	4	1.1	237.3973	3	C	2	24	3	Site Infrastructure	3	239.6907	9.206033	4	-1.1934	1	12	2	6
1565	643645	896335	238.8166	5.620648	4	0.9	237.9166	2	R	1.5	12	2	Site Infrastructure	3	239.6907	15.311901	3	-0.8741	1	9	1	2
1566	643645	896316	239.9667	8.373613	6	0.8	239.1667	2	R	1.5	18	3	Site Infrastructure	3	241.2818	22.391486	3	-1.3151	1	9	1	3
1567	643646	896305	242.0861	10.62118	6	0.9	241.1861	2	Not Proven	2	24	3	Minor Watercourse	6	238.9445	21.835209	3	3.1416	1	18	2	6
1568	643655	896303	242.1414	7.49442	4	1	241.1414	2	G	1	8	2	Site Infrastructure	3	241.2818	26.197534	3	0.8596	1	9	1	2
1569	643655	896316	240.5907	6.087285	4	1.1	239.4907	3	G	1	12	2	Site Infrastructure	3	241.2818	14.681033	3	-0.6911	1	9	1	2
1570	643652	896323	240.1181	5.806921	4	1.6	238.5181	3	G	1	12	2	Site Infrastructure	3	241.2818	12.496496	3	-1.1637	1	9	1	2
1571	643651	896332	238.8166	5.620648	4	1.1	237.7166	3	G	1	12	2	Site Infrastructure	3	241.1273	13.701579	3	-2.3107	1	9	1	2
1572	643651	896344	238.4973	6.403994	4	2	236.4973	3	G	1	12	2	Site Infrastructure	3	239.6907	4.557507	4	-1.1934	1	12	2	4
1573	643652	896353	238.3993	7.038223	4	2	236.3993	3	R	1.5	18	3	Site Infrastructure	3	239.7233	0	4	-1.324	1	12	2	6
1574	643653	896363	239.8878	7.227486	4	2.5	237.3878	3	G	1	12	2	Site Infrastructure	3	239.8878	0	4	0	1	12	2	4
1575	643653	896375	239.9484	7.038826	4	2.2	237.7484	3	G	1	12	2	Site Infrastructure	3	239.9484	0	4	0	1	12	2	4
1576	643652	896384	238.7274	7.082705	4	0.8	237.9274	2	R	1.5	12	2	Site Infrastructure	3	239.9782	0	4	-1.2508	1	12	2	4
1577	643653	896394	239.9727	7.01207	4	1	238.9727	2	G	1	8	2	Site Infrastructure	3	239.9727	0	4	0	1	12	2	4
1578	643663	896394	241.2235	6.760778	4	0.9	240.3235	2	G	1	8	2	Site Infrastructure	3	241.2235	0	4	0	1	12	2	4
1579	643664	896386	241.2211	7.011411	4	1.5	239.7211	3	R	1.5	18	3	Site Infrastructure	3	241.2211	0	4	0	1	12	2	6
1580	643662	896376	241.1605	6.940125	4	1.6	239.5605	3	G	1	12	2	Site Infrastructure	3	241.1605	0	4	0	1	12	2	4
1581	643663	896362	241.0998	6.996629	4	2.2	238.8998	3	G	1	12	2	Site Infrastructure	3	241.0998	0	4	0	1	12	2	4
1582	643663	896354	241.0392	7.130088	4	2.5	238.5392	3	C	2	24	3	Site Infrastructure	3	241.0392	0	4	0	1	12	2	6
1583	643663	896344	240.8842	7.029853	4	1.8	239.0842	3	R	1.5	18	3	Site Infrastructure	3	240.8842	0	4	0	1	12	2	6
1584	643663	896334	241.1273	6.886335	4	2.1	239.0273	3	C	2	24	3	Site Infrastructure	3	241.1273	0	4	0	1	12	2	6
1585	643663	896324	241.2818	6.680198	4	2.3	238.9818	3	C	2	24	3	Site Infrastructure	3	241.2818	3.575496	4	0	1	12	2	6
1586	643663	896314	241.4324	5.812225	4	2.2	239.2324	3	R	1.5	18	3	Site Infrastructure	3	241.2818	13.498228	3	0.1506	1	9	1	3
1587	643663	896304	241.7228	4.644758	4	1.7	240.0228	3	R	1.5	18	3	Site Infrastructure	3	241.2818	23.486695	3	0.441	1	9	1	3
1588	643673	896304	242.9335	7.747713	4	1.1	241.8335	3	C	2	24	3	Site Infrastructure	3	242.5008	23.486596	3	0.4327	1	9	1	3
1589	643673	896314	242.7172	8.038376	6	2.5	240.2172	3	C	2	36	4	Site Infrastructure	3	242.5008	13.498328	3	0.2164	1	9	1	4
1590	643673	896324	242.5008	8.032845	6	0.7	241.8008	2	R	1.5	18	3	Site Infrastructure	3	242.5008	0	4	0	1	12	2	6
1591	643673	896334	242.2909	7.816918	4	1.9	240.3909	3	C	2	24	3	Site Infrastructure	3	242.2909	0	4	0	1	12	2	6
1592	643673	896344	242.1896	7.301474	4	1.9	240.2896	3	R	1.5	18	3	Site Infrastructure	3	242.1896	0	4	0	1	12	2	6
1593	643683	896344	243.4062	8.676053	6	1.2	242.2062	3	C	2	36	4	Site Infrastructure	3	243.4062	0	4	0	1	12	2	8
1594	643683	896334	243.8943	9.686839	6	1.1	242.7943	3	G	1	18	3	Site Infrastructure	3	243.8943	0	4	0	1	12	2	6
1595	643683	896324	244.0775	9.751693	6	0.7	243.3775	2	G	1	12	2	Site Infrastructure	3	244.0775	0	4	0	1	12	2	4
1596	643683	896314	244.2607	9.622214	6	1.3	242.9607	3	C	2	36	4	Site Infrastructure	3	244.0775	13.498328	3	0.1832	1	9	1	4
1597	643683	896304	244.4439	10.01743	6	1.5	242.9439	3	C	2	36	4	Site Infrastructure	3	244.0775	23.486596	3	0.3664	1	9	1	4
1598	643693	896304	246.2694	10.76202	6	1.8	244.4694	3	C	2	36	4	Site Infrastructure	3	245.903	23.486596	3	0.3664	1	9	1	4
1599	643693	896314	246.0862	10.4347	6	1	245.0862	2	C	2	24	3	Site Infrastructure	3	245.903	13.498328	3	0.1832	1	9	1	3
1600	643693	896324	245.903	10.56483	6	0.4	245.503	1	C	2	12	2	Site Infrastructure	3	245.903	3.575593	4	0	1	12	2	4
1601	643693	896334	245.7891	10.78034	6	1.8	243.9891	3	C	2	36	4	Site Infrastructure	3	245.7891	0	4	0	1	12	2	8
1602	643703	896334	247.6917	10.85902	6	1.1	246.5917	3	R	1.5	27	3	Site Infrastructure	3	247.6917	0	4	0	1	12	2	6
1603	643703	896324	247.7903	10.70218	6	1.1	246.6903	3	G	1	18	3	Site Infrastructure	3	247.7903	3.575496	4	0	1	12	2	6
1604	643703	896314	247.9117	10.55065	6	1	246.9117	2	G	1	12	2	Site Infrastructure	3	247.7903	13.498228	3	0.1214	1	9	1	2
1605	643703	896304	248.0949	10.86678	6	1.7	246.3949	3	G	1	18	3	Site Infrastructure	3	247.7903	23.486695	3	0.3046	1	9	1	3
1606	643713	896304	249.9205	9.662321	6	1.8	248.1205	3	G	1	18	3	Site Infrastructure	3	249.6929	23.486695	3	0.2276	1	9	1	3
1607	643723	896304	251.3525	6.550362	4	1.8	249.5525	3	C	2	24	3	Site Infrastructure	3	249.6929	25.188294	3	1.6596	1	9	1	3
1608	643733	896304	252.2085	5.564457	4	1.1	251.1085	3	C	2	24	3	Site Infrastructure	3	249.6929	30.286711	3	2.5156	1	9	1	3
1609	643733	896314	251.5048	3.981544	2	0.9	250.6048	2	G	1	4	1	Site Infrastructure	3	249.6929	23.406456	3	1.8119	1	9	1	1
1610	643733	896324	251.2428	1.961865	1	2	249.2428	3	C	2	6	2	Site Infrastructure	3	251.192	13.498328	3	0.0508	1	9	1	2
1611	643723	896324	251.2233	4.609664	4	2.6	248.6233	3	G	1	12	2	Site Infrastructure	3	249.6929	9.778285	4	1.5304	1	12	2	4
1612	643723	896314	251.2741	5.29059	4	0.8	250.4741	2	G	1	8	2	Site Infrastructure	3	249.6929	16.279891	3	1.5812	1	9	1	2
1613	643713	896314	249.7915	9.539989	6	0.7	249.0915	2	G	1	12	2	Site Infrastructure	3	249.6929	13.498228	3	0.0986	1	9	1	2
1614	643713	896324	249.6929	9.737031	6	1	248.6929	2	G	1	12	2	Site Infrastructure	3	249.6929	3.575496	4	0	1	12	2	4
1615	643713	896334	249.5944	10.10613	6	1.9	247.6944	3	C	2	36	4	Site Infrastructure	3	249.5944	0	4	0	1	12	2	8
1616	643723	896334	251.1725	5.01314	4	1.6	249.5725	3	C	2	24	3	Site Infrastructure	3	251.1725	0	4	0	1	12	2	6
1617	643733	896334	251.192	1.536188	1	1.9	249.292	3	C	2	6	2	Site Infrastructure	3	251.192	3.575496	4	0	1	12	2	4
1618	643733	896344	250.8609	3.616361	2	1.9	248.9609	3	C	2	12	2	Site Infrastructure	3	250.8609	0	4	0	1	12	2	4
1619	643733	896354	249.6886	6.08285	4	1.2	248.4886	3	G	1	12	2	Site Infrastructure	3	249.6886	0	4	0	1	12	2	4
1622	643723	896394	247.4983	4.977314	4	1.6	245.8983	3	G	1	12	2	Site Infrastructure	3	247.2069	18.888572	3	0.2914	1	9	1	2
1623	643733	896384	248.5132	8.143248	6	3.1	245.4132	8	G	1	48	4	Site Infrastructure	3	248.4932	18.888572	3	0.02	1	9	1	4
1624	643733	896394	248.2746	5.003573	4	1.7	246.5746	3	G	1	12	2	Site Infrastructure	3	247.2069	25.29041	3	1.0677	1	9	1	2
1625	643723	896384	247.5856	6.129733	4	1	246.5856	2	G	1	8	2	Site Infrastructure	3	247.2069	11.233649	3	0.3787	1	9	1	2
1626	643723	896374	248.1088	7.66858	4	0.01	248.0988	1	G	1	4	1	Site Infrastructure	3	248.4932	6.5852	4	-0.3844	1	12	2	2
1627	643723	896364	248.4932	8.117294	6	0.9	247.5932	2	G	1	12	2	Site Infrastructure	3	248.4932	0	4	0	1	12	2	4
1628	643723	896354	249.6385	7.946809	4	1.3	248.3385	3	C	2	24	3	Site Infrastructure	3	249.6385	0	4	0	1	12	2	6
1629	643723	896344	250.6954	6.924824	4	1.8	248.8954	3	C	2	24	3	Site Infrastructure	3	250.6954	0	4	0	1	12	2	6
1630	643713	896344	248.9393	11.26253	6	1.9	247.0393	3	C	2	36	4	Site Infrastructure	3	248.9393	0	4	0	1	12	2	8
1631	643713	896354	247.7941	10.76565	6	1.2	246.5941	3	G	1	18	3	Site Infrastructure	3	247.7941	0	4	0	1	12	2	6
1632	643713	896364	247.1464	7.989052	4	0.5	246.6464	1	G	1	4	1	Site Infrastructure	3	247.1464	0	4	0	1	12	2	2

1633	643713	896374	247.2069	6.376232	4	0.9	246.3069	2	C	2	16	3	Site Infrastructure	3	247.2069	0	4	0	1	12	2	6
1634	643714	896383	246.592	5.881874	4	0.4	246.192	1	C	2	8	2	Site Infrastructure	3	247.2069	0	4	-0.6149	1	12	2	4
1635	643713	896394	246.5047	5.630295	4	0.4	246.1047	1	G	1	4	1	Site Infrastructure	3	245.511	9.778285	4	0.9937	1	12	2	2
1636	643703	896394	245.511	5.742864	4	0.6	244.911	2	R	1.5	12	2	Site Infrastructure	3	245.511	0	4	0	1	12	2	4
1637	643703	896384	245.7081	5.798414	4	0.4	245.3081	1	C	2	8	2	Site Infrastructure	3	245.7081	0	4	0	1	12	2	4
1638	643703	896374	245.9986	6.443722	4	1.3	244.6986	3	G	1	12	2	Site Infrastructure	3	245.9986	0	4	0	1	12	2	4
1639	643703	896364	245.9381	7.39362	4	1	244.9381	2	C	2	16	3	Site Infrastructure	3	245.9381	0	4	0	1	12	2	6
1640	643703	896354	245.9497	9.364514	6	1.4	244.5497	3	C	2	36	4	Site Infrastructure	3	245.9497	0	4	0	1	12	2	8
1641	643703	896344	247.0949	11.08621	6	1.6	245.4949	3	R	1.5	27	3	Site Infrastructure	3	247.0949	0	4	0	1	12	2	6
1642	643693	896344	245.2506	10.17564	6	1.7	243.5506	3	R	1.5	27	3	Site Infrastructure	3	245.2506	0	4	0	1	12	2	6
1643	643693	896354	244.6693	8.023657	6	1.5	243.1693	3	G	1	18	3	Site Infrastructure	3	244.6693	0	4	0	1	12	2	6
1644	643693	896364	244.7298	6.946747	4	1.1	243.6298	3	C	2	24	3	Site Infrastructure	3	244.7298	0	4	0	1	12	2	6
1645	643693	896374	244.7903	6.642413	4	1.2	243.5903	3	G	1	12	2	Site Infrastructure	3	244.7903	0	4	0	1	12	2	4
1646	643693	896384	244.8508	6.138927	4	0.9	243.9508	2	G	1	8	2	Site Infrastructure	3	244.8508	0	4	0	1	12	2	4
1647	643693	896394	244.5174	6.236632	4	0.4	244.1174	1	R	1.5	6	2	Site Infrastructure	3	244.5174	0	4	0	1	12	2	4
1648	643683	896384	243.6425	6.631254	4	0.5	243.1425	1	G	1	4	1	Site Infrastructure	3	243.6425	0	4	0	1	12	2	2
1649	643683	896374	243.582	6.901519	4	1.2	242.382	3	G	1	12	2	Site Infrastructure	3	243.582	0	4	0	1	12	2	4
1650	643683	896364	243.5215	6.901866	4	1.1	242.4215	3	G	1	12	2	Site Infrastructure	3	243.5215	0	4	0	1	12	2	4
1651	643683	896354	243.4609	7.347918	4	1.8	241.6609	3	R	1.5	18	3	Site Infrastructure	3	243.4609	0	4	0	1	12	2	6
1652	643673	896354	242.2513	6.986781	4	1.9	240.3513	3	C	2	24	3	Site Infrastructure	3	242.2513	0	4	0	1	12	2	6
1653	643673	896364	242.3119	6.912476	4	1.5	240.8119	3	C	2	24	3	Site Infrastructure	3	242.3119	0	4	0	1	12	2	6
1654	643673	896374	242.3725	6.912114	4	0.8	241.5725	2	G	1	8	2	Site Infrastructure	3	242.3725	0	4	0	1	12	2	4
1655	643673	896384	242.4332	6.819386	4	1.1	241.3332	3	R	1.5	18	3	Site Infrastructure	3	242.4332	0	4	0	1	12	2	6
1656	643673	896394	242.4743	6.514783	4	0.8	241.6743	2	G	1	8	2	Site Infrastructure	3	242.4743	0	4	0	1	12	2	4
1657	643662	896407	239.9672	6.493505	4	0.3	239.6672	1	G	1	4	1	Site Infrastructure	3	241.0574	0	4	-1.0902	1	12	2	2
1658	643613	896435	234.0256	7.196587	4	1	233.0256	2	G	1	8	2	Site Infrastructure	3	234.9793	11.690735	3	-0.9537	1	9	1	2
1659	643253	896085	276.1138	4.36842	4	2.4	273.7138	3	R	1.5	18	3	Site Infrastructure	3	276.8548	19.120579	3	-0.741	1	9	1	3
1660	643234	896067	277.7256	3.665641	2	1.9	275.8256	3	C	2	12	2	Site Infrastructure	3	277.7256	0.451983	4	0	1	12	2	4
1661	643220	896054	279.5707	5.934835	4	2	277.5707	3	C	2	24	3	Site Infrastructure	3	278.2299	15.045963	3	1.3408	1	9	1	3
1662	643230	896008	281.1681	4.640004	4	0.6	280.5681	2	C	2	16	3	Site Infrastructure	3	279.5778	16.950351	3	1.5903	1	9	1	3
1663	643249	896013	279.5778	4.185264	4	0.6	278.9778	2	C	2	16	3	Site Infrastructure	3	279.5778	0	4	0	1	12	2	6
1664	643277	896024	277.5816	3.722805	2	0.6	276.9816	2	C	2	8	2	Site Infrastructure	3	278.4957	14.749717	3	-0.9141	1	9	1	2
1665	643295	895981	279.3514	5.018011	4	1.4	277.9514	3	C	2	24	3	Site Infrastructure	3	279.3514	0	4	0	1	12	2	6
1666	643258	895971	282.2187	5.293887	4	2	280.2187	3	C	2	24	3	Site Infrastructure	3	282.2187	0	4	0	1	12	2	6
1667	643243	895964	282.7798	5.638524	4	1.4	281.3798	3	G	1	12	2	Site Infrastructure	3	282.7798	0	4	0	1	12	2	4
1668	643253	895964	282.2187	5.293887	4	1.7	280.5187	3	G	1	12	2	Site Infrastructure	3	282.2187	0	4	0	1	12	2	4
1669	643263	895964	281.7476	5.063803	4	1.4	280.3476	3	G	1	12	2	Site Infrastructure	3	281.7476	0	4	0	1	12	2	4
1670	643275	895962	281.1817	4.941137	4	1.6	279.5817	3	G	1	12	2	Site Infrastructure	3	281.7249	0	4	-0.5432	1	12	2	4
1671	643283	895964	280.5961	4.812815	4	2	278.5961	3	G	1	12	2	Site Infrastructure	3	280.5961	0	4	0	1	12	2	4
1672	643293	895964	279.9915	4.820923	4	1.7	278.2915	3	G	1	12	2	Site Infrastructure	3	279.9915	0	4	0	1	12	2	4
1673	643304	895963	279.3869	4.810155	4	1.7	277.6869	3	R	1.5	18	3	Site Infrastructure	3	279.3869	0	4	0	1	12	2	6
1674	643313	895964	278.7822	4.810124	4	1.9	276.8822	3	G	1	12	2	Site Infrastructure	3	279.3869	9.77825	4	-0.6047	1	12	2	4
1675	643323	895964	278.1776	4.82327	4	2	276.1776	3	G	1	12	2	Site Infrastructure	3	279.3869	19.453659	3	-1.2093	1	9	1	2
1676	643333	895964	277.573	4.854751	4	1.9	275.673	3	G	1	12	2	Site Infrastructure	3	279.3869	29.347473	3	-1.8139	1	9	1	2
1677	643323	895954	278.7682	4.506287	4	1.1	277.6682	3	G	1	12	2	Site Infrastructure	3	279.9551	19.453642	3	-1.1869	1	9	1	2
1678	643313	895954	279.3651	4.463577	4	1	278.3651	2	R	1.5	12	2	Site Infrastructure	3	279.9551	9.778285	4	-0.59	1	12	2	4
1679	643303	895954	279.9551	4.428974	4	1	278.9551	2	G	1	8	2	Site Infrastructure	3	279.9551	0	4	0	1	12	2	4
1680	643293	895954	280.545	4.517671	4	1.1	279.445	3	G	1	12	2	Site Infrastructure	3	280.545	0	4	0	1	12	2	4
1681	643283	895954	281.135	4.775893	4	1.2	279.935	3	G	1	12	2	Site Infrastructure	3	281.135	0	4	0	1	12	2	4
1682	643273	895954	281.7249	5.251448	4	1.4	280.3249	3	C	2	24	3	Site Infrastructure	3	281.7249	0	4	0	1	12	2	6
1683	643263	895954	282.4694	5.548417	4	1.6	280.8694	3	R	1.5	18	3	Site Infrastructure	3	282.4694	0	4	0	1	12	2	6
1684	643253	895954	283.084	5.704861	4	1.5	281.584	3	C	2	24	3	Site Infrastructure	3	283.084	0	4	0	1	12	2	6
1685	643243	895954	283.645	5.870152	4	1.5	282.145	3	C	2	24	3	Site Infrastructure	3	283.645	0	4	0	1	12	2	6
1686	643244	895942	285.2549	5.657026	4	1.7	283.5549	3	C	2	24	3	Site Infrastructure	3	285.2549	0	4	0	1	12	2	6
1687	643253	895944	283.8622	5.677182	4	1.5	282.3622	3	C	2	24	3	Site Infrastructure	3	283.8622	0	4	0	1	12	2	6
1688	643263	895944	283.1941	5.78228	4	1.5	281.6941	3	G	1	12	2	Site Infrastructure	3	283.1941	0	4	0	1	12	2	4
1689	643273	895944	282.4468	5.808867	4	1.1	281.3468	3	G	1	12	2	Site Infrastructure	3	282.4468	0	4	0	1	12	2	4
1690	643283	895944	281.677	5.44051	4	1	280.677	2	G	1	8	2	Site Infrastructure	3	281.677	0	4	0	1	12	2	4
1691	643293	895944	280.9719	4.913603	4	1.1	279.8719	3	G	1	12	2	Site Infrastructure	3	280.9719	0	4	0	1	12	2	4
1692	643304	895943	280.3819	4.453434	4	1.1	279.2819	3	G	1	12	2	Site Infrastructure	3	280.3819	0	4	0	1	12	2	4
1693	643313	895944	279.792	4.230746	4	1	278.792	2	R	1.5	12	2	Site Infrastructure	3	280.3819	9.778285	4	-0.5899	1	12	2	4
1694	643323	895944	279.2021	4.186285	4	1.1	278.1021	3	R	1.5	18	3	Site Infrastructure	3	280.8289	18.888572	3	-1.6268	1	9	1	3
1695	643323	895934	279.6289	4.323068	4	1.7	277.9289	3	G	1	12	2	Site Infrastructure	3	280.8289	11.233707	3	-1.2	1	9	1	2
1696	643313	895934	280.2189	4.751625	4	1.6	278.6189	3	C	2	24	3	Site Infrastructure	3	280.8289	6.5852	4	-0.61	1	12	2	6
1697	643303	895934	280.8681	5.275923	4	1.4	279.4681	3	R	1.5	18	3	Site Infrastructure	3	280.8681	0	4	0	1	12	2	6
1698	643293	895934	281.6379	5.750558	4	1.5	280.1379	3	G	1	12	2	Site Infrastructure	3	281.6379	0	4	0	1	12	2	4
1699	643282	895934	283.1774	5.99443	4	1.9	281.2774	3	C	2	24	3	Site Infrastructure	3	282.4076	0	4	0.7698	1	12	2	6
1700	643273	895934	283.1774	5.99443	4	1.9	281.2774	3	G	1	12	2	Site Infrastructure	3	283.1774	0	4	0	1	12	2	4
1701	643263	895934	283.9189	5.77838	4	2	281.9189	3	R	1.5	18	3	Site Infrastructure	3	283.9189	0	4	0	1	12	2	6
1702	643253	895934	284.5869	5.629973	4	2.4	282.1869	3	G	1	12	2	Site Infrastructure	3	284.5869	0	4	0	1	12	2	4
1703	643243	895934	285.2549	5.657026	4	2.1	283.1549	3	G	1	12	2	Site Infrastructure	3	285.2549	0	4	0	1	12	2	4
1704	643243	895924	285.9797	5.767445	4	1.8	284.1797	3	G	1	12	2	Site Infrastructure	3	285.9797	3.575496	4	0	1	12	2	4
1705	643253	895924	285.3116	5.723649	4	1.5	283.8116	3	C	2	24	3	Site Infrastructure	3	285.3116	0	4	0	1	12	2	6
1706	643263	895924	284.6436	5.817722	4	1.4	283.2436	3	C	2	24	3	Site Infrastructure	3	284.6436	0	4	0	1	12	2	6
1707	643273	895924	283.908	5.997439	4	1.6	282.308	3	G	1	12	2	Site Infrastructure	3	283.908	0	4	0	1	12	2	4
1708	643283	895924	283.1382	6.05804	4	1.6	281.5382	3	C	2	24	3	Site Infrastructure	3	283.1382	0	4	0	1	12	2	6
1709	643293	895924	282.3685	6.05804	4	1.3	281.0685	3	R	1.5	18	3	Site Infrastructure	3	282.3685	0	4	0	1	12	2	6
1710	643303	895924	281.5987	5.937476	4	1	280.5987	2	C	2	16	3	Site Infrastructure	3	281.5987	0	4	0	1	12	2	6
1711	643313	895924	280.8289	5.641094	4	1.2	279.6289	3	G	1	12	2	Site Infrastructure	3	280.8289	3.575593	4	0	1	12	2	4
1712	643323	895924	280.0592	5.063044	4	1.4	278.6592	3	R	1.5	18	3	Site Infrastructure	3	280.8289	9.77825	4	-0.7697	1	12	2	6
1713	643323	895914	280.7899	5.91814	4	1	279.7899	2	R	1.5	12	2	Site Infrastructure	3	281.5596	9.77825	4	-0.7697	1	12	2	4
1714	643313	895914	281.5596	6.108978	4	1	280.5596	2	G	1	8	2	Site Infrastructure	3	281.5596	0	4	0	1	12	2	4
1715	643303	895914	282.3294	6.202421	4	1	281.3294	2	C	2	16	3	Site Infrastructure	3	282.3294	0	4	0	1	12	2	6
1716	643293	895914	283.0991	6.058116	4	1.1	281.9991	3	G	1	12	2	Site Infrastructure	3	283.0991	0	4	0	1	12	2	4
1717	643283	895914	283.8689	5.890338	4	1	282.8689	2	G	1	8	2	Site Infrastructure	3	283.8689	0	4	0	1	12	2	4
1718	643274	895913	284.6386	5.960963	4	1.5	283.1386	3	G	1	12	2	Site Infrastructure	3	284.6386	0	4	0	1	12	2	4
1719	643262	895914	286.072	6.033009	4	1.3	284.772	3	G	1	12	2	Site Infrastructure	3	285.3833	0	4	0.6887	1	12	2	4
1720	643253	895914	286.072	6.033009	4	1.6	284.472	3	G	1	12	2	Site Infrastructure	3	286.072	0	4	0	1	12	2	4
1721	643243	895914	286.7608	6.085686	4	1.5	285.2608	3	G	1	12	2	Site Infrastructure	3	286.7608	3.575496	4	0	1	12	2	4
1722	643243	895904	287.616	6.244589	4	2.4	285.216	3	G	1	12	2	Site Infrastructure	3	287.616	3.575593	4	0	1	12	2	4
1723	643253	895904	286.9272	6.201144	4	2.2	284.7272	3	C	2	24	3	Site Infrastructure	3	286.9272	0	4	0	1	12	2	6
1724	643263	895904	286.1366	6.176929	4	2.3	283.8366	3	C	2	24	3	Site Infrastructure	3	286.1366	0	4	0	1	12	2	6
1725	643273	895904	285.2959	6.059516	4	2.2	283.0959	3	G	1	12	2	Site Infrastructure	3	285.2959	0	4	0	1	12	2	4
1726	643283	895904	284.5054	5.631141	4	1.7	282.8054	3	G	1	12	2	Site Infrastructure	3	284.5054	0	4	0	1	12	2	4
1727	643293	895904	283.9259	5.471838	4	1.5	282.4259	3	R	1.5	18	3	Site Infrastructure	3	283.9259	0	4	0	1	12	2	6
1728	643303	895904	283.109	5.794512	4	1.1	282.009	3	G	1	12	2	Site Infrastructure	3	283.109	3.575496	4	0	1	12	2	4
1729	643313	895904	282.292	6.145233	4	1.5	280.792	3	C	2	24	3	Site Infrastructure	3	282.292	3.575496	4	0	1	12	2	6
1730	643323	895904	281.5207	6.714685	4	1.5	280.0207	3	G	1	12	2	Site Infrastructure	3	282.292	9.778285	4	-0.7713	1	12	2	4
1731	643323	895894	281.9162	7.546037	4	1.9	280.0162	3	G	1	12	2	Site Infrastructure	3	282.292	16.279891	3	-0.3758	1	9	1	2
1732	643313	895894	283.1346	5.83675	4	2	281.1346	3	C	2	24	3	Site Infrastructure	3	282.292	13.498228	3	0.8426	1	9	1	3
1733	643303	895894	283.7022	4.980342	4	2	281.7022	3	G	1	12	2	Site Infrastructure	3	283.109	13.498228	3	0.5932	1	9	1	2
1734	643293	895894	284.289	5.380045	4	2	282.289	3	C	2	24	3	Site Infrastructure	3	285.1491	9.77825	4	-0.8601	1	12	2	6
1735	643283	895894	285.1491	5.964728	4	1.8	283.3491	3	C	2	24	3	Site Infrastructure	3	285.1491	3.575593	4	0	1	12	2	6
1736	643273	895894	286.0092	6.269859	4	1.9	284.1092	3	G	1	12	2	Site Infrastructure	3	286.0092	0	4	0	1	12	2	4
1737	643263	895894	286.8517	6.223598	4	1.9	284.9517	3	C	2	24	3	Site Infrastructure	3	286.8517	0	4	0	1	12	2	6
1738	643253	895894	287.657	6.154696	4	1.9	285.757	3	G	1	12	2	Site Infrastructure	3	287.657	0	4	0	1	12	2	4
1739	643253	895884	288.3722	6.145352	4	1.4	286.9722	3	G	1	12	2	Site Infrastructure	3	288.3722	3.575593	4	0	1	12	2	4
1740	643263	895884	287.5669	6.228909	4	1.6	285.9669	3	G	1	12	2	Site Infrastructure	3	287.5669	3.575496	4	0	1	12	2	4
1741	643273	895884	286.7225	6.32955	4	1.6	285.1225	3	C	2	24	3	Site Infrastructure	3	287.5669	9.778285	4	-0.8444	1	12	2	6
1742	643283	895883	285.8624	6.273063	4	1.6	284.2624	3	C	2	24	3	Site Infrastructure	3	285.1491	14.022969	3	0.7133	1	9	1	3
1743	643293	895884	285.0023	5.893319	4	1.5	283.5023	3	R	1.5	18	3	Site Infrastructure	3	285.1491	16.279809	3	-0.1468	1	9	1	3
1744	643313	895884	283.49	5.894141	4	1.7	281.79	3	G	1	12	2	Site Infrastructure	3	282.292	23.486596	3	1.198	1	9	1	2
1745	643323	895884	282.277	6.83615	4	1.3	280.977	3	G	1	12	2	Site Infrastructure	3	282.292	25.188387	3	-0.015	1	9	1	2
1746	643323	895874	281.9367	5.037071	4	1.1	280.8367	3	C	2	24	3	Site Infrastructure	3	282.292	34.696803	3	-0.3553	1	9	1	3
1747	643313	895875	282.8846	6.373535	4	1.9	280.9846	3	C	2	24	3	Site Infrastructure	3	282.292	32.31552	3	0.5926	1	9	1	3
1748	643303	895874	284.6649	6.291295	4	1.8	282.8649	3	G	1	12	2	Site Infrastructure	3	285.1491	30.286634	3	-0.4842	1	9	1	2
1749	643293	895874	285.5671	6.464898	4	1.4	284.1671	3	R	1.5	18	3	Site Infrastructure	3	285.1491	25.188387	3	0.418	1	9	1	3
1750	643282	895874	287.4097	6.607145	4	1.7	285.7097	3	G	1	12	2	Site Infrastructure	3	287.5669	21.936913	3	-0.1572	1	9	1	2
1751	643273	895874	287.4097	6.607145	4	1.8	285.6097	3	C	2	24	3	Site Infrastructure	3	287.5669	16.279809	3	-0.1572	1	9	1	3
1752	643263	895874	288.2812	6.229716	4	1.6	286.6812	3	C	2	24	3	Site Infrastructure	3	287.5669	13.498328	3	0.7143	1	9	1	3
1753	643253	895874	289.0865	6.140281	4	1.6	287.4865	3	C	2	24	3	Site Infrastructure	3	288.3722	13.498228	3	0.7143	1	9	1	3
1754	643075	896067	290.2551	6.908601	4	1.1	289.1551	3	R	1.5	18	3	Site Infrastructure	3	289.5822	20.476193	3	0.6729	1	9	1	3
1755	643071	896088	290.4567	6.166477	4	1.2	289.2567	3	G	1	12	2	Site Infrastructure	3	289.5822	0	4	0.8745	1	12	2	4
1756	643069	896110	289.3818	6.274524	4	1	288.3818	2	G	1	8	2	Site Infrastructure	3	289.9193	13.764811	3	-0.5375	1	9	1	2
1757	643069	896125	288.2353	6.993107	4	0.8	287.4353	2	G	1	8	2	Site Infrastructure	3	290.3762	23.43488	3	-2.1409	1	9	1	2
1758	643068	896146	287.0175	7.068001	4	0.3	286.7175	1	G	1	4	1	Site Infrastructure	3	290.3762	40.735912	3	-3.3587	1	9	1	1
1759	643124	896147	281.1095	6.820962	4	1	280.1095	2	G	1	8	2	Site Infrastructure	3	281.5084	31.974461	3	-0.3989	1	9	1	2
1760	643128	896119	282.4942	7.607123	4	1.4	281.0942	3	G	1	12	2	Site Infrastructure	3	281.5084	6.054764	4	0.9858	1	12	2	4
1761	643138	896094	282.4565	9.502842	6	1.1	281.3565	3	G	1	18	3	Site Infrastructure	3	283.279	19.243683	3	-0.8225	1	9	1	3
1762	643183	896120	276.9122	4.677602	4	0.6	276.3122	2	G	1	8	2	Site Infrastructure	3	275.7451	17.232567	3	1.1671	1	9	1	2
1763	643179	896135	276.7923	6.590798	4	1.2	275.5923	3	G	1	12	2	Site Infrastructure	3	275.7451	0	4	1.0472	1	12	2	4
1764	643171	896156	275.9037	7.595098	4	0.9	275.0037	2	G	1	8	2	Site Infrastructure	3	276.7923	19.381408	3	-0.8886	1	9	1	2
1765	643210	896181	271.6594	7.837638	4	1.2	270.4594	3	G	1	12	2	Site Infrastructure	3	272.2579	27.855026	3	-0.5985	1	9	1	2
1766	643227	896157	272.2579	6.830081	4	1.2	271.0579	3	G	1	12	2	Site Infrastructure	3	272.2579	0	4	0	1	12	2	4
1767	643247	896139	273.1253	7.416908	4	1.5	271.6253	3	G	1	12	2	Site Infrastructure	3	269.7444	0	4	3.3809	1	12	2	4
1768	643299	896168	266.746	6.370131	4	1.3	265.446	3	R	1.5	18	3	Site Infrastructure	3	266.746	4.861426	4	0	1	12	2	6
1769	643291	896184	265.0613	8.336884	6	0.01	265.0513	1	Not Proven	2	12	2	Site Infrastructure	3	263.7204	0	4	1.3409	1	12	2	4
1770	643280	896206	264.5881	7.617484	4	1.8	262.7881	3	C	2	24	3	Site Infrastructure	3	265.0613	19.407114	3	-0.4732	1	9	1	3
1771	643323	896227	259.9113	4.173962	4	0.4	259.5113	1	R	1.5	6	2	Site Infrastructure	3	262.4331	23.177128	3	-2.5218	1	9	1	2
1772	643348	896212	261.6514	9.933823	6	1.1	260.5514	3	R	1.5	27	3	Site Infrastructure	3	262.6423	0	4	-0.9909	1	12	2	6
1773	643401	896224	261.0546	6.462321	4	1	260.0546	2	C	2	16	3	Site Infrastructure	3	260.0276	15.084818	3	1.027	1	9	1	3
1774	643391	896235	259.8905	8.105723	6	0.7	259.1905	2	C	2	24	3	Site Infrastructure	3	260.0276	0	4	-0.1371	1	12	2	6
1775	643379	896255	257.0889	7.67307	4	1	256.0889	2	G	1	8	2	Site Infrastructure	3	260.0276	23.888699	3	-2.9387	1	9	1	2
1776	643412	896290	254.3166	5.574935	4	0.3	254.0166	1	G	1	4	1	Site Infrastructure	3	255.292	17.163769	3	-0.9754	1	9	1	1
1777	643428	896279	255.292	5.203997	4	0.5	254.792	1	G	1	4	1	Site Infrastructure	3	255.292	0	4	0	1	12	2	2
1778	643440	896268	255.7685	4.849509	4	0.5	255.2685	1	G	1	4	1	Site Infrastructure	3	255.292	18.289981	3	0.4765	1	9	1	1
1779	643469	896311	250.2384	5.951791	4	0.4	249.8384	1	G	1	4	1	Site Infrastructure	3	250.1048	16.055046	3	0.1336	1	9	1	1
1780	643444	896332	249.6096	6.034549	4	0.6	249.0096	2	G	1	8	2	Site Infrastructure	3	249.4097	11.112193	3	0.1999	1	9	1	2
1781	643457	896364	245.6121	6.018421	4	0.6	245.0121	2	G	1	8	2	Site Infrastructure	3	245.8694	9.796352	4	-0.2573	1	12	2	4
1782	643473	896415	240.0821	7.860148	4	0.3	239.7821	1	G	1	4	1	Site Infrastructure	3	240.9506	13.342633	3	-0.8685	1	9	1	1
1783	643491	896459	236.1833	4.023321	4	0.9	235.2833	2	G	1	8	2	Site Infrastructure	3	235.8324	13.781585	3	0.3509	1	9	1	2
1784	643526	896452	237.2056	5.035118	4	0.6	236.6056	2	G	1	8	2	Site Infrastructure	3	235.6569	19.570851	3	1.5487	1	9	1	2
1785	643541	896505	232.8831	5.595714	4	0.2	232.6831	1	G	1	4	1	Site Infrastructure	3	231.858	13.699258	3	1.0251	1	9	1	1
1786	643523	896521	231.3312	4.201878	4	1.5	229.8312	3	G	1	12	2	Site Infrastructure	3	231.858	11.818242	3	-0.5268	1	9	1	2
1787	641905	897192	258.712	6.043749	4	0.1	258.612	1	G	1	4	1	Site Infrastructure	3	258.0404	11.558371	3	0.6716	1	9	1	1
1788	641879	897214	257.6149	6.386802	4	0.1	257.5149	1	G	1	4	1	Site Infrastructure	3	257.2421	8.120565	4	0.3728	1	12	2	2
1789	641855	897224	255.5815	6.867705	4	0.6	254.9815	2	G	1	8	2	Site Infrastructure	3	255.5815	0	4	0	1	12	2	4
1790	641839	897223	253.4561	7.038811	4	0.1	253.3561	1	G	1	4	1	Site Infrastructure	3	253.4561	0	4	0	1	12	2	2
1791	641823	897223	252.3551	7.497403	4	0.5	251.8551	1	G	1	4	1	Site Infrastructure	3	253.4561	12.125074	3	-1.101	1	9	1	1
1792	641851	897201	253.1157	7.9394	4	0.01	253.1057	1	G	1	4	1	Site Infrastructure	3	254.3882	0	4	-1.2725	1	12	2	2

1793	641862	897189	253.4751	8.656916	6	0.4	253.0751	1	G	1	6	2	Site Infrastructure	3	254.4637	0	4	-0.9886	1	12	2	4
1794	641880	897169	252.7619	6.695939	4	0.1	252.6619	1	G	1	4	1	Site Infrastructure	3	252.7619	0	4	0	1	12	2	2
1795	641854	897142	251.7681	2.06321	2	2.1	249.6681	3	G	1	6	2	Site Infrastructure	3	251.7681	5.43496	4	0	1	12	2	4
1796	641610	896672	248.5357	7.825442	4	1.5	247.0357	3	C	2	24	3	Site Infrastructure	3	249.2301	15.868588	3	-0.6944	1	9	1	3
1797	641598	896669	247.4768	7.947608	4	1.6	245.8768	3	G	1	12	2	Site Infrastructure	3	247.4768	0	4	0	1	12	2	4
1798	641580	896665	245.2783	4.917405	4	1	244.2783	2	G	1	8	2	Site Infrastructure	3	247.4768	14.615114	3	-2.1985	1	9	1	2
1799	641584	896616	248.7092	7.532238	4	1	247.7092	2	G	1	8	2	Site Infrastructure	3	251.3283	20.513494	3	-2.6191	1	9	1	2
1800	641606	896614	251.3283	8.355837	6	1.1	250.2283	3	G	1	18	3	Site Infrastructure	3	251.3283	0	4	0	1	12	2	6
1801	641620	896617	252.6872	8.393511	6	0.6	252.0872	2	G	1	12	2	Site Infrastructure	3	252.6872	0	4	0	1	12	2	4
1802	641650	896567	260.6257	9.486866	6	1.6	259.0257	3	R	1.5	27	3	Site Infrastructure	3	262.1601	0	4	-1.5344	1	12	2	6
1803	641632	896565	257.5569	8.974667	6	0.7	256.8569	2	G	1	12	2	Site Infrastructure	3	259.0913	0	4	-1.5344	1	12	2	4
1804	641617	896565	256.2079	8.358008	6	0.5	255.7079	1	G	1	6	2	Site Infrastructure	3	256.2079	0	4	0	1	12	2	4
1805	641600	896562	253.578	8.164455	6	1.5	252.078	3	G	1	18	3	Site Infrastructure	3	255.4198	0	4	-1.8418	1	12	2	6
1806	641689	896549	268.4549	10.12763	6	1	267.4549	2	G	1	12	2	Site Infrastructure	3	269.2318	12.250301	3	-0.7769	1	9	1	2
1807	641688	896537	269.2318	10.21712	6	1.1	268.1318	3	G	1	18	3	Site Infrastructure	3	269.2318	3.490309	4	0	1	12	2	6
1808	641688	896527	270.0087	10.61688	6	1.1	268.9087	3	G	1	18	3	Site Infrastructure	3	270.0087	0	4	0	1	12	2	6
1809	641689	896519	270.9858	10.89146	6	1	269.9858	2	G	1	12	2	Site Infrastructure	3	270.9858	0	4	0	1	12	2	4
1810	641688	896509	271.7467	10.88679	6	1.1	270.6467	3	G	1	18	3	Site Infrastructure	3	271.7467	0	4	0	1	12	2	6
1811	641687	896498	272.3688	10.91133	6	0.3	272.0688	1	G	1	6	2	Site Infrastructure	3	272.3688	0	4	0	1	12	2	4
1812	641688	896488	272.9908	10.8121	6	0.9	272.0908	2	R	1.5	18	3	Site Infrastructure	3	272.9908	0	4	0	1	12	2	6
1813	641688	896477	273.5701	10.56693	6	0.5	273.0701	1	G	1	6	2	Site Infrastructure	3	273.5701	0	4	0	1	12	2	4
1814	641689	896467	274.0625	10.42053	6	0.9	273.1625	2	G	1	12	2	Site Infrastructure	3	274.0625	4.192285	4	0	1	12	2	4
1815	641689	896458	274.5995	10.41197	6	0.6	273.9995	2	G	1	12	2	Site Infrastructure	3	274.0625	10.302775	3	0.537	1	9	1	2
1816	641679	896459	272.8434	10.03462	6	0.6	272.2434	2	R	1.5	18	3	Site Infrastructure	3	272.3065	9.429203	4	0.5369	1	12	2	6
1817	641680	896469	272.3065	10.16585	6	0.3	272.0065	1	G	1	6	2	Site Infrastructure	3	274.0625	0	4	-1.756	1	12	2	4
1818	641679	896479	271.7883	10.46977	6	0.6	271.1883	2	G	1	12	2	Site Infrastructure	3	271.7883	0	4	0	1	12	2	4
1819	641680	896490	271.1662	10.70436	6	0.6	270.5662	2	G	1	12	2	Site Infrastructure	3	272.9908	0	4	-1.8246	1	12	2	4
1820	641680	896498	270.5442	10.75187	6	0.4	270.1442	1	G	1	6	2	Site Infrastructure	3	272.3688	0	4	-1.8246	1	12	2	4
1821	641679	896509	269.9221	10.71416	6	0.9	269.0221	2	G	1	12	2	Site Infrastructure	3	269.9221	0	4	0	1	12	2	4
1822	641679	896519	269.2809	10.67539	6	0.8	268.4809	2	G	1	12	2	Site Infrastructure	3	269.2809	0	4	0	1	12	2	4
1823	641679	896529	268.4001	10.45627	6	0.9	267.5001	2	G	1	12	2	Site Infrastructure	3	268.4001	0	4	0	1	12	2	4
1824	641680	896538	267.6233	10.1964	6	1.5	266.1233	3	G	1	18	3	Site Infrastructure	3	269.2318	0	4	-1.6085	1	12	2	6
1825	641679	896547	266.8465	10.18747	6	1	265.8465	2	G	1	12	2	Site Infrastructure	3	266.8465	0	4	0	1	12	2	4
1826	641669	896549	265.2132	10.45956	6	1.4	263.8132	3	G	1	18	3	Site Infrastructure	3	265.2132	0	4	0	1	12	2	6
1827	641667	896538	265.9865	10.4831	6	0.9	265.0865	2	G	1	12	2	Site Infrastructure	3	265.9865	0	4	0	1	12	2	4
1828	641667	896528	266.7598	10.58667	6	1	265.7598	2	G	1	12	2	Site Infrastructure	3	266.7598	0	4	0	1	12	2	4
1829	641668	896517	267.5273	10.55504	6	0.4	267.1273	1	R	1.5	9	2	Site Infrastructure	3	267.5273	0	4	0	1	12	2	4
1830	641667	896507	268.1554	10.36696	6	1	267.1554	2	G	1	12	2	Site Infrastructure	3	268.1554	0	4	0	1	12	2	4
1831	641667	896497	268.7812	10.291	6	0.4	268.3812	1	G	1	6	2	Site Infrastructure	3	268.7812	0	4	0	1	12	2	4
1832	641667	896489	269.407	10.27228	6	0.2	269.207	1	G	1	6	2	Site Infrastructure	3	269.407	0	4	0	1	12	2	4
1833	641669	896478	270.0329	10.01177	6	0.7	269.3329	2	R	1.5	18	3	Site Infrastructure	3	270.0329	0	4	0	1	12	2	6
1834	641669	896469	270.6791	9.359331	6	0.5	270.1791	1	G	1	6	2	Site Infrastructure	3	270.6791	0	4	0	1	12	2	4
1835	641667	896459	271.2295	9.075693	6	0.3	270.9295	1	R	1.5	9	2	Site Infrastructure	3	270.6791	8.708088	4	0.5504	1	12	2	4
1836	641659	896459	269.799	8.334007	6	0.8	268.999	2	G	1	12	2	Site Infrastructure	3	270.6791	10.299508	3	-0.8801	1	9	1	2
1837	641660	896468	269.3862	9.149857	6	0.1	269.2862	1	R	1.5	9	2	Site Infrastructure	3	270.6791	4.252738	4	-1.2929	1	12	2	4
1838	641659	896479	268.4079	9.91997	6	0.4	268.0079	1	G	1	6	2	Site Infrastructure	3	268.4079	0	4	0	1	12	2	4
1839	641658	896489	267.7605	9.959347	6	0.4	267.3605	1	G	1	6	2	Site Infrastructure	3	267.7605	0	4	0	1	12	2	4
1840	641659	896500	267.1346	10.02839	6	0.3	266.8346	1	G	1	6	2	Site Infrastructure	3	267.1346	0	4	0	1	12	2	4
1841	641657	896510	266.5088	10.23094	6	1.4	265.1088	3	G	1	18	3	Site Infrastructure	3	266.5088	0	4	0	1	12	2	6
1842	641659	896519	265.8011	10.54188	6	0.4	265.4011	1	G	1	6	2	Site Infrastructure	3	265.8011	0	4	0	1	12	2	4
1843	641659	896529	265.0354	10.69559	6	1.3	263.7354	3	G	1	18	3	Site Infrastructure	3	265.0354	0	4	0	1	12	2	6
1844	641658	896538	264.2621	10.69805	6	1.4	262.8621	3	C	2	36	4	Site Infrastructure	3	264.2621	0	4	0	1	12	2	8
1845	641659	896548	263.4888	10.49949	6	0.5	262.9888	1	G	1	6	2	Site Infrastructure	3	263.4888	0	4	0	1	12	2	4
1846	641649	896550	261.7686	9.986809	6	1.9	259.8686	3	G	1	18	3	Site Infrastructure	3	261.7686	0	4	0	1	12	2	6
1847	641648	896537	262.5377	10.52215	6	1	261.5377	2	G	1	12	2	Site Infrastructure	3	262.5377	0	4	0	1	12	2	4
1848	641649	896528	263.311	10.6935	6	0.5	262.811	1	G	1	6	2	Site Infrastructure	3	263.311	0	4	0	1	12	2	4
1849	641649	896517	264.0748	10.63261	6	0.5	263.5748	1	G	1	6	2	Site Infrastructure	3	264.0748	0	4	0	1	12	2	4
1850	641649	896509	264.8195	10.41783	6	1	263.8195	2	G	1	12	2	Site Infrastructure	3	264.8195	0	4	0	1	12	2	4
1851	641647	896498	265.4881	10.12589	6	0.5	264.9881	1	R	1.5	9	2	Site Infrastructure	3	265.4881	0	4	0	1	12	2	4
1852	641648	896488	266.1139	9.993762	6	0.6	265.5139	2	R	1.5	18	3	Site Infrastructure	3	266.1139	0	4	0	1	12	2	6
1853	641649	896477	266.8445	10.20354	6	1	265.8445	2	R	1.5	18	3	Site Infrastructure	3	266.8445	0	4	0	1	12	2	6
1854	641649	896468	267.8229	9.754726	6	0.9	266.9229	2	G	1	12	2	Site Infrastructure	3	266.8445	10.090391	3	0.9784	1	9	1	2
1855	641648	896458	268.5826	8.393061	6	0.9	267.6826	2	G	1	12	2	Site Infrastructure	3	270.6791	18.61741	3	-2.0965	1	9	1	2
1856	641639	896460	267.238	9.105761	6	0.5	266.738	1	G	1	6	2	Site Infrastructure	3	265.2812	17.949556	3	1.9568	1	9	1	2
1857	641639	896469	266.2596	10.24062	6	1	265.2596	2	G	1	12	2	Site Infrastructure	3	265.2812	9.200242	4	0.9784	1	12	2	4
1858	641639	896481	265.2812	10.31511	6	0.9	264.3812	2	G	1	12	2	Site Infrastructure	3	265.2812	0	4	0	1	12	2	4
1859	641639	896490	264.4673	10.15989	6	0.5	263.9673	1	G	1	6	2	Site Infrastructure	3	264.4673	0	4	0	1	12	2	4
1860	641640	896499	263.838	10.32482	6	1.4	262.438	3	G	1	18	3	Site Infrastructure	3	265.4881	0	4	-1.6501	1	12	2	6
1861	641637	896518	262.3485	10.66413	6	1.5	260.8485	3	C	2	36	4	Site Infrastructure	3	262.3485	0	4	0	1	12	2	8
1862	641639	896529	261.5866	10.52492	6	0.5	261.0866	1	C	2	12	2	Site Infrastructure	3	261.5866	0	4	0	1	12	2	4
1863	641638	896537	260.8133	10.01449	6	0.4	260.4133	1	G	1	6	2	Site Infrastructure	3	260.8133	0	4	0	1	12	2	4
1864	641639	896549	260.2342	9.479984	6	1.1	259.1342	3	R	1.5	27	3	Site Infrastructure	3	260.2342	0	4	0	1	12	2	6
1865	641630	896549	258.6999	8.95907	6	0.9	257.7999	2	G	1	12	2	Site Infrastructure	3	260.2342	0	4	-1.5343	1	12	2	4
1866	641629	896539	259.2713	9.218678	6	0.9	258.3713	2	G	1	12	2	Site Infrastructure	3	259.2713	0	4	0	1	12	2	4
1867	641627	896529	259.8622	9.732738	6	0.7	259.1622	2	G	1	12	2	Site Infrastructure	3	259.8622	0	4	0	1	12	2	4
1868	641629	896519	260.6223	10.0058	6	1.2	259.4223	3	G	1	18	3	Site Infrastructure	3	260.6223	0	4	0	1	12	2	6
1869	641629	896509	261.367	9.970716	6	1.4	259.967	3	G	1	18	3	Site Infrastructure	3	261.367	0	4	0	1	12	2	6
1870	641628	896498	262.1118	9.817577	6	0.6	261.5118	2	G	1	12	2	Site Infrastructure	3	262.1118	0	4	0	1	12	2	4
1871	641628	896488	262.8208	9.727332	6	1.4	261.4208	3	G	1	18	3	Site Infrastructure	3	262.8208	0	4	0	1	12	2	6
1872	641628	896477	263.7179	9.831853	6	1	262.7179	2	G	1	12	2	Site Infrastructure	3	263.7179	0	4	0	1	12	2	4
1873	641628	896468	264.6962	9.818479	6	0.1	264.5962	1	G	1	6	2	Site Infrastructure	3	263.7179	9.328578	4	0.9783	1	12	2	4
1874	641628	896459	265.6746	9.195148	6	0.2	265.4746	1	G	1	6	2	Site Infrastructure	3	263.7179	18.416115	3	1.9567	1	9	1	2
1875	641618	896460	264.4311	8.443747	6	2.2	262.2311	3	G	1	18	3	Site Infrastructure	3	262.4027	17.516313	3	2.0284	1	9	1	3
1876	641619	896470	263.4169	8.73102	6	0.2	263.2169	1	G	1	6	2	Site Infrastructure	3	262.4027	8.660506	4	1.0142	1	12	2	4
1877	641620	896479	262.4027	8.677429	6	0.8	261.6027	2	G	1	12	2	Site Infrastructure	3	263.7179	0	4	-1.3152	1	12	2	4
1878	641619	896490	261.4275	8.358509	6	1.4	260.0275	3	R	1.5	27	3	Site Infrastructure	3	261.4275	0	4	0	1	12	2	6
1879	641619	896500	260.664	8.204325	6	1.8	258.864	3	G	1	18	3	Site Infrastructure	3	260.664	0	4	0	1	12	2	6
1880	641620	896510	259.9104	8.339197	6	0.4	259.5104	1	G	1	6	2	Site Infrastructure	3	261.367	0	4	-1.4566	1	12	2	4
1881	641619	896518	259.1569	8.684934	6	1	258.1569	2	G	1	12	2	Site Infrastructure	3	259.1569	0	4	0	1	12	2	4
1882	641619	896529	258.3929	8.710486	6	1.1	257.2929	3	G	1	18	3	Site Infrastructure	3	258.3929	0	4	0	1	12	2	6
1883	641619	896539	257.8434	8.485672	6	0.8	257.0434	2	R	1.5	18	3	Site Infrastructure	3	257.8434	0	4	0	1	12	2	6
1884	641619	896550	257.294	8.401284	6	0.8	256.494	2	G	1	12	2	Site Infrastructure	3	257.294	0	4	0	1	12	2	4
1885	641608	896547	255.9589	8.171441	6	1.2	254.7589	3	G	1	18	3	Site Infrastructure	3	255.9589	0	4	0	1	12	2	6
1886	641609	896539	256.5083	8.207942	6	0.7	255.8083	2	G	1	12	2	Site Infrastructure	3	256.5083	0	4	0	1	12	2	4
1887	641608	896530	257.0578	8.516704	6	1.1	255.9578	3	G	1	18	3	Site Infrastructure	3	257.0578	0	4	0	1	12	2	6
1888	641608	896518	258.0513	8.445765	6	0.6	257.4513	2	R	1.5	18	3	Site Infrastructure	3	258.0513	0	4	0	1	12	2	6
1889	641608	896510	258.8798	7.598029	4	0.6	258.2798	2	G	1	8	2	Site Infrastructure	3	258.8798	0	4	0	1	12	2	4
1890	641607	896498	259.6334	7.322002	4	0.5	259.1334	1	G	1	4	1	Site Infrastructure	3	259.6334	0	4	0	1	12	2	2
1891	641608	896487	260.4488	7.556304	4	1.6	258.8488	3	G	1	12	2	Site Infrastructure	3	260.4488	0	4	0	1	12	2	4
1892	641608	896478	261.3599	7.979783	4	0.8	260.5599	2	R	1.5	12	2	Site Infrastructure	3	261.3599	0	4	0	1	12	2	4
1893	641607	896468	262.3741	8.247963	6	0.4	261.9741	1	G	1	6	2	Site Infrastructure	3	261.3599	9.108044	4	1.0142	1	12	2	4
1894	641608	896458	263.3883	8.049556	6	0.6	262.7883	2	G	1	12	2	Site Infrastructure	3	261.3599	19.225927	3	2.0284	1	9	1	2
1895	641599	896459	262.2313	7.963717	4	1	261.2313	2	G	1	8	2	Site Infrastructure	3	261.3599	19.377724	3	0.8714	1	9	1	2
1896	641599	896469	261.3313	8.054625	6	0.6	260.7313	2	C	2	24	3	Site Infrastructure	3	261.3599	10.299426	3	-0.0286	1	9	1	3
1897	641599	896478	260.3483	7.791034	4	0.2	260.1483	1	G	1	4	1	Site Infrastructure	3	261.3599	5.615834	4	-1.0116	1	12	2	2
1898	641598	896489	259.47	7.517689	4	2	257.47	3	R	1.5	18	3	Site Infrastructure	3	260.4488	6.840515	4	-0.9788	1	12	2	6
1899	641600	896499	258.6027	7.453352	4	1.5	257.1027	3	G	1	12	2	Site Infrastructure	3	259.6334	4.755873	4	-1.0307	1	12	2	4
1900	641599	896510	257.8492	8.02966	6	0.6	257.2492	2	G	1	12	2	Site Infrastructure	3	258.8798	6.437919	4	-1.0306	1	12	2	4
1901	641598	896520	256.8325	9.011066	6	0.7	256.1325	2	G	1	12	2	Site Infrastructure	3	258.0513	6.874419	4	-1.2188	1	12	2	4
1902	641599	896530	255.7227	8.662486	6	1.3	254.4227	3	G	1	18	3	Site Infrastructure	3	257.0578	6.296038	4	-1.3351	1	12	2	6
1903	641599	896539	255.1733	8.137118	6	1	254.1733	2	G	1	12	2	Site Infrastructure	3	256.5083	6.29136	4	-1.335	1	12	2	4
1904	641598	896548	254.6317	8.118014	6	0.7	253.9317	2	G	1	12	2	Site Infrastructure	3	255.9589	0	4	-1.3272	1	12	2	4
1905	642878	896649	293.6071	8.219466	6	1.1	292.5071	3	R	1.5	27	3	Site Infrastructure	3	291.7967	18.929505	3	1.8104	1	9	1	3
1906	642888	896649	292.4624	9.926682	6	1.2	291.2624	3	G	1	18	3	Site Infrastructure	3	290.2309	18.929603	3	2.2315	1	9	1	3
1907	642898	896649	290.5701	12.07573	6	0.9	289.6701	2	G	1	12	2	Site Infrastructure	3	288.6532	18.929603	3	1.9169	1	9	1	2
1908	642909	896646	288.5675	12.02578	6	1.3	287.2675	3	G	1	18	3	Site Infrastructure	3	287.0795	21.695073	3	1.488	1	9	1	3
1909	642919	896649	286.565	11.44731	6	1.3	285.265	3	G	1	18	3	Site Infrastructure	3	285.5058	18.336712	3	1.0592	1	9	1	3
1910	642928	896649	284.5624	10.6612	6	1.1	283.4624	3	G	1	18	3	Site Infrastructure	3	283.9321	18.929603	3	0.6303	1	9	1	3
1911	642938	896649	282.7979	9.399369	6	0.9	281.8979	2	G	1	12	2	Site Infrastructure	3	282.3584	18.929505	3	0.4395	1	9	1	2
1912	642948	896649	281.2765	8.395747	6	1.3	279.9765	3	G	1	18	3	Site Infrastructure	3	280.8393	18.929603	3	0.4372	1	9	1	3
1913	642958	896649	279.9814	8.123063	6	2.1	277.8814	3	G	1	18	3	Site Infrastructure	3	279.372	18.929505	3	0.6094	1	9	1	3
1914	642968	896649	278.7938	8.156468	6	1.8	276.9938	3	G	1	18	3	Site Infrastructure	3	279.372	23.262843	3	-0.5782	1	9	1	3
1915	642968	896659	278.1232	8.079947	6	1.8	276.3232	3	G	1	18	3	Site Infrastructure	3	279.372	16.484483	3	-1.2488	1	9	1	3
1916	642958	896659	279.5905	8.229476	6	2.2	277.3905	3	G	1	18	3	Site Infrastructure	3	279.372	9.429203	4	0.2185	1	12	2	6
1917	642948	896659	281.0579	8.484564	6	1.4	279.6579	3	G	1	18	3	Site Infrastructure	3	280.8393	9.429203	4	0.2186	1	12	2	6
1918	642938	896659	282.5781	9.032009	6	0.9	281.6781	2	G	1	12	2	Site Infrastructure	3	282.3584	9.429203	4	0.2197	1	12	2	4
1919	642928	896659	284.1519	9.574659	6	0.9	283.2519	2	G	1	12	2	Site Infrastructure	3	283.9321	9.429113	4	0.2198	1	12	2	4
1920	642918	896659	285.7256	10.05066	6	1.6	284.1256	3	G	1	18	3	Site Infrastructure	3	285.5058	9.429113	4	0.2198	1	12	2	6
1921	642908	896659	287.3413	11.01461	6	1.9	285.4413	3	R	1.5	27	3	Site Infrastructure	3	287.0795	9.429203	4	0.2618	1	12	2	6
1922	642898	896659	289.3439	11.89068	6	1.9	287.4439	3	G	1	18	3	Site Infrastructure	3	288.6532	9.429113	4	0.6907	1	12	2	6
1923	642888	896659	291.3465	10.56724	6	1.6	289.7465	3	G	1	18	3	Site Infrastructure	3	290.2309	9.429113	4	1.1156	1	12	2	6
1924	642878	896659	292.4917	8.775098	6	1.9	290.5917	3	G	1	18	3	Site Infrastructure	3	291.7967	9.429203	4	0.695	1	12	2	6
1925	642878	896669	291.7967	8.596372	6	1.4	290.3967	3	R	1.5	27	3	Site Infrastructure	3	291.7967	0	4	0	1	12	2	6
1926	642878	896679	291.6824	8.825465	6	1	290.6824	2	C	2	24	3	Site Infrastructure	3	291.6824	0	4	0	1	12	2	6
1927	642878	896689	291.5908	8.822631	6	0.8	290.7908	2	G	1	12	2	Site Infrastructure	3	291.5908	0	4	0	1	12	2	4
1928	642878	896699	291.4805	8.960084	6	0.3	291.1805	1	G	1	6	2	Site Infrastructure	3	291.4805	0	4	0	1	12	2	4
1929	642878	896709	291.2081	9.11612	6	0.6	290.6081	2	G	1	12	2	Site Infrastructure	3	291.2081	0	4	0	1	12	2	4
1930	642878	896719	290.9229	9.171589	6	0.8	290.1229	2	G	1	12	2	Site Infrastructure	3	290.9229	0	4	0	1	12	2	4
1931	642878	896729	290.6376	9.41207	6	0.5	290.1376	1	G	1	6	2	Site Infrastructure	3	290.6376	0	4	0	1	12	2	4
1932	642878	896739	290.2486	9.980163	6	0.4	289.8486	1	G	1	6	2	Site Infrastructure	3	288.5315	6.054764	4	1.7171	1	12	2	4
1933	642888	896739	288.5315	10.14743	6	0.4	288.1315	1	G	1	6	2	Site Infrastructure	3	288.5315	0	4	0	1	12	2	4
1934	642888	896729	288.9987	9.895404	6	0.2	288.7987	1	G	1	6	2	Site Infrastructure	3	288.9987	0	4	0	1	12	2	4
1935	642888	896719	289.2868	9.847742	6	0.3	288.9868	1	G	1	6	2	Site Infrastructure	3	289.2868	0	4	0	1	12	2	4
1936	642888	896709	289.575	9.837577	6	0.2	289.375	1	G	1	6	2	Site Infrastructure	3	289.575	0	4	0	1	12	2	4
1937	642888	896699	289.8663	9.560658	6	0.4	289.4663	1	G	1	6	2	Site Infrastructure	3	289.8663	0	4	0	1	12	2	4
1938	642888	896689	290.0386	9.136007	6	1.1	288.9386	3	G	1	18	3	Site Infrastructure	3	290.0386	0	4	0	1	12	2	6
1939	642888	896679	290.1347	8.951897	6	1	289.1347	2	C	2	24	3	Site Infrastructure	3	290.1347	0	4	0	1	12	2	6
1940	642888	896669	290.2309	9.376095	6	0.8	289.4309	2	G	1	12	2	Site Infrastructure	3	290.2309	0	4	0	1	12	2	4
1941	642899	896669	288.6532	9.84034	6	1	287.6532	2	G	1	12	2	Site Infrastructure	3	288.6532	0	4	0	1	12	2	4
1942	642898	896678	288.5396	9.055584	6	1	287.5396	2	C	2	24	3	Site Infrastructure	3	288.5396	0	4	0	1	12	2	6
1943	642898	896689	288.4434	9.373463	6	0.4	288.0434	1	G	1	6	2	Site Infrastructure	3	288.4434	0	4	0	1	12	2	4
1944	642898	896699	288.1061	9.985478	6	1	287.1061	2	G	1	12	2	Site Infrastructure	3	288.1061	0	4	0	1	12	2	4
1945	642898	896709	287.7757	10.29286	6	0.1	287.6757	1	G	1	6	2	Site Infrastructure	3	287.7757	0	4	0	1	12	2	4
1946	642898	896719	287.4876	10.23566	6	0.5	286.9876	1	G	1	6	2	Site Infrastructure	3	287.4876	0	4	0	1	12	2	4
1947	642898	896729	287.2387	10.1062	6	0.5	286.7387	1	G	1	6	2	Site Infrastructure	3	287.2387	0	4	0	1	12	2	4
1948	642898	896739	286.8206	10.1894	6	0.4	286.4206	1	G	1	6	2	Site Infrastructure	3	286.8206	0	4	0	1	12	2	4
1949	642908	896739	285.1097	10.13381	6	0.6	284.5097	2	C	2	24	3	Site Infrastructure	3	285.1097	0	4	0	1	12	2	6
1950	642908	896729	285.5052	10.01301	6	0.5	285.0052	1	R	1.5	9	2	Site Infrastructure	3	285.5052	0	4	0	1	12	2	4
1951	642908	896719	285.6883	10.16103	6	0.5	285.1883	1	G	1	6	2	Site Infrastructure	3	285.6883	0	4	0	1	12	2	4
1952	642908	896709	285.9765	10.29209	6	0.3	285.6765	1	G	1	6	2	Site Infrastructure	3	285.9765	0	4	0	1	12	2	4

1953	642908	896699	286.3459	10.15942	6	0.3	286.0459	1	G	1	6	2	Site Infrastructure	3	286.3459	0	4	0	1	12	2	4
1954	642908	896689	286.8482	9.582636	6	0.4	286.4482	1	G	1	6	2	Site Infrastructure	3	286.8482	0	4	0	1	12	2	4
1955	642908	896679	286.9444	9.132053	6	1.4	285.5444	3	G	1	18	3	Site Infrastructure	3	286.9444	0	4	0	1	12	2	6
1956	642908	896669	287.0795	9.405248	6	1	286.0795	2	G	1	12	2	Site Infrastructure	3	287.0795	0	4	0	1	12	2	4
1957	642918	896669	285.5058	9.068452	6	0.1	285.4058	1	G	1	6	2	Site Infrastructure	3	285.5058	0	4	0	1	12	2	4
1958	642918	896679	285.3492	9.277095	6	0.9	284.4492	2	R	1.5	18	3	Site Infrastructure	3	285.3492	0	4	0	1	12	2	6
1959	642918	896689	285.1527	9.898709	6	0.9	284.2527	2	G	1	12	2	Site Infrastructure	3	285.1527	0	4	0	1	12	2	4
1960	642918	896699	284.5857	10.3482	6	0.6	283.9857	2	R	1.5	18	3	Site Infrastructure	3	284.5857	0	4	0	1	12	2	6
1961	642918	896709	284.1772	10.25248	6	0.5	283.6772	1	G	1	6	2	Site Infrastructure	3	284.1772	0	4	0	1	12	2	4
1962	642918	896719	283.9136	10.04813	6	0.3	283.6136	1	C	2	12	2	Site Infrastructure	3	283.9136	0	4	0	1	12	2	4
1963	642918	896729	283.7716	9.941915	6	0.3	283.4716	1	G	1	6	2	Site Infrastructure	3	283.7716	0	4	0	1	12	2	4
1964	642918	896739	283.3989	9.981727	6	0.5	282.8989	1	G	1	6	2	Site Infrastructure	3	283.3989	0	4	0	1	12	2	4
1965	642928	896739	281.688	9.726432	6	0.3	281.388	1	R	1.5	9	2	Site Infrastructure	3	281.688	0	4	0	1	12	2	4
1966	642928	896729	282.038	9.859994	6	0.6	281.438	2	G	1	12	2	Site Infrastructure	3	282.038	0	4	0	1	12	2	4
1967	642928	896719	282.18	9.965816	6	0.5	281.68	1	G	1	6	2	Site Infrastructure	3	282.18	0	4	0	1	12	2	4
1968	642928	896709	282.378	10.20295	6	0.5	281.878	1	G	1	6	2	Site Infrastructure	3	282.378	0	4	0	1	12	2	4
1969	642928	896689	283.3925	10.09605	6	0.8	282.5925	2	G	1	12	2	Site Infrastructure	3	283.3925	0	4	0	1	12	2	4
1970	642928	896679	283.754	9.38746	6	1.1	282.654	3	G	1	18	3	Site Infrastructure	3	283.754	0	4	0	1	12	2	6
1971	642928	896669	283.9321	9.04316	6	0.2	283.7321	1	G	1	6	2	Site Infrastructure	3	283.9321	0	4	0	1	12	2	4
1972	642938	896669	282.3584	8.939925	6	0.9	281.4584	2	G	1	12	2	Site Infrastructure	3	282.3584	0	4	0	1	12	2	4
1973	642938	896679	282.1588	9.338042	6	1	281.1588	2	G	1	12	2	Site Infrastructure	3	282.1588	0	4	0	1	12	2	4
1974	642938	896689	281.6323	9.91567	6	0.5	281.1323	1	C	2	12	2	Site Infrastructure	3	281.6323	0	4	0	1	12	2	4
1975	642938	896699	281.0652	10.04623	6	0.2	280.8652	1	G	1	6	2	Site Infrastructure	3	281.0652	0	4	0	1	12	2	4
1976	642938	896709	280.5884	9.795232	6	0.4	280.1884	1	R	1.5	9	2	Site Infrastructure	3	280.5884	0	4	0	1	12	2	4
1977	642938	896719	280.4465	9.630913	6	0.4	280.0465	1	G	1	6	2	Site Infrastructure	3	280.4465	0	4	0	1	12	2	4
1978	642938	896729	280.3045	9.552979	6	0.6	279.7045	2	R	1.5	18	3	Site Infrastructure	3	280.3045	0	4	0	1	12	2	6
1979	642938	896739	280.0283	9.434199	6	0.6	279.4283	2	G	1	12	2	Site Infrastructure	3	280.0283	0	4	0	1	12	2	4
1980	642948	896739	278.4349	9.257656	6	0.8	277.6349	2	G	1	12	2	Site Infrastructure	3	278.4349	0	4	0	1	12	2	4
1981	642948	896729	278.6717	9.189846	6	0.4	278.2717	1	G	1	6	2	Site Infrastructure	3	278.6717	0	4	0	1	12	2	4
1982	642948	896719	278.8105	9.111876	6	0.7	278.1105	2	C	2	24	3	Site Infrastructure	3	278.8105	0	4	0	1	12	2	6
1983	642948	896709	278.9608	9.126132	6	0.7	278.2608	2	G	1	12	2	Site Infrastructure	3	278.9608	0	4	0	1	12	2	4
1984	642948	896699	279.4502	9.364894	6	0.4	279.0502	1	R	1.5	9	2	Site Infrastructure	3	279.4502	0	4	0	1	12	2	4
1985	642948	896689	280.0089	9.428554	6	0.3	279.7089	1	C	2	12	2	Site Infrastructure	3	280.0089	0	4	0	1	12	2	4
1986	642948	896679	280.5678	9.066437	6	1.3	279.2678	3	G	1	18	3	Site Infrastructure	3	280.5678	0	4	0	1	12	2	6
1987	642948	896669	280.8393	8.686447	6	1	279.8393	2	G	1	12	2	Site Infrastructure	3	280.8393	0	4	0	1	12	2	4
1988	642958	896669	279.372	8.552707	6	1.2	278.172	3	R	1.5	27	3	Site Infrastructure	3	279.372	0	4	0	1	12	2	6
1989	642958	896679	279.0515	8.906281	6	0.9	278.1515	2	G	1	12	2	Site Infrastructure	3	279.0515	0	4	0	1	12	2	4
1990	642958	896689	278.4924	9.18076	6	0.6	277.8924	2	C	2	24	3	Site Infrastructure	3	278.4924	0	4	0	1	12	2	6
1991	642958	896699	277.9337	9.055602	6	0.6	277.3337	2	G	1	12	2	Site Infrastructure	3	277.9337	0	4	0	1	12	2	4
1992	642958	896709	277.4712	8.866717	6	0.7	276.7712	2	G	1	12	2	Site Infrastructure	3	277.4712	0	4	0	1	12	2	4
1993	642958	896719	277.2277	8.92858	6	0.1	277.1277	1	G	1	6	2	Site Infrastructure	3	277.2277	0	4	0	1	12	2	4
1994	642958	896729	277.0889	9.092786	6	0.8	276.2889	2	G	1	12	2	Site Infrastructure	3	277.0889	0	4	0	1	12	2	4
1995	642958	896739	276.8308	9.254485	6	0.6	276.2308	2	G	1	12	2	Site Infrastructure	3	276.8308	0	4	0	1	12	2	4
1996	642968	896739	275.2267	9.263942	6	0.4	274.8267	1	G	1	6	2	Site Infrastructure	3	275.2267	0	4	0	1	12	2	4
1997	642968	896729	275.506	9.04484	6	1	274.506	2	G	1	12	2	Site Infrastructure	3	275.506	0	4	0	1	12	2	4
1998	642968	896719	275.6453	8.835292	6	0.9	274.7453	2	G	1	12	2	Site Infrastructure	3	275.6453	0	4	0	1	12	2	4
1999	642968	896709	275.9817	8.831251	6	0.4	275.5817	1	G	1	6	2	Site Infrastructure	3	275.9817	0	4	0	1	12	2	4
2000	642968	896699	276.4171	9.031701	6	0.7	275.7171	2	C	2	24	3	Site Infrastructure	3	276.4171	4.414767	4	0	1	12	2	6
2001	642968	896689	276.9758	9.180685	6	1.2	275.7758	3	G	1	18	3	Site Infrastructure	3	276.9758	4.414733	4	0	1	12	2	6
2002	642968	896679	277.5353	8.94555	6	1.6	275.9353	3	C	2	36	4	Site Infrastructure	3	276.9758	9.429203	4	0.5595	1	12	2	8
2003	642968	896669	277.9046	8.471661	6	1.3	276.6046	3	G	1	18	3	Site Infrastructure	3	279.372	14.223919	3	-1.4674	1	9	1	3
2004	642926	896764	280.4158	9.649646	6	0.5	279.9158	1	G	1	6	2	Site Infrastructure	3	280.4158	0	4	0	1	12	2	4
2005	642960	896775	275.2	9.563794	6	0.8	274.4	2	G	1	12	2	Site Infrastructure	3	273.5963	0	4	1.6037	1	12	2	4
2006	642969	896771	274.1115	9.518297	6	0.6	273.5115	2	G	1	12	2	Site Infrastructure	3	274.1115	0	4	0	1	12	2	4
2007	642982	896764	272.4956	9.52675	6	0.8	271.6956	2	G	1	12	2	Site Infrastructure	3	271.2932	7.198493	4	1.2024	1	12	2	4
2008	643005	896805	265.7645	8.981118	6	0.8	264.9645	2	G	1	12	2	Site Infrastructure	3	267.0863	15.667733	3	-1.3218	1	9	1	2
2009	642987	896812	268.6945	9.230356	6	0.4	268.2945	1	G	1	6	2	Site Infrastructure	3	268.6945	0	4	0	1	12	2	4
2010	642973	896819	270.2534	8.983205	6	0.3	269.9534	1	G	1	6	2	Site Infrastructure	3	270.2534	0	4	0	1	12	2	4
2011	643000	896852	265.2758	9.971352	6	0.1	265.1758	1	G	1	6	2	Site Infrastructure	3	262.0533	15.101201	3	3.2225	1	9	1	2
2012	643012	896846	263.8787	10.60584	6	0.1	263.7787	1	G	1	6	2	Site Infrastructure	3	262.0533	0	4	1.8254	1	12	2	4
2013	643024	896837	260.8266	10.46862	6	0.3	260.5266	1	R	1.5	9	2	Site Infrastructure	3	262.0533	14.122403	3	-1.2267	1	9	1	2
2014	643063	896871	253.9019	6.483029	4	1.1	252.8019	3	G	1	12	2	Site Infrastructure	3	256.4341	19.438637	3	-2.5322	1	9	1	2
2015	643045	896882	256.1414	5.206188	4	0.3	255.8414	1	G	FALSE	0	1	Site Infrastructure	3	256.1414	0	4	0	1	12	2	2
2016	643058	896919	253.7117	5.226867	4	0.6	253.1117	2	G	FALSE	0	1	Site Infrastructure	3	253.7117	0	4	0	1	12	2	2
2017	643146	896877	247.3081	3.671772	2	0.7	246.6081	2	G	1	4	1	Site Infrastructure	3	247.3081	0	4	0	1	12	2	2
2018	643197	896840	244.2785	2.670007	2	3.5	240.7785	8	G	1	16	3	Site Infrastructure	3	243.834	0	4	0.4445	1	12	2	6
2019	643228	896823	242.7823	3.895369	2	2	240.7823	3	G	1	6	2	Site Infrastructure	3	242.7823	5.75736	4	0	1	12	2	4
2020	643255	896869	241.0038	3.304312	2	2.9	238.1038	3	G	1	6	2	Site Infrastructure	3	241.0038	0	4	0	1	12	2	4
2021	643286	896916	238.6636	4.080899	4	1	237.6636	2	G	1	8	2	Site Infrastructure	3	238.6636	2.581398	4	0	1	12	2	4
2022	643245	896935	241.281	3.511133	2	1.6	239.681	3	G	1	6	2	Site Infrastructure	3	241.281	0	4	0	1	12	2	4
2023	643215	896889	242.739	3.096667	2	1.2	241.539	3	G	1	6	2	Site Infrastructure	3	242.739	0	4	0	1	12	2	4
2024	643158	896924	246.0466	3.59762	2	0.9	245.1466	2	G	1	4	1	Site Infrastructure	3	246.0466	0	4	0	1	12	2	2
2025	643196	896957	244.1116	1.907179	1	1.7	242.4116	3	G	1	3	1	Site Infrastructure	3	244.1116	0	4	0	1	12	2	2
2026	643167	896975	244.8298	2.212544	2	0.7	244.1298	2	G	1	4	1	Site Infrastructure	3	244.8298	0	4	0	1	12	2	2
2027	643042	896962	252.6408	9.128923	6	0.3	252.3408	1	R	1.5	9	2	Site Infrastructure	3	251.3498	27.024815	3	1.291	1	9	1	2
2028	643170	897017	243.6643	3.802457	2	0.7	242.9643	2	G	1	4	1	Site Infrastructure	3	243.6643	5.844279	4	0	1	12	2	2
2029	643149	897028	244.8403	2.085922	2	0.1	244.7403	1	R	1.5	3	1	Site Infrastructure	3	244.8403	0	4	0	1	12	2	2
2030	643129	897040	245.3673	0.907344	1	0.1	245.2673	1	G	1	1	1	Site Infrastructure	3	245.3673	0	4	0	1	12	2	2
2031	643111	897053	245.6524	2.723986	2	0.01	245.6424	1	G	1	2	1	Site Infrastructure	3	245.4879	0	4	0.1645	1	12	2	2
2032	643088	897064	244.3199	6.602971	4	0.1	244.2199	1	G	1	4	1	Site Infrastructure	3	245.5671	0	4	-1.2472	1	12	2	2
2033	643141	897085	242.8019	6.386504	4	0.1	242.7019	1	G	1	4	1	Site Infrastructure	3	243.018	15.850796	3	-0.2161	1	9	1	1
2034	643153	897078	243.018	5.091114	4	0.1	242.918	1	G	1	4	1	Site Infrastructure	3	243.018	0	4	0	1	12	2	2
2035	643163	897065	242.6521	5.110924	4	0.4	242.2521	1	G	1	4	1	Site Infrastructure	3	243.6156	8.775811	4	-0.9635	1	12	2	2
2036	643195	897097	239.6742	6.035341	4	0.01	239.6642	1	G	1	4	1	Site Infrastructure	3	238.7948	10.115094	3	0.8794	1	9	1	1
2037	643180	897109	239.7292	5.908443	4	0.01	239.7192	1	G	1	4	1	Site Infrastructure	3	239.4526	0	4	0.2766	1	12	2	2
2038	643168	897120	238.739	8.39283	6	0.01	238.729	1	G	1	6	2	Site Infrastructure	3	239.7292	14.427302	3	-0.9902	1	9	1	2
2039	643198	897148	233.9437	7.132825	4	0.4	233.5437	1	G	1	4	1	Site Infrastructure	3	233.9437	0	4	0	1	12	2	2
2040	643209	897139	234.8056	8.035444	6	0.1	234.7056	1	G	1	6	2	Site Infrastructure	3	234.313	0	4	0.4926	1	12	2	4
2041	643223	897126	235.0885	6.595746	4	0.01	235.0785	1	G	1	4	1	Site Infrastructure	3	235.6674	8.504464	4	-0.5789	1	12	2	2
2042	643243	897120	234.9647	5.506799	4	0.01	234.9547	1	G	1	4	1	Site Infrastructure	3	234.1058	6.867525	4	0.8589	1	12	2	2
2043	643268	897136	232.1737	6.305445	4	0.01	232.1637	1	G	1	4	1	Site Infrastructure	3	232.1737	4.096099	4	0	1	12	2	2
2044	643269	897147	231.1607	5.77467	4	0.2	230.9607	1	G	1	4	1	Site Infrastructure	3	231.1607	0	4	0	1	12	2	2
2045	643270	897160	230.2883	5.356825	4	0.01	230.2783	1	G	1	4	1	Site Infrastructure	3	229.9682	0	4	0.3201	1	12	2	2
2046	643268	897168	229.4158	4.825296	4	0.1	229.3158	1	G	1	4	1	Site Infrastructure	3	229.4158	0	4	0	1	12	2	2
2047	643268	897178	228.7311	4.612269	4	0.4	228.3311	1	G	1	4	1	Site Infrastructure	3	228.7311	0	4	0	1	12	2	2
2048	643268	897188	227.9666	5.042779	4	0.1	227.8666	1	G	1	4	1	Site Infrastructure	3	227.9666	0	4	0	1	12	2	2
2049	643270	897198	227.1353	4.849922	4	1	226.1353	2	G	1	8	2	Site Infrastructure	3	226.7263	0	4	0.409	1	12	2	4
2050	643267	897207	226.5638	4.575737	4	1	225.5638	2	G	1	8	2	Site Infrastructure	3	226.5638	0	4	0	1	12	2	4
2051	643270	897217	225.9831	4.846557	4	0.9	225.0831	2	R	1.5	12	2	Site Infrastructure	3	225.4124	0	4	0.5707	1	12	2	4
2052	643271	897227	225.3026	5.055171	4	1.5	223.8026	3	G	1	12	2	Site Infrastructure	3	225.3026	6.776507	4	0	1	12	2	4
2053	643319	897184	225.7255	5.46222	4	2	223.7255	3	G	1	12	2	Site Infrastructure	3	226.2168	15.5404	3	-0.4913	1	9	1	2
2054	643307	897182	226.2168	5.500416	4	1.8	224.4168	3	G	1	12	2	Site Infrastructure	3	226.2168	5.298938	4	0	1	12	2	4
2055	643296	897183	226.7082	5.439166	4	0.01	226.6982	1	G	1	4	1	Site Infrastructure	3	226.7082	0	4	0	1	12	2	2
2056	643294	897176	227.5383	5.523686	4	0.5	227.0383	1	C	2	8	2	Site Infrastructure	3	227.5383	0	4	0	1	12	2	4
2057	643286	897184	227.1486	5.329217	4	0.1	227.0486	1	G	1	4	1	Site Infrastructure	3	227.1486	0	4	0	1	12	2	2
2058	643278	897184	227.5576	5.226476	4	0.1	227.4576	1	G	1	4	1	Site Infrastructure	3	227.5576	0	4	0	1	12	2	2
2059	643267	897184	227.9666	5.042779	4	0.01	227.9566	1	G	1	4	1	Site Infrastructure	3	227.9666	0	4	0	1	12	2	2
2060	643257	897183	228.3756	4.664438	4	0.01	228.3656	1	G	1	4	1	Site Infrastructure	3	228.3756	0	4	0	1	12	2	2
2061	643248	897184	228.7549	4.151988	4	0.5	228.2549	1	G	1	4	1	Site Infrastructure	3	228.7549	0	4	0	1	12	2	2
2062	643239	897185	229.1517	3.826292	2	1.1	228.0517	3	G	1	6	2	Site Infrastructure	3	229.1517	0	4	0	1	12	2	4
2063	643229	897184	229.617	4.115367	4	1.8	227.817	3	R	1.5	18	3	Site Infrastructure	3	229.617	0	4	0	1	12	2	6
2064	643218	897183	230.2583	4.675095	4	2.3	227.9583	3	G	1	12	2	Site Infrastructure	3	230.2583	0	4	0	1	12	2	4
2065	643217	897146	233.1298	6.89187	4	0.01	233.1198	1	G	1	4	1	Site Infrastructure	3	233.1298	0	4	0	1	12	2	2
2066	643856	897100	223.5421	1.767652	1	0.01	223.5321	1	G	1	1	1	Site Infrastructure	3	223.5421	0	4	0	1	12	2	2
2067	643847	897100	223.3788	2.634872	2	0.01	223.3688	1	G	1	2	1	Site Infrastructure	3	223.3788	0	4	0	1	12	2	2
2068	643838	897099	223.1804	3.284958	2	0.2	222.9804	1	G	1	2	1	Site Infrastructure	3	223.1804	0	4	0	1	12	2	2
2069	643827	897099	223.1671	4.050307	4	0.1	223.0671	1	G	1	4	1	Site Infrastructure	3	223.1671	0	4	0	1	12	2	2
2070	643817	897099	223.5246	5.287537	4	0.1	223.4246	1	G	1	4	1	Site Infrastructure	3	223.1671	7.774913	4	0.3575	1	12	2	2
2071	643808	897099	224.3588	6.147942	4	0.2	224.1588	1	G	1	4	1	Site Infrastructure	3	223.1671	15.902889	3	1.1917	1	9	1	1
2072	643797	897100	224.9972	6.228166	4	0.01	224.9872	1	G	1	4	1	Site Infrastructure	3	224.7525	24.018658	3	0.2447	1	9	1	1
2073	643790	897099	225.6203	4.89785	4	1	224.6203	2	G	1	8	2	Site Infrastructure	3	224.7525	30.449212	3	0.8678	1	9	1	2
2074	643838	897078	221.6822	4.380883	4	2.9	218.7822	3	G	1	12	2	Site Infrastructure	3	221.6822	0	4	0	1	12	2	4
2075	643837	897088	222.6775	4.157773	4	2.5	220.1775	3	G	1	12	2	Site Infrastructure	3	222.6775	0	4	0	1	12	2	4
2076	643839	897110	223.7905	2.512409	2	0.01	223.7805	1	G	1	2	1	Site Infrastructure	3	223.7427	0	4	0.0478	1	12	2	2
2077	643838	897120	224.0712	1.436049	1	0.2	223.8712	1	G	1	1	1	Site Infrastructure	3	224.0712	0	4	0	1	12	2	2
2078	643837	897129	224.1137	1.324165	1	0.3	223.8137	1	G	1	1	1	Site Infrastructure	3	224.1137	0	4	0	1	12	2	2
2079	643839	897139	224.2875	1.626593	1	1.1	223.1875	3	G	1	3	1	Site Infrastructure	3	224.2875	0	4	0	1	12	2	2
2080	643838	897148	224.5396	1.901149	1	1.9	222.6396	3	G	1	3	1	Site Infrastructure	3	224.2875	11.621116	3	0.2521	1	9	1	1
2081	643871	897158	222.9269	4.151694	4	2.7	220.2269	3	R	1.5	18	3	Site Infrastructure	3	222.203	3.185567	4	0.7239	1	12	2	6
2082	643882	897140	222.3355	3.438827	2	0.9	221.4355	2	G	1	4	1	Site Infrastructure	3	221.7894	0	4	0.5461	1	12	2	2
2083	643894	897131	221.4607	3.331033	2	0.5	220.9607	1	G	1	2	1	Site Infrastructure	3	221.4607	3.828239	4	0	1	12	2	2
2084	643933	897153	218.2933	4.378036	4	0.9	217.3933	2	R	1.5	12	2	Site Infrastructure	3	218.2933	0	4	0	1	12	2	4
2085	643928	897165	218.5684	4.231995	4	0.7	217.8684	2	G	1	8	2	Site Infrastructure	3	218.5684	0	4	0	1	12	2	4
2086	643919	897179	219.689	5.264482	4	0.7	218.989	2	G	1	8	2	Site Infrastructure	3	218.5684	13.376553	3	1.1206	1	9	1	2
2087	643957	897196	216.554	4.957207	4	0.5	216.054	1	C	2	8	2	Site Infrastructure	3	215.592	11.545837	3	0.962	1	9	1	2
2088	643965	897183	215.592	4.774372	4	1	214.592	2	G	1	8	2	Site Infrastructure	3	215.592	0	4	0	1	12	2	4
2089	643974	897171	214.7015	5.411807	4	2.6	212.1015	3	R	1.5	18	3	Site Infrastructure	3	215.6065	10.858942	3	-0.905	1	9	1	3
2090	644013	897177	210.9339	5.990527	4	0.9	210.0339	2	G	1	8	2	Site Infrastructure	3	211.1814	9.947116	4	-0.2475	1	12	2	4
2091	644005	897192	212.466	5.581191	4	0.4	212.066	1	G	1	4	1	Site Infrastructure	3	212.466	0	4	0	1	12	2	2
2092	643999	897213	213.7439	4.981199	4	0.8	212.9439	2	G	1	8	2	Site Infrastructure	3	212.7187	8.202238	4	1.0252	1	12	2	4
2093	644033	897229	209.4457	6.495042	4	0.5	208.9457	1	R	1.5	6	2	Site Infrastructure	3	209.3356	12.256687	3	0.1101	1	9	1	2
2094	644037	897214	209.3356	7.457785	4	0.6	208.7356	2	G	1	8	2	Site Infrastructure	3	209.3356	0	4	0	1	12	2	4
2095	644042	897197	208.4816	8.397248	6	0.9	207.5816	2	G	1	12	2	Site Infrastructure	3	207.0844	0	4	1.3972	1	12	2	4
2096	644056	897223	207.193	6.752175	4	0.1	207.093	1	R	1.5	6	2	Site Infrastructure	3	207.193	3.763598	4	0	1	12	2	4
2097	644056	897237	206.9605	6.191856	4	0.4	206.5605	1	G	1	4	1	Site Infrastructure	3	206.9605	2.15606	4	0	1	12	2	2
2098	644059	897204	205.9995	8.753087	6	0.1	205.8995	1	G	1	6	2	Site Infrastructure	3	206.7812	13.647416	3	-0.7817	1	9	1	2
2099	644153	896813	228.6717	7.564568	4	0.9	227.7717	2	G	1	8	2	Site Infrastructure	3	228.6717	0	4	0	1	12	2	4
2100	644109	896746	234.4112	7.59128	4	0.7	233.7112	2	G	1	8	2	Site Infrastructure	3	236.1992	10.004411	3	-1.788	1	9	1	2
2101	644120	896748	235.0039	7.418451	4	0.9	234.1039	2	G	1	8	2	Site Infrastructure	3	235.4468	0	4	-0.4429	1	12	2	4
2102	644129	896746	235.4468	7.254754	4	0.8	234.6468	2	G	1	8	2	Site Infrastructure	3	235.8896	0	4	-0.4428	1	12	2	4
2103	644138	896749	235.8896	7.353292	4	1.4	234.4896	3	G	1	12	2	Site Infrastructure	3	235.8896	0	4	0	1	12	2	4
2104	644148	896748	236.3325	7.682562	4	0.7	235.6325	2	G	1	8	2	Site Infrastructure	3	236.3325	0	4	0	1	12	2	4
2105	644159	896748	236.8573	7.541575	4	0.9	235.9573	2	G	1	8	2	Site Infrastructure	3	236.6067	0	4	0.2506	1	12	2	4
2106	644134	896740	237.0851	8.03798	6	0.7	236.3851	2	G	1	12	2	Site Infrastructure	3	237.0851	0	4	0	1	12	2	4
2107	644176	896748	236.4895	7.90829	4	0.01	236.4795	1	G	1	4	1	Site Infrastructure	3	236.4895	0	4	0	1	12	2	2
2108	644158	896700	242.8322	5.458646	4	0.9	241.9322	2	G	1	8	2	Site Infrastructure	3	241.9787	7.920184	4	0.8535	1	12	2	4
2109	644156	896708	241.9787	4.98568	4	0.9	241.0787	2	G	1	8	2	Site Infrastructure	3	241.9787	0	4	0	1	12	2	4
2110	644158	896720	241.1251	6.494895	4	0.8	240.3251	2	G	1	8	2	Site Infrastructure	3	241.1251	0	4	0	1	12	2	4
2111	644158	896729	239.7303	8.022552	6	0.5	239.2303	1	R	1.5	9	2	Site Infrastructure	3	239.7303	0	4	0	1	12	2	4
2112	644159	896740	238.2938	8.192554	6	0.6	237.6938	2	G	1	12	2	Site Infrastructure	3	238.2938	0	4	0	1	12	2	4

2113	644157	896757	235.6611	6.545528	4	0.9	234.7611	2	G	1	8	2	Site Infrastructure	3	235.6611	0	4	0	1	12	2	4
2114	644159	896769	234.6261	6.020256	4	0.8	233.8261	2	G	1	8	2	Site Infrastructure	3	234.0762	0	4	0.5499	1	12	2	4
2115	644158	896777	233.5912	5.919542	4	0.8	232.7912	2	C	2	16	3	Site Infrastructure	3	233.5912	0	4	0	1	12	2	6
2116	644158	896788	232.5562	6.288273	4	1	231.5562	2	R	1.5	12	2	Site Infrastructure	3	232.5562	0	4	0	1	12	2	4
2117	644159	896799	231.4016	7.096363	4	0.9	230.5016	2	G	1	8	2	Site Infrastructure	3	230.9736	0	4	0.428	1	12	2	4
2118	644189	896747	237.8843	9.281023	6	0.9	236.9843	2	C	2	24	3	Site Infrastructure	3	237.8843	0	4	0	1	12	2	6
2119	644200	896748	238.8695	7.30366	4	0.8	238.0695	2	G	1	8	2	Site Infrastructure	3	239.2741	0	4	-0.4046	1	12	2	4
2120	644210	896748	239.2741	6.374612	4	1	238.2741	2	C	2	16	3	Site Infrastructure	3	239.674	0	4	-0.3999	1	12	2	6
2121	644208	896797	233.647	6.831363	4	0.4	233.247	1	G	1	4	1	Site Infrastructure	3	233.647	0	4	0	1	12	2	2
2122	644191	896805	231.3473	9.014744	6	0.5	230.8473	1	G	1	6	2	Site Infrastructure	3	232.1335	0	4	-0.7862	1	12	2	4
2123	644180	896806	229.8937	8.041334	6	1	228.8937	2	G	1	12	2	Site Infrastructure	3	231.3473	0	4	-1.4536	1	12	2	4
2124	644187	896852	225.9992	7.596767	4	0.6	225.3992	2	C	2	16	3	Site Infrastructure	3	225.9992	0	4	0	1	12	2	6
2125	644200	896850	227.4724	6.969748	4	0.9	226.5724	2	G	1	8	2	Site Infrastructure	3	227.7952	0	4	-0.3228	1	12	2	4
2126	644212	896848	227.7952	7.214201	4	0.7	227.0952	2	G	1	8	2	Site Infrastructure	3	227.7952	8.111208	4	0	1	12	2	4
2127	644222	896888	223.872	5.892491	4	1.1	222.772	3	G	1	12	2	Site Infrastructure	3	222.7387	11.976657	3	1.1333	1	9	1	2
2128	644209	896894	222.6684	5.886546	4	1	221.6684	2	G	1	8	2	Site Infrastructure	3	222.7387	0	4	-0.0703	1	12	2	4
2129	644194	896897	222.2318	7.255232	4	0.8	221.4318	2	R	1.5	12	2	Site Infrastructure	3	223.4175	10.112931	3	-1.1857	1	9	1	2
2130	644196	896925	218.9736	7.364634	4	0.9	218.0736	2	G	1	8	2	Site Infrastructure	3	219.7699	8.255896	4	-0.7963	1	12	2	4
2131	644217	896924	220.1613	5.098366	4	1	219.1613	2	G	1	8	2	Site Infrastructure	3	220.1613	0	4	0	1	12	2	4
2132	644236	896919	220.8755	4.422262	4	0.4	220.4755	1	G	1	4	1	Site Infrastructure	3	220.8755	0	4	0	1	12	2	2
2133	643888	897118	222.1127	3.03268	2	0.1	222.0127	1	G	1	2	1	Site Infrastructure	3	222.1127	0	4	0	1	12	2	2
2134	643878	897108	222.6266	3.041185	2	0.1	222.5266	1	G	1	2	1	Site Infrastructure	3	222.6266	0	4	0	1	12	2	2
2135	643888	897108	222.1047	3.237125	2	0.1	222.0047	1	G	1	2	1	Site Infrastructure	3	222.1047	0	4	0	1	12	2	2
2136	643887	897098	221.9476	3.520058	2	0.1	221.8476	1	G	1	2	1	Site Infrastructure	3	221.9476	0	4	0	1	12	2	2
2137	643878	897098	222.5549	3.375816	2	0.1	222.4549	1	G	1	2	1	Site Infrastructure	3	222.5549	0	4	0	1	12	2	2
2138	643868	897098	223.1405	2.647408	2	0.1	223.0405	1	G	1	2	1	Site Infrastructure	3	223.1405	0	4	0	1	12	2	2
2139	643858	897090	222.9796	3.785723	2	0.1	222.8796	1	C	2	4	1	Site Infrastructure	3	222.9796	0	4	0	1	12	2	2
2140	643868	897088	223.0218	2.648482	2	0.01	223.0118	1	G	1	2	1	Site Infrastructure	3	223.0218	4.414733	4	0	1	12	2	2
2141	643878	897088	222.4064	3.372375	2	0.1	222.3064	1	G	1	2	1	Site Infrastructure	3	222.5549	9.429203	4	-0.1485	1	12	2	2
2142	643888	897088	221.791	3.685781	2	0.1	221.691	1	G	1	2	1	Site Infrastructure	3	221.9476	9.429113	4	-0.1566	1	12	2	2
2143	643888	897078	221.6289	3.827329	2	0.1	221.5289	1	G	1	2	1	Site Infrastructure	3	221.9476	18.929505	3	-0.3187	1	9	1	1
2144	643888	897068	221.3581	3.940854	2	0.1	221.2581	1	G	1	2	1	Site Infrastructure	3	221.9476	28.770642	3	-0.5895	1	9	1	1
2145	643878	897068	221.6568	4.673192	4	0.1	221.5568	1	G	1	4	1	Site Infrastructure	3	223.0218	23.262764	3	-1.365	1	9	1	1
2146	643878	897078	222.2949	3.264212	2	0.1	222.1949	1	G	1	2	1	Site Infrastructure	3	223.0218	16.484534	3	-0.7269	1	9	1	1
2147	643868	897078	222.425	4.158804	4	0.1	222.325	1	G	1	4	1	Site Infrastructure	3	223.0218	9.429203	4	-0.5968	1	12	2	2
2148	643868	897068	221.4151	5.8412	4	0.1	221.3151	1	G	1	4	1	Site Infrastructure	3	222.0518	16.484483	3	-0.6367	1	9	1	1
2149	643858	897068	221.1414	5.194321	4	0.7	220.4414	2	G	1	8	2	Site Infrastructure	3	222.0518	9.429203	4	-0.9104	1	12	2	4
2150	643858	897079	222.0518	5.378151	4	0.2	221.8518	1	G	1	4	1	Site Infrastructure	3	222.0518	4.268496	4	0	1	12	2	2
2151	643818	897048	223.4473	1.534	1	0.1	223.3473	1	G	1	1	1	Site Infrastructure	3	221.1	25.09505	3	2.3473	1	9	1	1
2152	643828	897049	223.4615	3.316598	2	0.1	223.3615	1	G	1	2	1	Site Infrastructure	3	221.1	19.184946	3	2.3615	1	9	1	1
2153	643838	897048	222.4415	5.922053	4	0.1	222.3415	1	G	1	4	1	Site Infrastructure	3	221.1	18.929603	3	1.3415	1	9	1	1
2154	643848	897048	221.2758	6.400175	4	0.1	221.1758	1	G	1	4	1	Site Infrastructure	3	221.1	23.262843	3	0.1758	1	9	1	1
2155	643858	897048	220.2605	5.370923	4	1.7	218.5605	3	G	1	12	2	Site Infrastructure	3	222.0518	28.770642	3	-1.7913	1	9	1	2
2156	643868	897048	219.0349	4.436831	4	1.7	217.3349	3	R	1.5	18	3	Site Infrastructure	3	222.0518	31.789619	3	-3.0169	1	9	1	3
2157	643879	897049	218.9901	6.652079	4	0.1	218.8901	1	G	1	4	1	Site Infrastructure	3	222.0518	37.69911	3	-3.0617	1	9	1	1
2158	643888	897048	219.1506	8.125322	6	0.1	219.0506	1	G	1	6	2	Site Infrastructure	3	222.0518	44.454919	3	-2.9012	1	9	1	2
2159	643888	897058	220.7316	6.120803	4	0.1	220.6316	1	C	2	8	2	Site Infrastructure	3	223.0218	37.328329	3	-2.2902	1	9	1	2
2160	643877	897058	220.5429	7.098903	4	0.1	220.4429	1	G	1	4	1	Site Infrastructure	3	222.0518	30.119964	3	-1.5089	1	9	1	1
2161	643868	897059	220.3047	5.931093	4	0.1	220.2047	1	G	1	4	1	Site Infrastructure	3	222.0518	23.001075	3	-1.7471	1	9	1	1
2162	643858	897058	220.0526	3.251616	2	2	218.0526	3	G	1	6	2	Site Infrastructure	3	222.0518	19.668469	3	-1.9992	1	9	1	2
2163	643848	897058	220.7896	4.223551	4	0.1	220.6896	1	R	1.5	6	2	Site Infrastructure	3	221.1	16.566968	3	-0.3104	1	9	1	2
2164	643838	897058	221.8602	5.791812	4	0.1	221.7602	1	G	1	4	1	Site Infrastructure	3	221.1	9.429203	4	0.7602	1	12	2	2
2165	643838	897068	221.1	2.372733	2	2.3	218.8	3	G	1	6	2	Site Infrastructure	3	221.1	0	4	0	1	12	2	4
2166	643847	897078	221.8333	5.338453	4	2	219.8333	3	G	1	12	2	Site Infrastructure	3	221.8333	0	4	0	1	12	2	4
2167	643828	897058	222.5207	5.469553	4	0.3	222.2207	1	G	1	4	1	Site Infrastructure	3	221.1	10.299426	3	1.4207	1	9	1	1
2168	643818	897058	222.8705	4.50545	4	0.1	222.7705	1	G	1	4	1	Site Infrastructure	3	221.1	17.979104	3	1.7705	1	9	1	1
2169	643809	897068	222.2372	1.991268	1	0.01	222.2272	1	G	1	1	1	Site Infrastructure	3	221.1	24.635587	3	1.1372	1	9	1	1
2170	643808	897058	223.1505	3.375104	2	2.4	220.7505	3	G	1	6	2	Site Infrastructure	3	221.1	27.210657	3	2.0505	1	9	1	2
2171	643808	897048	223.3883	1.038173	1	2.4	220.9883	3	G	1	3	1	Site Infrastructure	3	221.1	31.777978	3	2.2883	1	9	1	1
2172	643798	897048	223.3294	0.970731	1	2.3	221.0294	3	G	1	3	1	Site Infrastructure	3	221.1	41.160853	3	2.2294	1	9	1	1
2173	643788	897048	223.2705	1.044111	1	1.5	221.7705	3	G	1	3	1	Site Infrastructure	3	221.1	49.43861	3	2.1705	1	9	1	1
2174	643789	897059	223.099	1.55273	1	1.6	221.499	3	C	2	6	2	Site Infrastructure	3	221.1	45.938694	3	1.999	1	9	1	2
2175	643798	897058	223.1579	2.322594	2	2.7	220.4579	3	G	1	6	2	Site Infrastructure	3	221.1	36.845463	3	2.0579	1	9	1	2
2176	643798	897068	222.523	1.55603	1	2.3	220.223	3	G	1	3	1	Site Infrastructure	3	221.1	35.891083	3	1.423	1	9	1	1
2177	643788	897068	222.8087	2.041584	2	2.1	220.7087	3	G	1	6	2	Site Infrastructure	3	223.1671	45.786725	3	-0.3584	1	9	1	2
2178	643788	897078	223.6756	5.207185	4	2.5	221.1756	3	R	1.5	18	3	Site Infrastructure	3	223.1671	40.336165	3	0.5085	1	9	1	3
2179	643788	897088	224.6556	5.556247	4	1.5	223.1556	3	G	1	12	2	Site Infrastructure	3	223.1671	37.447532	3	1.4885	1	9	1	2
2180	643799	897088	224.0172	6.455077	4	0.6	223.4172	2	G	1	8	2	Site Infrastructure	3	223.1671	26.626136	3	0.8501	1	9	1	2
2181	643798	897078	223.0373	5.133507	4	3	220.0373	3	G	1	12	2	Site Infrastructure	3	223.1671	31.77792	3	-0.1298	1	9	1	2
2182	643808	897079	222.6042	4.022782	4	2.9	219.7042	3	G	1	12	2	Site Infrastructure	3	223.1671	23.996257	3	-0.5629	1	9	1	2
2183	643808	897089	223.3789	5.84517	4	1.4	221.9789	3	R	1.5	18	3	Site Infrastructure	3	223.1671	17.703624	3	0.2118	1	9	1	3
2184	643818	897088	222.7405	4.621837	4	1.1	221.6405	3	G	1	12	2	Site Infrastructure	3	223.1671	10.299426	3	-0.4266	1	9	1	2
2185	643818	897078	222.3184	3.322249	2	3.1	219.2184	8	G	1	16	3	Site Infrastructure	3	221.6822	15.932048	3	0.6362	1	9	1	3
2186	643818	897068	221.9514	2.4628	2	1.5	220.4514	3	C	2	12	2	Site Infrastructure	3	221.1	15.932048	3	0.8514	1	9	1	2
2187	643828	897068	221.5771	2.754701	2	2.4	219.1771	3	G	1	6	2	Site Infrastructure	3	221.1	6.054764	4	0.4771	1	12	2	4
2188	643828	897078	221.9372	3.428706	2	3.4	218.5372	8	G	1	16	3	Site Infrastructure	3	221.6822	6.054764	4	0.255	1	12	2	6
2189	643828	897089	222.5264	3.777032	2	2	220.5264	3	G	1	6	2	Site Infrastructure	3	222.6775	0	4	-0.1511	1	12	2	4
2190	643848	897088	222.8285	4.448972	4	0.1	222.7285	1	G	1	4	1	Site Infrastructure	3	222.8285	0	4	0	1	12	2	2
2191	643849	897108	223.7427	1.394793	1	0.1	223.6427	1	G	1	1	1	Site Infrastructure	3	223.7427	0	4	0	1	12	2	2
2192	643828	897109	223.9484	3.536772	2	0.1	223.8484	1	G	1	2	1	Site Infrastructure	3	223.9484	0	4	0	1	12	2	2
2193	643818	897108	224.305	4.244189	4	0.1	224.205	1	G	1	4	1	Site Infrastructure	3	223.9484	6.624452	4	0.3566	1	12	2	2
2194	643807	897109	224.92	4.260066	4	0.1	224.82	1	G	1	4	1	Site Infrastructure	3	224.7525	10.159851	3	0.1675	1	9	1	1
2195	643798	897108	225.8097	3.710583	2	0.2	225.6097	1	G	1	2	1	Site Infrastructure	3	224.7525	17.979151	3	1.0572	1	9	1	1
2196	643788	897109	226.4469	0.875028	1	0.1	226.3469	1	G	1	1	1	Site Infrastructure	3	224.7525	27.013785	3	1.6944	1	9	1	1
2197	643788	897118	225.7744	2.701919	2	0.2	225.5744	1	G	1	2	1	Site Infrastructure	3	224.7525	25.903665	3	1.0219	1	9	1	1
2198	643788	897128	225.2562	1.352285	1	0.6	224.6562	2	G	1	2	1	Site Infrastructure	3	224.6579	25.903665	3	0.5983	1	9	1	1
2199	643788	897138	225.5387	2.23964	2	0.8	224.7387	2	R	1.5	6	2	Site Infrastructure	3	224.6579	28.312186	3	0.8808	1	9	1	2
2200	643788	897148	225.8213	2.267635	2	0.8	225.0213	2	G	1	4	1	Site Infrastructure	3	224.6579	33.450492	3	1.1634	1	9	1	1
2201	643798	897148	225.5433	2.263933	2	0.6	224.9433	2	G	1	4	1	Site Infrastructure	3	224.6579	26.739375	3	0.8854	1	9	1	1
2202	643798	897138	225.2607	2.112067	2	0.4	224.8607	1	R	1.5	3	1	Site Infrastructure	3	224.6579	19.606373	3	0.6028	1	9	1	1
2203	643798	897128	225.0013	1.496409	1	0.2	224.8013	1	R	1.5	1.5	1	Site Infrastructure	3	224.6579	15.932039	3	0.3434	1	9	1	1
2204	643798	897118	225.326	3.078157	2	0.3	225.026	1	G	1	2	1	Site Infrastructure	3	224.7525	16.58899	3	0.5735	1	9	1	1
2205	643808	897118	225.1579	2.190819	2	0.1	225.0579	1	G	1	2	1	Site Infrastructure	3	224.7525	6.054739	4	0.4054	1	12	2	2
2206	643808	897128	224.8332	1.34968	1	0.3	224.5332	1	G	1	1	1	Site Infrastructure	3	224.6579	6.054764	4	0.1753	1	12	2	2
2207	643808	897138	224.9827	1.900736	1	0.8	224.1827	2	G	1	2	1	Site Infrastructure	3	224.6579	12.932214	3	0.3248	1	9	1	1
2208	643808	897148	225.2499	2.253175	2	0.9	224.3499	2	G	1	4	1	Site Infrastructure	3	224.6579	22.205303	3	0.592	1	9	1	1
2209	643818	897148	224.9489	2.086526	2	0.9	224.0489	2	G	1	4	1	Site Infrastructure	3	224.2875	19.606373	3	0.6614	1	9	1	1
2210	643818	897138	224.6962	1.79437	1	0.8	223.8962	2	G	1	2	1	Site Infrastructure	3	224.6579	12.250395	3	0.0383	1	9	1	1
2211	643818	897128	224.6579	1.693498	1	0.1	224.5579	1	G	1	1	1	Site Infrastructure	3	224.6579	4.414767	4	0	1	12	2	2
2212	643818	897118	224.7525	2.32596	2	0.2	224.5525	1	G	1	2	1	Site Infrastructure	3	224.7525	0	4	0	1	12	2	2
2213	643828	897119	224.3565	2.00172	2	0.2	224.1565	1	G	1	2	1	Site Infrastructure	3	224.3565	0	4	0	1	12	2	2
2214	643829	897128	224.3095	1.584823	1	0.1	224.2095	1	R	1.5	1.5	1	Site Infrastructure	3	224.3095	0	4	0	1	12	2	2
2215	643828	897138	224.4725	1.683657	1	0.9	223.5725	2	G	1	2	1	Site Infrastructure	3	224.2875	5.821872	4	0.185	1	12	2	2
2216	643828	897148	224.7246	1.850787	1	1.1	223.6246	3	R	1.5	4.5	1	Site Infrastructure	3	224.2875	12.932125	3	0.4371	1	9	1	1
2217	643848	897148	224.1437	2.626782	2	2.7	221.4437	3	G	1	6	2	Site Infrastructure	3	223.5965	6.338117	4	0.5472	1	12	2	4
2218	643848	897138	224.1025	2.196604	2	0.9	223.2025	2	G	1	4	1	Site Infrastructure	3	224.1025	0	4	0	1	12	2	2
2219	643848	897128	223.9179	1.655844	1	0.1	223.8179	1	G	1	1	1	Site Infrastructure	3	223.9179	0	4	0	1	12	2	2
2220	643848	897118	223.8453	1.231593	1	0.1	223.7453	1	G	1	1	1	Site Infrastructure	3	223.8453	0	4	0	1	12	2	2
2221	643859	897108	223.6193	1.629339	1	0.1	223.5193	1	G	1	1	1	Site Infrastructure	3	223.6193	0	4	0	1	12	2	2
2222	643868	897108	223.128	2.845462	2	0.1	223.028	1	G	1	2	1	Site Infrastructure	3	223.128	0	4	0	1	12	2	2
2223	643878	897118	222.6142	2.955564	2	0.1	222.5142	1	G	1	2	1	Site Infrastructure	3	222.6142	0	4	0	1	12	2	2
2224	643868	897119	223.1156	2.900017	2	0.1	223.0156	1	R	1.5	3	1	Site Infrastructure	3	223.1156	0	4	0	1	12	2	2
2225	643858	897118	223.617	2.072746	2	0.1	223.517	1	G	1	2	1	Site Infrastructure	3	223.617	0	4	0	1	12	2	2
2226	643858	897129	223.6046	2.569856	2	0.01	223.5946	1	G	1	2	1	Site Infrastructure	3	223.6046	0	4	0	1	12	2	2
2227	643858	897139	223.5422	3.242198	2	0.7	222.8422	2	G	1	4	1	Site Infrastructure	3	223.5422	0	4	0	1	12	2	2
2228	643858	897148	223.5965	3.599134	2	0.9	222.6965	2	G	1	4	1	Site Infrastructure	3	223.5965	0	4	0	1	12	2	2
2229	643868	897148	222.8726	3.968671	2	0.7	222.1726	2	G	1	4	1	Site Infrastructure	3	222.8726	0	4	0	1	12	2	2
2230	643868	897138	222.8816	3.568044	2	0.6	222.2816	2	G	1	4	1	Site Infrastructure	3	222.8816	0	4	0	1	12	2	2
2231	643868	897128	223.099	3.141277	2	0.2	222.899	1	G	1	2	1	Site Infrastructure	3	223.099	0	4	0	1	12	2	2
2232	643878	897128	222.5529	3.164011	2	0.1	222.4529	1	G	1	2	1	Site Infrastructure	3	222.5529	0	4	0	1	12	2	2
2233	643878	897138	222.3355	3.438827	2	0.8	221.5355	2	G	1	4	1	Site Infrastructure	3	222.3355	0	4	0	1	12	2	2
2234	643878	897149	222.1488	3.69641	2	0.6	221.5488	2	G	1	4	1	Site Infrastructure	3	222.1488	0	4	0	1	12	2	2
2235	643888	897148	221.572	3.490415	2	1.1	220.472	3	G	1	6	2	Site Infrastructure	3	221.572	0	4	0	1	12	2	4
2236	643889	897139	221.7894	3.376335	2	0.3	221.4894	1	G	1	2	1	Site Infrastructure	3	221.7894	0	4	0	1	12	2	2
2237	643888	897128	222.0068	3.198551	2	0.1	221.9068	1	G	1	2	1	Site Infrastructure	3	222.0068	0	4	0	1	12	2	2
2238	644178	896799	230.9534	7.412449	4	0.2	230.7534	1	G	1	4	1	Site Infrastructure	3	230.9534	0	4	0	1	12	2	2
2239	644178	896789	231.9388	7.162603	4	0.1	231.8388	1	R	1.5	6	2	Site Infrastructure	3	231.9388	0	4	0	1	12	2	4
2240	644178	896779	232.9242	7.421637	4	0.1	232.8242	1	R	1.5	6	2	Site Infrastructure	3	232.9242	0	4	0	1	12	2	4
2241	644178	896769	234.1021	7.90336	4	0.01	234.0921	1	R	1.5	6	2	Site Infrastructure	3	234.1021	0	4	0	1	12	2	4
2242	644178	896759	235.308	7.961798	4	0.01	235.298	1	R	1.5	6	2	Site Infrastructure	3	235.308	0	4	0	1	12	2	4
2243	644178	896749	236.4895	7.90829	4	0.01	236.4795	1	R	1.5	6	2	Site Infrastructure	3	236.4895	0	4	0	1	12	2	4
2244	644178	896739	237.7813	8.02478	6	0.01	237.7713	1	R	1.5	9	2	Site Infrastructure	3	237.7813	0	4	0	1	12	2	4
2245	644178	896729	239.1086	7.820721	4	0.01	239.0986	1	R	1.5	6	2	Site Infrastructure	3	239.1086	0	4	0	1	12	2	4
2246	644178	896719	240.4319	7.50015	4	0.01	240.4219	1	R	1.5	6	2	Site Infrastructure	3	240.4319	0	4	0	1	12	2	4
2247	644178	896709	241.882	7.408558	4	0.01	241.872	1	R	1.5	6	2	Site Infrastructure	3	241.882	0	4	0	1	12	2	4
2248	644178	896699	243.2255	7.533648	4	0.1	243.1255	1	G	1	4	1	Site Infrastructure	3	243.2255	0	4	0	1	12	2	2
2249	644168	896699	242.4737	6.003997	4	0.01	242.4637	1	G	1	4	1	Site Infrastructure	3	243.2255	6.054739	4	-0.7518	1	12	2	2
2250	644148	896699	242.145	6.448045	4	0.9	241.245	2	G	1	8	2	Site Infrastructure	3	241.2914	9.429113	4	0.8536	1	12	2	4
2251	644138	896699	241.6899	6.764407	4	0.8	240.8899	2	G	1	8	2	Site Infrastructure	3	241.2914	10.299426	3	0.3985	1	9	1	2
2252	644128	896699	241.2693	6.935394	4	1.1	240.1693	3	G	1	12	2	Site Infrastructure	3	241.2914	17.979151	3	-0.0221	1	9	1	2
2253	644118	896699	240.8373	7.178037	4	1.1	239.7373	3	G	1	12	2	Site Infrastructure	3	239.0633	19.377724	3	1.774	1	9	1	2
2254	644108	896699	240.225	7.477606	4	1.2	239.025	3	G	1	12	2	Site Infrastructure	3	239.0633	24.344812	3	1.1617	1	9	1	2
2255	644108	896709	239.0828	7.389606	4	1.2	237.8828	3	G	1	12	2	Site Infrastructure	3	239.0633	17.979104	3	0.0195	1	9	1	2
2256	644118	896709	239.6952	7.129797	4	1.3	238.3952	3	G	1	12	2	Site Infrastructure	3	239.0633	10.299426	3	0.6319	1	9	1	2
2257	644128	896709	240.1249	6.745537	4	1.2	238.9249	3	R	1.5	18	3	Site Infrastructure	3	239.0633	9.429203	4	1.0616	1	12	2	6
2258	644138	896709	240.6041	6.446942	4	0.9	239.7041	2	G	1	8	2	Site Infrastructure	3	241.2914	6.054764	4	-0.6873	1	12	2	4
2259	644148	896709	241.2914	6.283156	4	0.7	240.5914	2	R	1.5	12	2	Site Infrastructure	3	241.2914	0	4	0	1	12	2	4
2260	644168	896709	241.7882	5.571346	4	0.01	241.7782	1	G	1	4	1	Site Infrastructure	3	241.7882	0	4	0	1	12	2	2
2261	644168	896719	240.83	7.002891	4	0.4	240.43	1	G	1	4	1	Site Infrastructure	3	240.83	0	4	0	1	12	2	2
2262	644148	896719	240.4378	7.26001	4	0.5	239.9378	1	G	1	4	1	Site Infrastructure	3	240.4378	0	4	0	1	12	2	2
2263	644138	896719	239.7506	7.120191	4	0.6	239.1506	2	G	1	8	2	Site Infrastructure	3	239.7506	0	4	0	1	12	2	4
2264	644128	896719	239.0633	7.042694	4	1.1	237.9633	3	G	1	12	2	Site Infrastructure	3	239.0633	0	4	0	1	12	2	4
2265	644118	896719	238.553	7.21841	4	1.3	237.253	3	G	1	12	2	Site Infrastructure	3	239.0633	6.054739	4	-0.5103	1	12	2	4
2266	644108	896719	237.9407	7.419621	4	1.3	236.6407	3	G	1	12	2	Site Infrastructure	3	239.0633	15.932039	3	-1.1226	1	9	1	2
2267	644108	896729	236.7862	7.504603	4	1.7	235.0862	3	G	1	12	2	Site Infrastructure	3	236.1992	10.299508	3	0.587	1	9	1	2
2268	644118	896729	237.3916	7.432904	4	1.1	236.2916	3	G	1	12	2	Site Infrastructure	3	237.9038	0	4	-0.5122	1	12	2	4
2269	644128	896729	237.9038	7.66623	4	0.9	237.0038	2	G	1	8	2	Site Infrastructure	3	237.9038	0	4	0	1	12	2	4
2270	644138	896729	238.5126	8.230466	6	0.3	238.2126	1	G	1	6	2	Site Infrastructure	3	238.5126	0	4	0	1	12	2	4
2271	644148	896729	239.1215	8.595869	6	0.3	238.8215	1	R	1.5	9	2	Site Infrastructure	3	239.1215	0	4	0	1	12	2	4
2272	644168	896729	239.4997	8.011945	6	0.4	239.0997	1	G	1	6	2	Site Infrastructure	3	239.4997	0	4	0	1	12	2	4

2273	644168	896739	238.0756	8.149759	6	0.7	237.3756	2	G	1	12	2	Site Infrastructure	3	238.0756	0	4	0	1	12	2	4
2274	644148	896739	237.685	8.525487	6	0.2	237.485	1	R	1.5	9	2	Site Infrastructure	3	237.685	0	4	0	1	12	2	4
2275	644138	896739	237.0851	8.03798	6	0.3	236.7851	1	G	1	6	2	Site Infrastructure	3	237.0851	0	4	0	1	12	2	4
2276	644128	896739	236.6422	7.561544	4	0.9	235.7422	2	G	1	8	2	Site Infrastructure	3	236.6422	0	4	0	1	12	2	4
2277	644118	896739	236.1992	7.475589	4	0.9	235.2992	2	G	1	8	2	Site Infrastructure	3	236.1992	0	4	0	1	12	2	4
2278	644108	896739	235.6036	7.57316	4	1	234.6036	2	G	1	8	2	Site Infrastructure	3	236.1992	6.054764	4	-0.5956	1	12	2	4
2279	644108	896759	233.2188	7.3308	4	1.3	231.9188	3	G	1	12	2	Site Infrastructure	3	234.2513	15.932048	3	-1.0325	1	9	1	2
2280	644118	896759	233.8084	7.285359	4	0.8	233.0084	2	G	1	8	2	Site Infrastructure	3	234.2513	6.054764	4	-0.4429	1	12	2	4
2281	644128	896759	234.2513	7.019517	4	0.9	233.3513	2	R	1.5	12	2	Site Infrastructure	3	234.2513	0	4	0	1	12	2	4
2282	644138	896759	234.7192	6.820123	4	0.9	233.8192	2	R	1.5	12	2	Site Infrastructure	3	234.7192	0	4	0	1	12	2	4
2283	644148	896759	235.1902	6.824845	4	1.1	234.0902	3	R	1.5	18	3	Site Infrastructure	3	235.1902	0	4	0	1	12	2	6
2284	644168	896759	235.2962	6.991439	4	0.8	234.4962	2	G	1	8	2	Site Infrastructure	3	235.2962	0	4	0	1	12	2	4
2285	644168	896769	234.0762	6.520517	4	0.7	233.3762	2	G	1	8	2	Site Infrastructure	3	234.0762	0	4	0	1	12	2	4
2286	644148	896769	234.1552	6.508424	4	1.7	232.4552	3	R	1.5	18	3	Site Infrastructure	3	234.1552	0	4	0	1	12	2	6
2287	644138	896769	233.6843	6.694108	4	1.4	232.2843	3	R	1.5	18	3	Site Infrastructure	3	233.6843	0	4	0	1	12	2	6
2288	644127	896768	233.2134	7.174525	4	1.3	231.9134	3	R	1.5	18	3	Site Infrastructure	3	233.6843	0	4	-0.4709	1	12	2	6
2289	644118	896769	232.5891	7.416499	4	0.8	231.7891	2	G	1	8	2	Site Infrastructure	3	234.2513	12.932125	3	-1.6622	1	9	1	2
2290	644108	896769	232.1381	7.228064	4	0.6	231.5381	2	G	1	8	2	Site Infrastructure	3	234.2513	19.606373	3	-2.1132	1	9	1	2
2291	644108	896779	230.8956	7.456595	4	0.9	229.9956	2	G	1	8	2	Site Infrastructure	3	232.6264	25.903665	3	-1.7308	1	9	1	2
2292	644118	896779	231.3534	7.694067	4	0.9	230.4534	2	G	1	8	2	Site Infrastructure	3	232.6264	15.932039	3	-1.273	1	9	1	2
2293	644128	896779	231.9899	7.730027	4	1.3	230.6899	3	G	1	12	2	Site Infrastructure	3	232.6264	6.054764	4	-0.6365	1	12	2	4
2294	644138	896779	232.6264	7.271545	4	1.6	231.0264	3	G	1	12	2	Site Infrastructure	3	232.6264	0	4	0	1	12	2	4
2295	644148	896779	233.1203	6.784856	4	1.5	231.6203	3	G	1	12	2	Site Infrastructure	3	233.1203	0	4	0	1	12	2	4
2296	644168	896779	233.0696	6.168393	4	1	232.0696	2	R	1.5	12	2	Site Infrastructure	3	233.0696	0	4	0	1	12	2	4
2297	644168	896789	232.0507	6.190023	4	1.1	230.9507	3	R	1.5	18	3	Site Infrastructure	3	232.0507	0	4	0	1	12	2	6
2298	644148	896789	232.0272	7.395625	4	1.3	230.7272	3	R	1.5	18	3	Site Infrastructure	3	232.0272	0	4	0	1	12	2	6
2299	644138	896789	231.3907	7.781663	4	1.5	229.8907	3	G	1	12	2	Site Infrastructure	3	231.3907	0	4	0	1	12	2	4
2300	644128	896789	230.7542	7.913695	4	1.6	229.1542	3	G	1	12	2	Site Infrastructure	3	231.3907	6.054739	4	-0.6365	1	12	2	4
2301	644118	896789	230.1176	7.713223	4	0.8	229.3176	2	G	1	8	2	Site Infrastructure	3	231.3907	15.932039	3	-1.2731	1	9	1	2
2302	644108	896789	229.653	7.520643	4	1.1	228.553	3	G	1	12	2	Site Infrastructure	3	231.3907	25.903665	3	-1.7377	1	9	1	2
2303	644108	896799	228.4105	7.365163	4	1	227.4105	2	G	1	8	2	Site Infrastructure	3	231.3907	28.312186	3	-2.9802	1	9	1	2
2304	644118	896799	228.8819	7.516965	4	1.4	227.4819	3	R	1.5	18	3	Site Infrastructure	3	231.3907	19.606373	3	-2.5088	1	9	1	3
2305	644128	896799	229.5184	7.947128	4	1.7	227.8184	3	R	1.5	18	3	Site Infrastructure	3	231.3907	12.932214	3	-1.8723	1	9	1	3
2306	644138	896799	230.1549	8.202705	6	1.7	228.4549	3	G	1	18	3	Site Infrastructure	3	230.782	6.054764	4	-0.6271	1	12	2	6
2307	644148	896799	230.782	8.134677	6	1.3	229.482	3	G	1	18	3	Site Infrastructure	3	230.782	0	4	0	1	12	2	6
2308	644168	896799	230.9736	6.613924	4	0.9	230.0736	2	G	1	8	2	Site Infrastructure	3	230.9736	0	4	0	1	12	2	4
2309	644188	896699	243.9396	7.813664	4	0.7	243.2396	2	G	1	8	2	Site Infrastructure	3	243.9396	0	4	0	1	12	2	4
2310	644198	896699	244.5383	7.105679	4	0.5	244.0383	1	G	1	4	1	Site Infrastructure	3	244.5383	0	4	0	1	12	2	2
2311	644208	896699	244.8695	6.709024	4	1	243.8695	2	R	1.5	12	2	Site Infrastructure	3	244.8695	0	4	0	1	12	2	4
2312	644208	896709	243.7101	6.897066	4	0.9	242.8101	2	G	1	8	2	Site Infrastructure	3	243.7101	0	4	0	1	12	2	4
2313	644198	896709	243.3956	7.351379	4	0.6	242.7956	2	R	1.5	12	2	Site Infrastructure	3	243.3956	0	4	0	1	12	2	4
2314	644188	896709	242.6069	8.3778	6	0.5	242.1069	1	G	1	6	2	Site Infrastructure	3	242.6069	0	4	0	1	12	2	4
2315	644188	896719	241.4619	8.523662	6	0.5	240.9619	1	G	1	6	2	Site Infrastructure	3	241.4619	0	4	0	1	12	2	4
2316	644198	896719	242.2322	7.288441	4	0.6	241.6322	2	R	1.5	12	2	Site Infrastructure	3	242.2322	0	4	0	1	12	2	4
2317	644208	896719	242.5362	6.90098	4	0.7	241.8362	2	R	1.5	12	2	Site Infrastructure	3	242.5362	0	4	0	1	12	2	4
2318	644208	896729	241.3728	6.667712	4	0.8	240.5728	2	G	1	8	2	Site Infrastructure	3	241.3728	0	4	0	1	12	2	4
2319	644198	896729	241.0689	7.313195	4	0.7	240.3689	2	G	1	8	2	Site Infrastructure	3	241.0689	0	4	0	1	12	2	4
2320	644188	896729	240.3168	8.962228	6	0.8	239.5168	2	G	1	12	2	Site Infrastructure	3	240.3168	0	4	0	1	12	2	4
2321	644188	896739	239.004	9.246106	6	0.8	238.204	2	R	1.5	18	3	Site Infrastructure	3	239.004	0	4	0	1	12	2	6
2322	644198	896739	239.9653	7.291343	4	0.7	239.2653	2	G	1	8	2	Site Infrastructure	3	239.9653	0	4	0	1	12	2	4
2323	644208	896739	240.2826	6.284256	4	1.1	239.1826	3	G	1	12	2	Site Infrastructure	3	240.2826	0	4	0	1	12	2	4
2324	644208	896759	238.1784	6.657762	4	1.1	237.0784	3	G	1	12	2	Site Infrastructure	3	238.1784	0	4	0	1	12	2	4
2325	644198	896759	237.7738	7.41256	4	0.8	236.9738	2	G	1	8	2	Site Infrastructure	3	237.7738	0	4	0	1	12	2	4
2326	644188	896759	236.7986	9.496524	6	0.5	236.2986	1	R	1.5	9	2	Site Infrastructure	3	236.7986	0	4	0	1	12	2	4
2327	644188	896769	235.6647	9.715414	6	0.6	235.0647	2	R	1.5	18	3	Site Infrastructure	3	235.6647	0	4	0	1	12	2	6
2328	644198	896769	236.6781	7.515633	4	0.5	236.1781	1	R	1.5	6	2	Site Infrastructure	3	236.6781	0	4	0	1	12	2	4
2329	644208	896769	237.0827	6.81392	4	0.8	236.2827	2	R	1.5	12	2	Site Infrastructure	3	237.0827	0	4	0	1	12	2	4
2330	644208	896779	235.9219	6.91762	4	0.8	235.1219	2	G	1	8	2	Site Infrastructure	3	235.9219	0	4	0	1	12	2	4
2331	644198	896779	235.5446	7.476663	4	0.8	234.7446	2	R	1.5	12	2	Site Infrastructure	3	235.5446	0	4	0	1	12	2	4
2332	644188	896779	234.5559	9.575302	6	0.5	234.0559	1	R	1.5	9	2	Site Infrastructure	3	234.5559	0	4	0	1	12	2	4
2333	644188	896789	233.5131	9.248763	6	0.8	232.7131	2	R	1.5	18	3	Site Infrastructure	3	233.5131	0	4	0	1	12	2	6
2334	644198	896789	234.4076	7.345103	4	0.8	233.6076	2	R	1.5	12	2	Site Infrastructure	3	234.4076	0	4	0	1	12	2	4
2335	644208	896789	234.784	6.84934	4	0.8	233.984	2	R	1.5	12	2	Site Infrastructure	3	234.784	0	4	0	1	12	2	4
2336	644208	896799	233.647	6.831363	4	0.6	233.047	2	G	1	8	2	Site Infrastructure	3	233.647	0	4	0	1	12	2	4
2337	644198	896799	233.2705	7.280963	4	0.6	232.6705	2	G	1	8	2	Site Infrastructure	3	233.2705	0	4	0	1	12	2	4
2338	644188	896799	232.4302	9.043325	6	0.8	231.6302	2	R	1.5	18	3	Site Infrastructure	3	232.4302	0	4	0	1	12	2	6
2339	643219	897139	234.313	7.576132	4	0.01	234.303	1	G	1	4	1	Site Infrastructure	3	234.313	0	4	0	1	12	2	2
2340	643218	897159	232.015	6.172103	4	0.01	232.005	1	R	1.5	6	2	Site Infrastructure	3	232.015	0	4	0	1	12	2	4
2341	643228	897168	230.7544	4.817391	4	0.01	230.7444	1	G	1	4	1	Site Infrastructure	3	230.7544	0	4	0	1	12	2	2
2342	643228	897158	231.718	6.220202	4	0.4	231.318	1	G	1	4	1	Site Infrastructure	3	231.718	0	4	0	1	12	2	2
2343	643228	897148	232.815	6.644765	4	0.01	232.805	1	G	1	4	1	Site Infrastructure	3	232.815	0	4	0	1	12	2	2
2344	643228	897138	233.9143	6.983449	4	0.5	233.4143	1	G	1	4	1	Site Infrastructure	3	233.9143	0	4	0	1	12	2	2
2345	643238	897138	233.5294	6.632293	4	0.2	233.3294	1	R	1.5	6	2	Site Infrastructure	3	233.5294	0	4	0	1	12	2	4
2346	643239	897149	232.4367	6.64183	4	0.7	231.7367	2	G	1	8	2	Site Infrastructure	3	231.9848	0	4	0.4519	1	12	2	4
2347	643238	897158	231.3439	6.111515	4	0.01	231.3339	1	R	1.5	6	2	Site Infrastructure	3	231.3439	0	4	0	1	12	2	4
2348	643238	897168	230.4241	4.97783	4	0.01	230.4141	1	G	1	4	1	Site Infrastructure	3	230.4241	0	4	0	1	12	2	2
2349	643238	897179	229.7277	4.117484	4	0.8	228.9277	2	R	1.5	12	2	Site Infrastructure	3	229.7277	0	4	0	1	12	2	4
2350	643228	897178	230.075	3.953285	2	0.8	229.275	2	R	1.5	6	2	Site Infrastructure	3	230.075	0	4	0	1	12	2	4
2351	643218	897178	230.7192	4.39143	4	0.4	230.3192	1	R	1.5	6	2	Site Infrastructure	3	230.7192	0	4	0	1	12	2	4
2352	643248	897178	229.4206	4.262841	4	0.01	229.4106	1	G	1	4	1	Site Infrastructure	3	229.4206	0	4	0	1	12	2	2
2353	643248	897168	230.0794	4.826798	4	0.01	230.0694	1	G	1	4	1	Site Infrastructure	3	230.0794	0	4	0	1	12	2	2
2354	643249	897157	230.9284	5.861602	4	0.5	230.4284	1	G	1	4	1	Site Infrastructure	3	230.9284	0	4	0	1	12	2	2
2355	643248	897148	231.9848	6.541289	4	0.01	231.9748	1	G	1	4	1	Site Infrastructure	3	231.9848	0	4	0	1	12	2	2
2356	643248	897138	233.0775	6.572376	4	0.01	233.0675	1	G	1	4	1	Site Infrastructure	3	233.0775	0	4	0	1	12	2	2
2357	643258	897138	232.6256	6.514985	4	0.01	232.6156	1	G	1	4	1	Site Infrastructure	3	232.6256	0	4	0	1	12	2	2
2358	643258	897148	231.5329	6.190617	4	0.01	231.5229	1	R	1.5	6	2	Site Infrastructure	3	231.5329	0	4	0	1	12	2	4
2359	643259	897159	230.6083	5.53686	4	0.2	230.4083	1	G	1	4	1	Site Infrastructure	3	230.2883	0	4	0.32	1	12	2	2
2360	643259	897169	229.7359	4.773719	4	0.7	229.0359	2	G	1	8	2	Site Infrastructure	3	229.7359	0	4	0	1	12	2	4
2361	643258	897178	229.0759	4.417856	4	0.3	228.7759	1	G	1	4	1	Site Infrastructure	3	229.0759	0	4	0	1	12	2	2
2362	643258	897188	228.3756	4.664438	4	0.1	228.2756	1	G	1	4	1	Site Infrastructure	3	228.3756	0	4	0	1	12	2	2
2363	643248	897188	228.7549	4.151988	4	1	227.7549	2	G	1	8	2	Site Infrastructure	3	228.7549	0	4	0	1	12	2	4
2364	643238	897188	229.1517	3.826292	2	1	228.1517	2	R	1.5	6	2	Site Infrastructure	3	229.1517	0	4	0	1	12	2	4
2365	643229	897188	229.617	4.115367	4	1.7	227.917	3	R	1.5	18	3	Site Infrastructure	3	229.617	0	4	0	1	12	2	6
2366	643218	897188	230.2583	4.675095	4	1.5	228.7583	3	G	1	12	2	Site Infrastructure	3	230.2583	0	4	0	1	12	2	4
2367	643218	897198	229.8082	4.565743	4	1	228.8082	2	R	1.5	12	2	Site Infrastructure	3	229.159	6.054764	4	0.6492	1	12	2	4
2368	643218	897168	230.9197	4.697624	4	1.8	229.1197	3	G	1	12	2	Site Infrastructure	3	230.9197	0	4	0	1	12	2	4
2369	643228	897198	229.159	4.152919	4	1.1	228.059	3	G	1	12	2	Site Infrastructure	3	229.159	0	4	0	1	12	2	4
2370	643228	897208	228.7076	4.254324	4	0.9	227.8076	2	G	1	8	2	Site Infrastructure	3	228.2098	6.446541	4	0.4978	1	12	2	4
2371	643218	897208	229.358	4.52238	4	0.9	228.458	2	R	1.5	12	2	Site Infrastructure	3	229.159	12.932214	3	0.199	1	9	1	2
2372	643218	897218	228.9079	4.921504	4	0.9	228.0079	2	G	1	8	2	Site Infrastructure	3	228.2098	19.606432	3	0.6981	1	9	1	2
2373	643218	897228	228.1835	5.180293	4	1	227.1835	2	G	1	8	2	Site Infrastructure	3	226.4528	25.903671	3	1.7307	1	9	1	2
2374	643228	897228	227.6196	4.653653	4	0.5	227.1196	1	R	1.5	6	2	Site Infrastructure	3	226.4528	15.932039	3	1.1668	1	9	1	2
2375	643228	897218	228.2575	4.630381	4	0.5	227.7575	1	R	1.5	6	2	Site Infrastructure	3	228.2098	12.932125	3	0.0477	1	9	1	2
2376	643238	897228	227.0972	4.658542	4	0.6	226.4972	2	G	1	8	2	Site Infrastructure	3	226.4528	6.054764	4	0.6444	1	12	2	4
2377	643238	897218	227.6766	4.551991	4	0.7	226.9766	2	G	1	8	2	Site Infrastructure	3	227.1213	6.054764	4	0.5553	1	12	2	4
2378	643238	897208	228.2098	4.120782	4	1.2	227.0098	3	G	1	12	2	Site Infrastructure	3	228.2098	0	4	0	1	12	2	4
2379	643238	897198	228.6807	3.860056	2	1.4	227.2807	3	G	1	6	2	Site Infrastructure	3	228.6807	0	4	0	1	12	2	4
2380	643248	897198	228.2272	4.174606	4	1.2	227.0272	3	R	1.5	18	3	Site Infrastructure	3	228.2272	0	4	0	1	12	2	6
2381	643248	897208	227.6743	4.370677	4	1.2	226.4743	3	G	1	12	2	Site Infrastructure	3	227.6743	0	4	0	1	12	2	4
2382	643248	897218	227.1213	4.731746	4	0.9	226.2213	2	R	1.5	12	2	Site Infrastructure	3	227.1213	0	4	0	1	12	2	4
2383	643248	897228	226.4528	4.869672	4	0.9	225.5528	2	G	1	8	2	Site Infrastructure	3	226.4528	4.414767	4	0	1	12	2	4
2384	643258	897228	225.8733	4.965882	4	1.4	224.4733	3	G	1	12	2	Site Infrastructure	3	225.8733	0	4	0	1	12	2	4
2385	643258	897218	226.5538	4.810498	4	0.9	225.6538	2	G	1	8	2	Site Infrastructure	3	226.5538	0	4	0	1	12	2	4
2386	643258	897208	227.119	4.520865	4	1.4	225.719	3	R	1.5	18	3	Site Infrastructure	3	227.119	0	4	0	1	12	2	6
2387	643278	897198	226.7263	5.074399	4	1	225.7263	2	R	1.5	12	2	Site Infrastructure	3	226.7263	0	4	0	1	12	2	4
2388	643278	897208	226.0085	4.769516	4	1.5	224.5085	3	G	1	12	2	Site Infrastructure	3	226.0085	0	4	0	1	12	2	4
2389	643278	897218	225.4124	4.881368	4	1.1	224.3124	3	G	1	12	2	Site Infrastructure	3	225.4124	4.414767	4	0	1	12	2	4
2390	643278	897228	224.7319	5.074422	4	0.9	223.8319	2	G	1	8	2	Site Infrastructure	3	225.4124	12.250395	3	-0.6805	1	9	1	2
2391	643288	897228	224.1612	5.050587	4	0.8	223.3612	2	R	1.5	12	2	Site Infrastructure	3	225.4124	18.245544	3	-1.2512	1	9	1	2
2392	643288	897218	224.8417	4.92948	4	1.4	223.4417	3	G	1	12	2	Site Infrastructure	3	225.486	12.250301	3	-0.6443	1	9	1	2
2393	643288	897208	225.486	5.022597	4	1.1	224.386	3	R	1.5	18	3	Site Infrastructure	3	225.486	4.414767	4	0	1	12	2	6
2394	643289	897200	226.3173	5.296151	4	0.01	226.3073	1	R	1.5	6	2	Site Infrastructure	3	226.3173	0	4	0	1	12	2	4
2395	643298	897198	225.8781	5.419056	4	1.5	224.3781	3	R	1.5	18	3	Site Infrastructure	3	225.8781	4.414767	4	0	1	12	2	6
2396	643308	897198	225.3867	5.434885	4	1.4	223.9867	3	G	1	12	2	Site Infrastructure	3	226.2168	12.250395	3	-0.8301	1	9	1	2
2397	643298	897208	225.0479	5.217896	4	1.1	223.9479	3	G	1	12	2	Site Infrastructure	3	225.8781	12.250301	3	-0.8302	1	9	1	2
2398	643297	897217	224.2886	5.000181	4	1.6	222.6886	3	R	1.5	18	3	Site Infrastructure	3	225.486	16.968003	3	-1.1974	1	9	1	3
2399	643298	897228	223.6056	4.9612	4	1.8	221.8056	3	R	1.5	18	3	Site Infrastructure	3	225.486	25.758186	3	-1.8804	1	9	1	3
2400	643308	897228	223.0898	4.932604	4	1.9	221.1898	3	R	1.5	18	3	Site Infrastructure	3	225.486	32.346713	3	-2.3962	1	9	1	3
2401	643318	897228	222.5739	4.988486	4	2.2	220.3739	3	R	1.5	18	3	Site Infrastructure	3	225.8781	39.710152	3	-3.3042	1	9	1	3
2402	643318	897218	223.3339	5.123593	4	1.7	221.6339	3	R	1.5	18	3	Site Infrastructure	3	225.8781	32.34678	3	-2.5442	1	9	1	3
2403	643308	897218	223.7982	5.074131	4	1.7	222.0982	3	R	1.5	18	3	Site Infrastructure	3	225.8781	25.758103	3	-2.0799	1	9	1	3
2404	643309	897209	224.5758	5.278028	4	1.4	223.1758	3	G	1	12	2	Site Infrastructure	3	225.8781	19.523649	3	-1.3023	1	9	1	2
2405	643318	897208	224.111	5.231663	4	1.3	222.811	3	G	1	12	2	Site Infrastructure	3	226.2168	25.758103	3	-2.1058	1	9	1	2
2406	643318	897198	224.9052	5.352726	4	2.1	222.8052	3	R	1.5	18	3	Site Infrastructure	3	226.2168	18.245544	3	-1.3116	1	9	1	3
2407	643318	897188	225.7255	5.46222	4	1.7	224.0255	3	G	1	12	2	Site Infrastructure	3	226.2168	14.223919	3	-0.4913	1	9	1	2
2408	643308	897188	226.2168	5.500416	4	1.9	224.3168	3	G	1	12	2	Site Infrastructure	3	226.2168	4.414767	4	0	1	12	2	4
2409	643298	897188	226.7082	5.439166	4	0.01	226.6982	1	G	1	4	1	Site Infrastructure	3	226.7082	0	4	0	1	12	2	2
2410	643288	897188	227.1486	5.329217	4	0.01	227.1386	1	G	1	4	1	Site Infrastructure	3	227.1486	0	4	0	1	12	2	2
2411	643278	897188	227.5576	5.226476	4	0.3	227.2576	1	G	1	4	1	Site Infrastructure	3	227.5576	0	4	0	1	12	2	2
2412	643279	897179	228.3864	4.878137	4	0.01	228.3764	1	G	1	4	1	Site Infrastructure	3	228.3864	0	4	0	1	12	2	2
2413	643288	897178	227.9799	5.190143	4	0.01	227.9699	1	G	1	4	1	Site Infrastructure	3	227.9799	0	4	0	1	12	2	2
2414	643298	897178	227.5383	5.523686	4	0.01	227.5283	1	G	1	4	1	Site Infrastructure	3	227.5383	0	4	0	1	12	2	2
2415	643308	897178	227.047	5.731227	4	1	226.047	2	G	1	8	2	Site Infrastructure	3	227.047	4.414767	4	0	1	12	2	4
2416	643318	897178	226.5556	5.770727	4	0.9	225.6556	2	G	1	8	2	Site Infrastructure	3	227.047	14.223929	3	-0.4914	1	9	1	2
2417	643318	897168	227.4939	6.23505	4	0.8	226.6939	2	R	1.5	12	2	Site Infrastructure	3	227.047	16.484534	3	0.4469	1	9	1	2
2418	643318	897158	228.5395	6.144233	4	0.2	228.3395	1	R	1.5	6	2	Site Infrastructure	3	227.047	23.262843	3	1.4925	1	9	1	2
2419	643318	897148	229.464	5.621094	4	1	228.464	2	R	1.5	12	2	Site Infrastructure	3	228.4393	30.397202	3	1.0247	1	9	1	2
2420	643318	897138	230.3354	5.293518	4	0.9	229.4354	2	G	1	8	2	Site Infrastructure	3	228.4393	37.328406	3	1.8961	1	9	1	2
2421	643308	897138	230.6945	5.313845	4	1	229.6945	2	G	1	8	2	Site Infrastructure	3	229.6481	30.397141	3	1.0464	1	9	1	2
2422	643298	897138	231.0535	5.381392	4	0.8	230.2535	2	G	1	8	2	Site Infrastructure	3	229.6481	23.262843	3	1.4054	1	9	1	2
2423	643298	897148	230.1821	5.363352	4	0.8	229.3821	2	G	1	8	2	Site Infrastructure	3	229.6481	16.484483	3	0.534	1	9	1	2
2424	643308	897148	229.8231	5.433303	4	1	228.8231	2	G	1	8	2	Site Infrastructure	3	228.4393	23.262764	3	1.3838	1	9	1	2
2425	643309	897158	228.9517	5.758426	4	1.3	227.6517	3	R	1.5	18	3	Site Infrastructure	3	228.4393	17.293093	3	0.5124	1	9	1	3
2426	643308	897168	227.978	5.992572	4	0.9	227.078	2	G	1	8	2	Site Infrastructure	3	227.047	9.429113	4	0.931	1	12	2	4
2427	643298	897168	228.4393	5.5787	4	0.3	228.1393	1	G	1	4	1	Site Infrastructure	3	228.4393	0	4	0	1	12	2	2
2428	643288	897168	228.7756	5.185383	4	0.01	228.7656	1	G	1	4	1	Site Infrastructure	3	228.7756	0	4	0	1	12	2	2
2429	643278	897168	229.0957	4.947448	4	0.5	228.5957	1	G	1	4	1	Site Infrastructure	3	229.0957	0	4	0	1	12	2	2
2430	643278	897158	229.9682	5.309355	4	0.01	229.9582	1	G	1	4	1	Site Infrastructure	3	229.9682	0	4	0	1	12	2	2
2431	643288	897158	229.6481	5.325047	4	0.01	229.6381	1	G	1	4	1	Site Infrastructure	3	229.6481	0	4	0	1	12	2	2
2432	643298	897158	229.3107	5.456769	4	1.1	228.2107	3	G	1	12	2	Site Infrastructure	3	228.4393	9.429203	4	0.8714	1	12	2	4

2433	643288	897148	230.5205	5.334167	4	0.01	230.5105	1	G	1	4	1	Site Infrastructure	3	229.6481	9.429113	4	0.8724	1	12	2	2
2434	643278	897148	230.8406	5.449359	4	0.01	230.8306	1	G	1	4	1	Site Infrastructure	3	230.8406	0	4	0	1	12	2	2
2435	643278	897138	231.7219	5.930884	4	0.01	231.7119	1	G	1	4	1	Site Infrastructure	3	230.8406	9.886521	4	0.8813	1	12	2	2
2436	643288	897138	231.393	5.569181	4	0.01	231.383	1	G	1	4	1	Site Infrastructure	3	230.8406	16.686704	3	0.5524	1	9	1	1

Slope Angles		**Co-eff.**	
	0	2.0	1.0
	2	4.0	2.0
	4	8.0	4.0
	8	15.0	6.0
	15	35.0	8.0
Peat depths		**Co-eff.**	
	0	0.5	1.0
	0.51	1.0	2.0
	1.01	3.0	3.0
	3.01	6.0	8.0
Substrate		**Co-eff.**	
G			1.0
R			1.5
C			2.0
not proven			2.0
slip material			5.0
Receptor		**Co-eff**	
Roads and Tracks			3.0
Minor Watercourse			6.0
Residential Dwelling			6.0
Major Watercourse			8.0
Site Infrastructure			3.0
Sensitive Habitat			8.0
Receptor Dist.		**Co-eff.**	
	0	10.0	4.0
	10	100.0	3.0
	100	1000.0	2.0
	1000	2000.0	1.0
Receptor Elev.		**Co-eff.**	
	0	10.0	1.0
	10	50.0	2.0
	50	100.0	3.0
	100	200.0	4.0
risk rating normalisation			
	0	5.0	1.0
	5	15.0	2.0
	15	31.0	3.0
	31	50.0	4.0
	50	150.0	5.0
impact rating normalisation			
	0	10.0	1.0
	10	20.0	2.0
	20	30.0	3.0
	30	50.0	4.0
	50	100.0	5.0

Slope Angles		**Co-eff.**
0	2.0	1.0
2	4.0	2.0
4	8.0	4.0
8	15.0	6.0
15	30.0	8.0

Peat depths		**Co-eff.**
0	0.5	1.0
0.51	1.0	2.0
1.01	3.0	3.0
3.01	6.0	8.0

Substrate	**Co-eff.**
sand and gravel	1.0
rock	1.5
clay	2.0
not proven	2.0
slip material	5.0

Receptor	**Co-eff**
Roads and Tracks	3.0
Minor Watercourse	6.0
Residential Dwelling	6.0
Major Watercourse	8.0
Site Infrastructure	3.0
Sensitive Habitat	8.0

Receptor Dist.		**Co-eff.**
0	10.0	4.0
10	100.0	3.0
100	1000.0	2.0
1000	2000.0	1.0

Receptor Elev.		**Co-eff.**
0	10.0	1.0
10	50.0	2.0
50	100.0	3.0
100	200.0	4.0

risk rating normalisation		
0	5.0	1.0
5	15.0	2.0
15	31.0	3.0
31	50.0	4.0
50	150.0	5.0

impact rating normalisation		
0	10.0	1.0

10	20.0	2.0
20	30.0	3.0
30	50.0	4.0
50	100.0	5.0

APPENDIX F – HISTORICAL PSRA REPORTING

06 September 2023

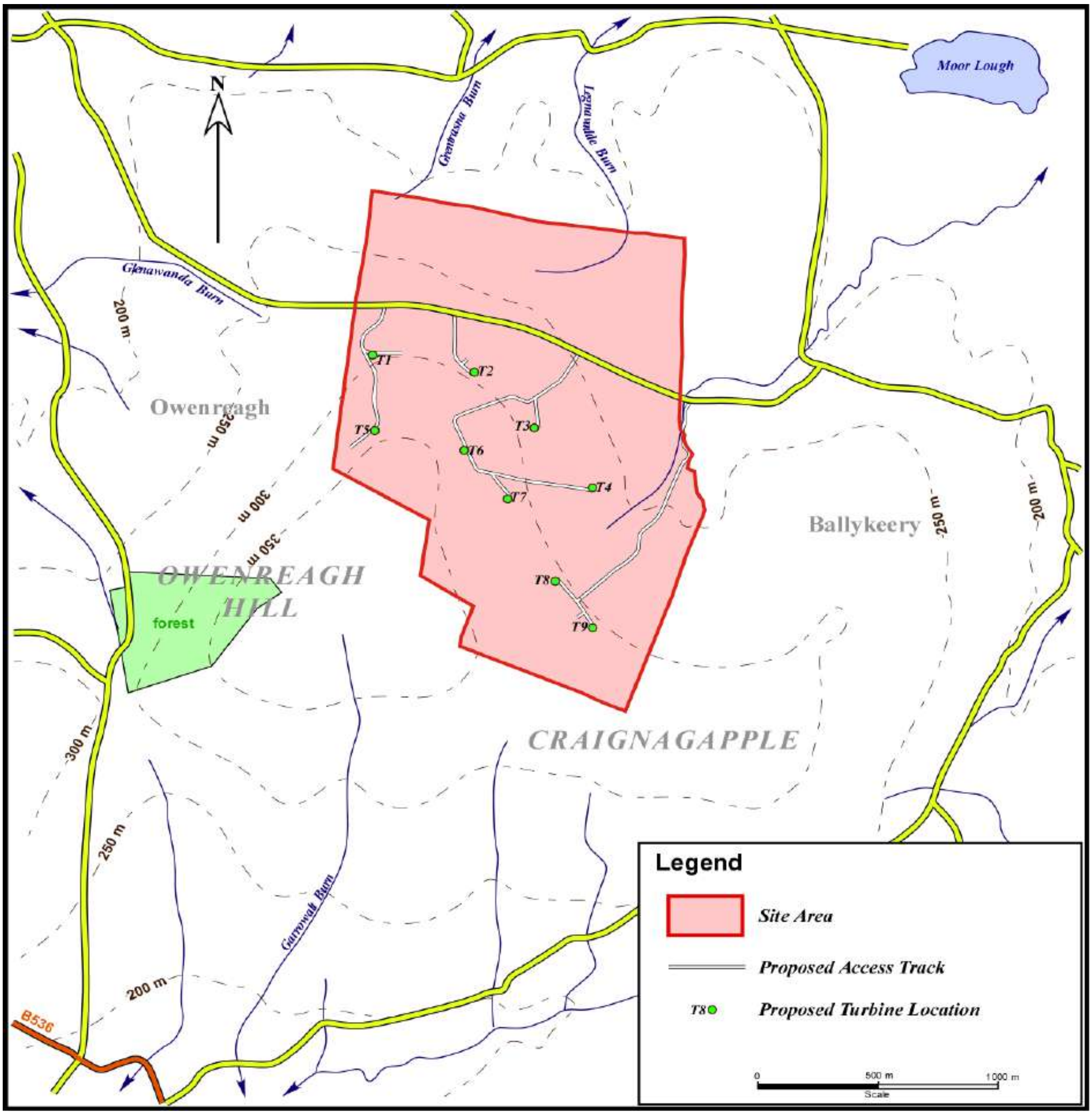
TECHNICAL NOTE No 3

Craignagapple Wind Farm project: review of peatslide risk assessment for amended layout – November 2012

Introduction

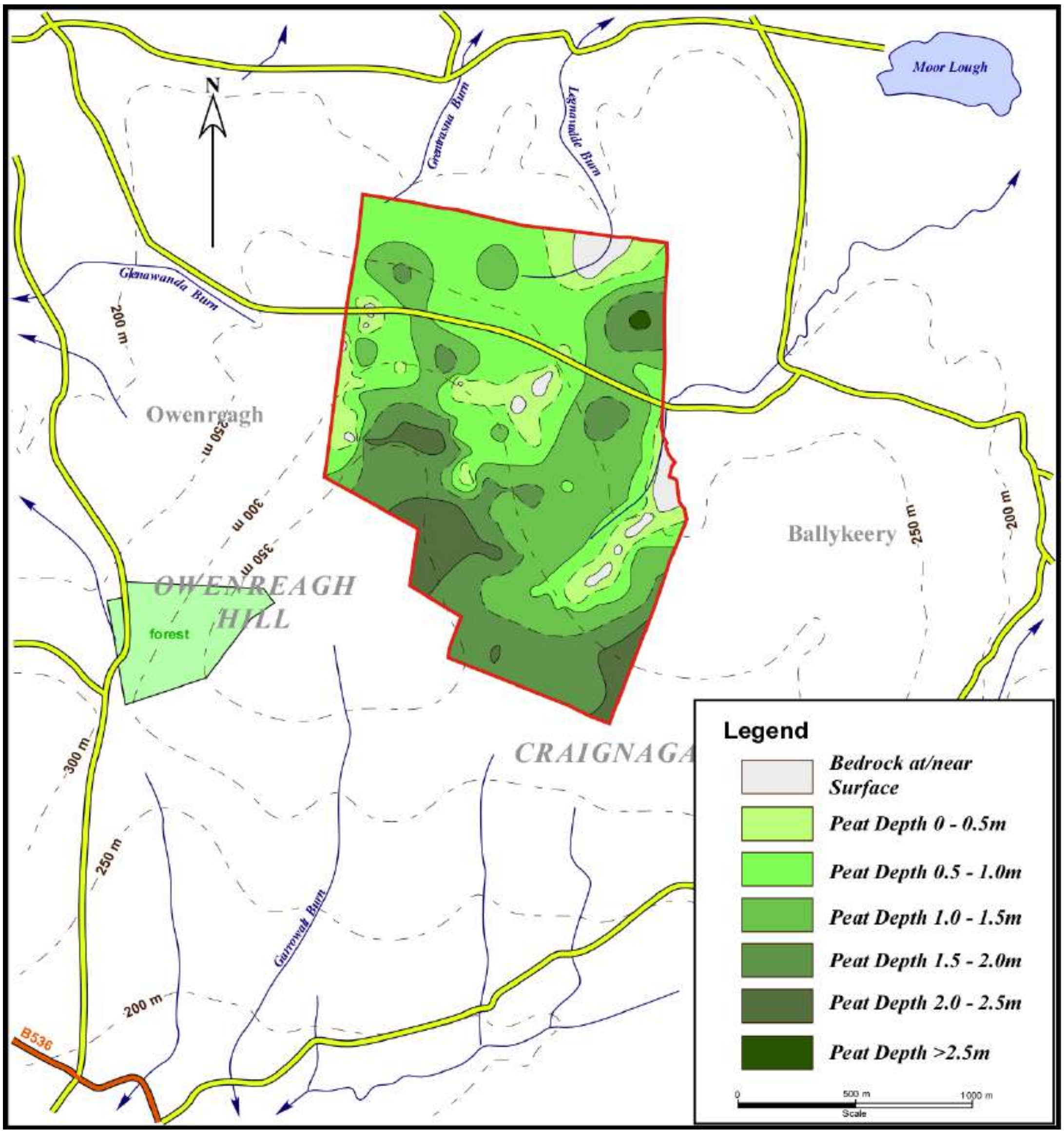
Further to report entitled “Craignagapple Wind Farm Peatslide Hazard and Risk Assessment” dated February 2012, the writer visited the proposed Craignagapple Wind Farm site on the 12th November 2012 to inspect certain amendments to the layout from a peat stability risk assessment perspective and also to consider the effect of acid flushes on peat stability in the vicinity of turbine positions T4 and T8. The proposed new layout is illustrated in Figure 1.

Figure 1 Craignagapple wind farm proposed layout



Moreover, a supplementary probing survey was carried out by Ground-Check also during November 2012 to provide additional measurements of peat depth across the proposed access tracks, turbine and infrastructure at 100m spaced positions and intermediate sampling stations as suggested by GSNI. These were combined with the results of previous probing surveys and the consolidated findings are presented in Attachment A. The resulting 195 peat depth values were then used to create a revised peat depth contour map to depict the patterns of variation in peat depth across the proposed development site (Figure 2).

Figure 2 Craignagapple wind farm peat depth contour map



Turbine positions

Compared to the original layout, turbine position T1 has been repositioned some 44m to the southeast, T2 has been repositioned some 67m to the east, T3 remains unchanged, T4 has been repositioned some 37m to the west, T5 has been repositioned some 11m to the east, T6 has been repositioned some 72m to the northeast, T7 has been repositioned some 75m to the northwest, T8 remains unchanged and T9 has been repositioned some 57m to the northwest.

The reviewed and revised Peatslide Hazard Rating System (PHRS) data sheets for the 9 turbine positions are presented in Attachment B and the results summarised in Table 1.

Table 1 PHRS scores for turbine positions at Craignagapple

Turbine position	PHRS score
T1	98
T2	89
T3	112
T4	89
T5	64
T6	93
T7	81
T8	85
T9	155

The PHRS scores for turbine positions range from 64 to 155 and average 96 which compares well with an average value of 90 previously calculated for the entire site. These results are also in general agreement with the findings of previous surveys. All of the PHRS scores fall within the low range for peatslide risk. Importantly, the PHRS scores for repositioned turbines T4 and T5 are exceedingly low.

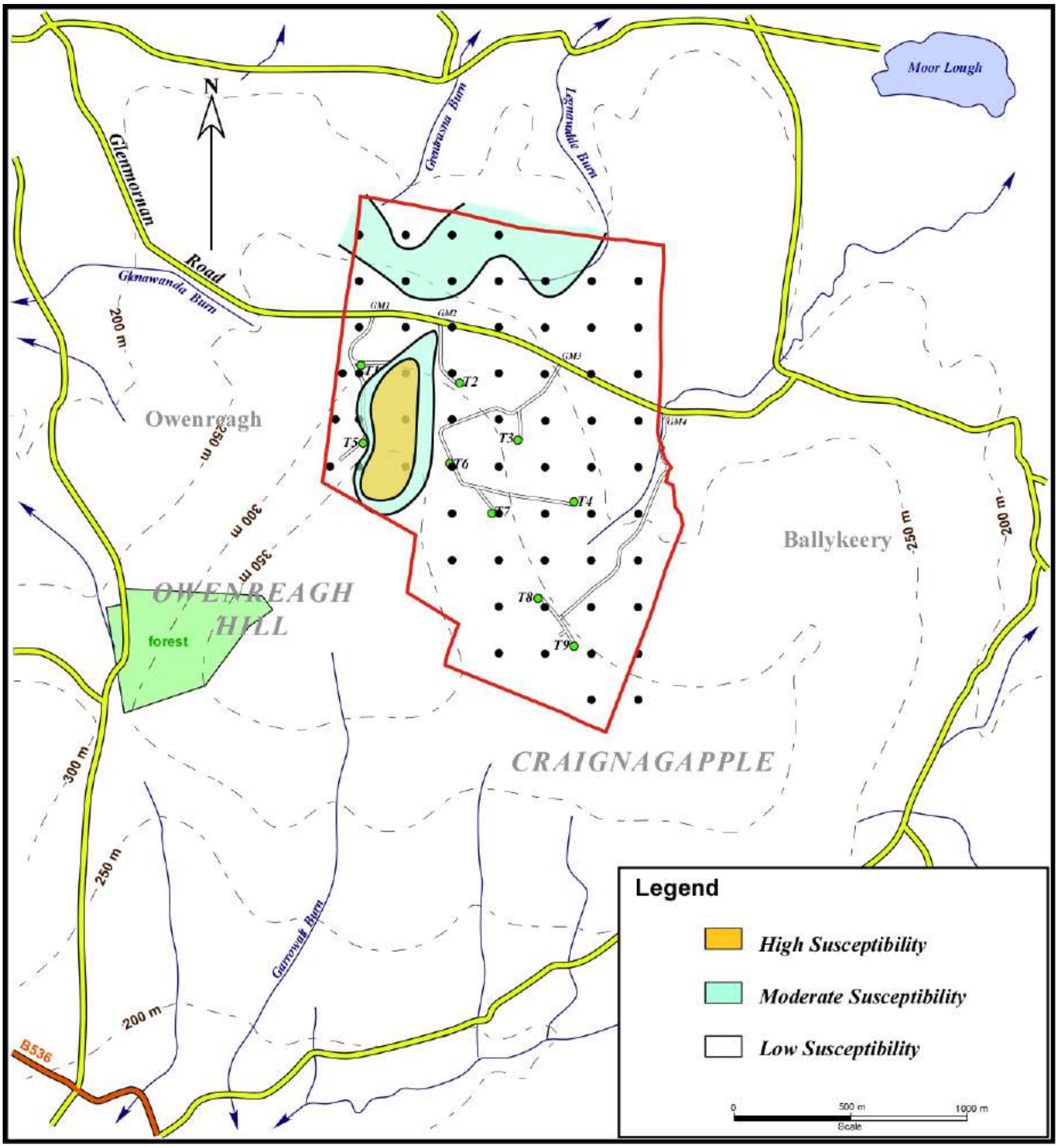
PHRS scores are intended as a means of comparing different sites and as a tool for prioritising mitigation works. The PHRS system itself does not attach any particular significance to the total score for each site and leaves it to the project engineers to draw their own conclusions based on an understanding of the local conditions that apply. However, as a rule of thumb, sites with an average rating of less than 200 are assigned a low priority while those with an average rating of more than 400 are identified for urgent attention.

A summary of risk estimations for turbine positions together with appropriate engineering responses are presented in Table 2 and the peatslide zonation map for the site is presented in Figure 3.

Table 2 Peatslide risk estimation – engineering response for turbine positions

Risk class	Hazard	Engineering response	Turbine position
Risk level 1	Negligible	Do nothing. Acceptable	T1, T2, T3, T5, T6 & T7
Risk level 2	Very low	Monitor and review. Manage by normal slope maintenance procedures	T4 & T8
Risk level 3	Low	Further investigation of the peatslide hazard may possibly be required. Manage by normal slope maintenance procedures	T9
Risk level 4	Low-Moderate	Peatslide stabilisation works may possibly be required	-
Risk level 5	Moderate	Peatslide stabilisation works may be required, but further studies required to refine judgements	-
Risk level 6	High	Peatslide stabilisation works likely to be required. Further investigations will be required, including comprehensive assessment of risks	-
Risk level 7	Very high	Large-scale mitigation works will be required. Urgent requirements for further investigations, including comprehensive assessment of risks	-

Figure 3 Craignagapple peatslide zonation map



Access track routes

The amended network of track routes now involves a total of four access positions from Glenmornan Road (GM). The amended routes make better use of existing tracks, avoid certain areas of peatland and give a substantial reduction in earthworks quantities. GM1 leading to turbine positions T1 and T5 remains unchanged but GM2 leading to T2 is a new route. Also, GM3 leading to T3, T6, T7 and T4 involves both old and new routes whereas GM4 leading to T8 and T9 is a new route much of which lies along an existing track.

Each element of the access track routes was individually assessed for peatslide susceptibility by using PHRS scores of nearby grid positions and turbine positions. A summary of risk estimations for access track routes together with appropriate engineering responses are presented in Table 3.

Table 3 Peatslide risk estimation – engineering response for access track routes

Risk class	Hazard	Engineering response	Turbine position
Risk level 1	Negligible	Do nothing. Acceptable	GR1-T1; T1-T5; GR2-T2; GR3-T3; T3-T6; GR4-T8/T9
Risk level 2	Very low	Monitor and review. Manage by normal slope maintenance procedures	T6-T7
Risk level 3	Low	Further investigation of the peatslide hazard may possibly be required. Manage by normal slope maintenance procedures	T7-T4
Risk level 4	Low-Moderate	Peatslide stabilisation works may possibly be required	-
Risk level 5	Moderate	Peatslide stabilisation works may be required, but further studies required to refine judgements	-
Risk level 6	High	Peatslide stabilisation works likely to be required. Further investigations will be required, including comprehensive assessment of risks	-
Risk level 7	Very high	Large-scale mitigation works will be required. Urgent requirements for further investigations, including comprehensive assessment of risks	_

Flush zones

Natural lines of drainage on the peat hillside at Craignagapple include flush zones and sloughs where water from groundwater springs and seepages, surface run-off and rainfall can reach the surface in depressions and long shallow hollows which become partly or wholly dry in summer. Because these areas are wetter, the resulting type of vegetation is different to the surrounding upland habitat and so flushes are often seen in the landscape as lanes of grasses and reeds (Figure 4).

Figure 4 Flush zones crossing hillside at Craignagapple. View looking westwards

In relation to the presence of acid flushes in the vicinity of turbine position T8 and concerns that they may pose a peatslide risk when obstructed or crossed, specific items have been introduced in the latest version of the Geotechnical Risk Register (Attachment C) to deal with these matters. In order to avoid blockage of the flushes, earthworks will be carried out under geotechnical supervision and crossings of flushes have been eliminated as far as possible during the design process and all remaining case of encroachment on flushes will involve special drainage measures installed under geotechnical supervision.

In relation to the distribution of flush zones across the development site these are not detailed in the habitat mapping due to small size (less than 0.1ha). Certain flushes appear to be man-made drainage ditches that have subsequently infilled over time with soft silty mud and peaty soil.

These flush zones typically have very small vertical hydraulic gradients with flow nets occasionally indicating an upward flux from within the peat mass toward the surface probably as a result of the combination of a head of water from upslope and a fairly impermeable peat layer. Accordingly, mitigation measures during the construction phase will concentrate primarily on the provision of robust drainage measures. These will be specifically applied to turbine position T8.

Conclusions

A PHRS study of the amended layout for the Craignagapple wind farm project has demonstrated that the proposed changes are acceptable in relation to peatslide risk.

Recommendations for peatslide risk management are made with regard to the detailed design and construction phase of the project that would eliminate or minimise the risk of peatslides occurring and appropriate updates have been made to the Geotechnical Risk Register for the project.

Overall, based on the findings of the PHRS scores, the level of potential damage or degree of loss due to instability of peat appears low to negligible.

Dr Douglas Nichol
Geotechnical Engineer DN/Craignagapple 3: 05/12/12

Attachment A: Craignagapple consolidated probe data
Attachment B: Field data and PHRS scoring sheets for turbine positions T1-T9 inclusive
Attachment C: Craignagapple Geotechnical Risk Register 28 November 2012

Attachment B. Craignagapple consolidated field probe data

ID Ref.	Grid Ref. Easting	Grid Ref. Northing	Peat Depth (m)	Notes
Grid positions				
A5	242225	397000	0.61	Boundary fence adjacent
A6	242198	396800	0.75	Boundary fence adjacent
A7	242173	396600	0.70	Boundary fence adjacent
B2	242300	397600	0.66	
B3	242300	397400	0.92	
B4	242300	397200	0.97	
B5	242300	397000	0.97	On access track
B6	242300	396800	0.29	
B7	242300	396600	1.17	
C2	242500	397600	0.74	
C3	242500	397400	1.80	
C4	242500	397200	0.91	
C5	242500	397000	0.27	
C6	242500	396800	1.95	
C7	242500	396600	1.74	
D2	242700	397600	0.42	
D3	242700	397400	0.74	
D4	242700	397200	0.38	
D5	242700	397000	1.74	
D6	242700	396800	0.66	
D7	242700	396600	1.86	
D8	242700	396400	2.27	
D9	242700	396200	2.21	
E2	242900	397600	0.90	
E3	242900	397400	1.39	Stream nearby
E4	242900	397200	0.44	
E5	242900	397000	0.85	
E6	242900	396800	0.70	
E7	242900	396600	0.83	
E8	242900	396400	1.02	
E9	242900	396200	2.30	
E10	242900	396000	1.24	
E11	242900	395800	2.02	
F3	243100	397400	0.55	
F4	243100	397200	0.91	
F5	243100	397000	0.64	
F6	243100	396800	0.61	
F7	243100	396600	0.97	old turbary area nearby
F8	243100	396400	1.37	
F9	243100	396200	1.59	
F10	243100	396000	1.45	
F11	243100	395800	1.60	
G3	243300	397400	0.05	
G4	243300	397200	1.15	
G5	243300	397000	1.19	
G6	243300	396800	1.77	
G7	243300	396600	1.24	
G8	243300	396400	1.51	
G9	243300	396200	0.79	
G10	243300	396000	0.87	old turbary area nearby
G11	243300	395800	1.96	
G12	243300	395600	1.82	
H3	243500	397400	0.47	
H4	243500	397200	3.05	
H5	243500	397000	0.84	
H6	243500	396800	1.51	
H7	243500	396600	1.13	
H8	243500	396400	0.98	
H9	243500	396200	1.27	
H10	243500	396000	1.25	
H11	243500	395800	2.31	intermittent stream nearby
H12	243500	395600	2.39	wet ground
Turbine positions				
T1	242314	397028	1.15	
T2	242736	396954	1.45	
T3	242986	396707	0.75	
T4	243224	396495	1.10	
T5	242322	396696	1.30	

T6	242693	396609	1.80	
T7	242874	396395	1.10	
T8	243071	396033	0.55	
T9	243224	395828	1.60	
Track positions				
P1	243174	397045	0.05	track to turbine position T9
P2	243150	397001	0.06	
P3	243097	396916	0.08	
P4	243015	396859	0.05	
P4a	243032	396869	0.90	
P5	242928	396826	0.90	
P6	242837	396826	0.07	
P6a	242837	396821	0.80	
P7	242742	396793	0.95	
P8	242727	396700	0.05	
P8a	242726	396699	1.30	
P8b	242758	396607	1.50	
P9	242758	396605	0.04	rock
P10	242812	396522	1.50	
P11	242870	396438	1.80	
P12	242913	396348	1.45	
P13	242960	396261	1.10	
P14	243016	396178	1.40	
P15	243060	396091	1.10	
P16	243111	396003	1.20	
P17	243173	395925	1.50	
P18	243235	395848	1.40	
P19	242956	396818	0.10	track to turbine position T4
P20	242994	396731	0.30	
P21	243069	396665	0.30	
P22	243149	396605	1.50	
P23	243208	396524	1.50	
P24	242892	396842	0.02	track/rock
P24a	242889	396850	0.50	
P24b	242886	396850	0.60	
P25	242822	396915	0.08	
P25a	242822	396913	1.10	
P25b	242815	396916	0.60	
P26	242754	396965	0.09	
P26a	242755	396966	1.30	
P26b	242754	396965	1.30	
GC10	242363	397261	0.01	track roadside to T5
GC11	242338	397169	0.01	track to T5
GC12	242269	397100	0.01	track to T5
GC13	242292	397007	0.01	track to T5
GC14	242329	396917	0.01	track to T5
GC15	242319	396695	0.01	track to T5
GC16	242736	396937	0.01	track to T5
GC17	242656	397219	0.85	track to T2
GC18	242656	397119	1.60	track to T2
GC19	242694	396966	1.50	track to T2
GC20	243174	397045	0.01	track to T4
GC21	243123	396959	0.01	track to T4
GC22	243057	396888	0.01	track to T4
GC23	242975	396831	0.01	track to T4
GC24	242884	396843	0.60	track to T4
GC25	242791	396808	0.70	track to T4
GC26	242697	396774	1.80	track to T4
GC27	242666	396701	2.10	track to T4
GC28	242706	396610	1.95	track to T4
GC29	242751	396521	0.25	track to T4
GC30	242848	396499	1.65	track to T4
GC31	242945	396473	1.40	track to T4
GC32	243044	396458	1.75	track to T4
GC33	243142	396443	1.40	track to T4
GC34	243229	396429	1.35	track to T4
GC35	242989	396840	0.01	spur to T3
GC36	242997	396731	0.65	spur to T3
GC37	242999	396696	0.55	spur to T3
GC38	242797	396509	0.10	spur to T7
GC39	242862	396432	2.00	spur to T7
GC40	242891	396398	0.90	spur to T7
GC41	243631	396826	0.40	track to T8
GC42	243614	396729	0.01	track to T8
GC43	243611	396636	0.01	track to T8

GC44	243603	396552	0.01	track to T8
GC45	243564	396460	0.05	track to T8
GC46	243528	396366	0.01	track to T8
GC47	243474	396284	0.01	track to T8
GC48	243421	396205	0.10	track to T8
GC49	243375	396123	0.10	track to T8
GC50	243297	396060	0.10	track to T8
GC51	243220	395997	0.10	track to T8
GC52	243187	395961	1.20	track to T8
GC53	243147	395965	0.80	spur to T8
GC54	243073	396050	1.00	spur to T8
GC55	243179	395922	1.40	spur to T9
GC56	243241	395825	1.65	spur to T9
Substation positions				
Ss1	243150	396900	0.30	
Ss2	243139	396918	0.50	
Ss3	243123	396936	0.20	
Ss4	243135	396945	0.40	
Ss5	243147	396945	0.60	
Construction compound				
Cc1	243176	396923	0.55	
Cc2	243211	396960	0.50	
Cc3	243193	396979	0.75	
Cc4	243171	397000	1.00	
Cc5	243147	396945	0.08	
Suppliers compound				
Sc1	243150	397018	1.10	
Sc2	243132	397039	0.85	
Sc3	243122	397038	1.05	
Sc4	243110	397020	0.60	
Sc5	243119	397014	0.40	
Sc6	243135	397009	0.40	
Other positions				
Z1	242314	397027	1.00	
Z2	242734	396955	0.50	
Z3	242738	396950	0.65	
Z4	242741	396955	0.70	
Z5	242987	396710	0.40	
Z6	243202	396498	0.50	floor of old turbary
Z7	242328	396694	2.00	
Z8	242327	396691	2.00	
Z9	242694	396609	2.00	
Z10	242873	396395	1.40	
Z11	243070	396035	0.80	
Z12	243224	395828	1.80	
Z13	242324	397103	1.72	
Z14	242363	396709	1.87	
Z15	242932	396730	1.25	
Z16	242832	396127	1.52	
Z17	243187	396242	1.35	
Z18	243164	395898	1.31	
Z19	243543	396364	0.20	
Z20	243469	396134	1.13	
Z21	243500	395400	2.36	
Z22	243700	395800	3.45	
Z23	243700	395600	1.85	
Z24	243700	395400	2.72	
Z25	243204	396495	0.50	former position of T4
Z26	242327	396693	2.00	former position of T5
Trial pits				
X1	242333	396898	1.37	
X3	242705	395699	1.90	
X4	242208	396233	2.05	

Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T1**	
Co-ords: X	242314	**Y**	397028	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	12/02/10	**Date**	09 February 2012	0189 looking northwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch adjacent	**3**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.15 m	Peat	**6**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 28 kPa 23 kPa 27 kPa	Use 23 kPa	**17**
Slope angle Slope regularity	6° uneven	Disturbed and incised	**12**
Geomorphology & site history:		Old turbary area nearby Access track adjacent	**11**
Sub-profile drainage pipes		No surface indications	**5**
Peatslide history		Major peatslide nearby	**19**
Potential peatslide severity		Low. Public road nearby	**12**
TOTAL SCORE			**98**

COMMENTS	
Surface vegetation: heather, grass, reeds and moss Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age Terrain Analysis: Category I	

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT	LOCATION	LANDMARK
Craignagapple wind farm	Co Tyrone, Northern Ireland	**T2**

Co-ords: X	242736	**Y**	396954	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	[redacted] / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	12/02/10	**Date**	09 February 2012	0200 looking northeast

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch adjacent	**3**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 0.65 m	Peat	**3**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 29 kPa 28 kPa 33 kPa	Use 28 kPa	**12**
Slope angle Slope regularity	7° uneven	Undulating and incised Access track adjacent	**15**
Geomorphology & site history:		Mid-slope of hillside Rough grazing	**9**
Sub-profile drainage pipes		Reedy patches nearby	**19**
Peatslide history		No evidence	**3**
Potential peatslide severity		Low. Public road nearby	**12**
TOTAL SCORE			**89**

COMMENTS

Surface vegetation: heather, grass, reeds and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T3**	
Co-ords: X	242986	**Y**	396707	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	12/02/10	**Date**	09 February 2012	0201 looking southwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch nearby	**3**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 0.40 m	Peat	**3**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 25 kPa 30 kPa 30 kPa	Use 25 kPa	**15**
Slope angle Slope regularity	9^{o} uneven	Undulating and disturbed	**25**
Geomorphology & site history:		Old turbary area nearby Rough grazing	**26**
Sub-profile drainage pipes		Reedy flush nearby	**18**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**5**
TOTAL SCORE			**112**

COMMENTS

Surface vegetation: heather, grass and moss with patches of reeds

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T4**	
Co-ords: X	243224	**Y**	396442	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	12 November 2012	1366 looking eastward

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch nearby	**3**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.10 m	Peat	**7**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 24 kPa 24 kPa 28 kPa	Use 24 kPa	**16**
Slope angle Slope regularity	6^{o} even	Gently undulating Disturbed and incised	**12**
Geomorphology & site history:		Reedy flush adjacent Rough grazing	**26**
Sub-profile drainage pipes		No surface indications	**4**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**4**
TOTAL SCORE			**89**

COMMENTS

Surface vegetation: heather, grass and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T5**	
Co-ords: X	242322	**Y**	396696	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	12/02/10	**Date**	09 February 2012	2179 looking northwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry	**3**
Rockhead / Subsoil		Boulder clay Exposed nearby	**8**
Peat profile Peat depth	Simple 1.30 m	Peat	**10**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 35 kPa 42 kPa 42 kPa	Use 35 kPa	**4**
Slope angle Slope regularity	6^{o} uneven	Gently undulating & incised Access road nearby	**12**
Geomorphology & site history:		Upper hillside Rough grazing	**10**
Sub-profile drainage pipes		No surface indications	**5**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**3**
TOTAL SCORE			**64**

COMMENTS

Surface vegetation: heather, grass and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T6**	
Co-ords: X	242693	**Y**	396609	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	12/02/10	**Date**	09 February 2012	0199 looking northwest

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Numerous pools	**23**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.80 m	Peat	**16**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 22 kPa 23 kPa 25 kPa	Use 22 kPa	**18**
Slope angle Slope regularity	4^{o} even	Gently undulating	**8**
Geomorphology & site history:		Platform area on mid-hillside Rough grazing	**5**
Sub-profile drainage pipes		No surface indications	**4**
Peatslide history		No evidence	**3**
Potential peatslide severity		Low	**3**
TOTAL SCORE			**93**

COMMENTS

Surface vegetation: grass and moss with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T7**	
Co-ords: X	242874	**Y**	396395	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	12/02/10	**Date**	09 February 2012	0198 looking northeast

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch nearby	**4**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.10 m	Peat	**7**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 30 kPa 28 kPa 25 kPa	Use 25 kPa	**15**
Slope angle Slope regularity	6^{o} uneven	Undulating	**12**
Geomorphology & site history:		Upper hillside Rough grazing	**6**
Sub-profile drainage pipes		Reedy flush nearby	**17**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**3**
TOTAL SCORE			**81**

COMMENTS

Surface vegetation: heather, grass and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T8**	
Co-ords: X	243071	**Y**	396033	**Ref**	Turbine position

GENERAL			DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE		**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey		N/A	**Date**	09 February 2012	0197 looking westwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Occasional pools	**12**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 0.55 m	Peat	**4**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 31 kPa 30 kPa 31 kPa	Use 30 kPa	**9**
Slope angle Slope regularity	5^{o} even	Gently undulating Hummocky ground	**10**
Geomorphology & site history:		Platform area upper hillside Rough grazing	**4**
Sub-profile drainage pipes		Reedy flush nearby	**26**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**3**
TOTAL SCORE			**85**

COMMENTS

Surface vegetation: grass, reeds and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T9**	
Co-ords: X	243224	**Y**	395828	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	N/A	**Date**	09 February 2012	0195 looking northwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Numerous pools Drainage ditch nearby	**32**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.60 m	Peat	**14**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 28 kPa 24 kPa 22 kPa	Use 22 kPa	**18**
Slope angle Slope regularity	7^{o} even	Gently undulating & incised Upper hillside	**15**
Geomorphology & site history:		Disturbed ground. Sausage turbary area. Rough grazing	**54**
Sub-profile drainage pipes		No surface indications	**3**
Peatslide history		No evidence	**2**
Potential peatslide severity		Low	**4**
TOTAL SCORE			**155**

COMMENTS

Surface vegetation: grass and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

Managing Geotechnical Risk: Geotechnical Risk Register for Craignagapple Wind Farm (revised 28 November 2012)

Probability (P)		
Very likely	1 in 10	5
Likely	1 in 100	4
Probable	1 in 1000	3
Unlikely	1 in 10000	2
Negligible	1 in 100000	1

Impact (I)		Time	Cost
Very High	5	>10 weeks on completion	>20%
High	4	> 1 week on completion	5-20%
Medium	3	>4 weeks: < 1 week on completion	2-5%
Low	2	1-4 weeks: none on completion	0.5-2%
Very Low	1	< 1 week to activity: none on completion	<0.5%

Risk rating (R) = Probability (P) x Impact (I)

		I	I	I	I	I
		5	4	3	2	1
P	5	25	20	15	10	5
P	4	20	16	12	8	4
P	3	15	12	9	6	3
P	2	10	8	6	4	2
P	1	5	4	3	2	1

Risk ratings	
1 to 4	***Trivial***, but no action required
5 to 8	***Tolerable***, but must consider solutions or improvements
9 to 12	***Substantial*** and work must not start until risk has been reduced
13+	***Intolerable*** and work must not start until risk has been reduced

Geotechnical Risk Assessment

Hazard / Risk	Cause	Construction Stage			Consequences	Mitigation	Following Mitigation Stage		
		Probability	Impact	Risk Rating			Probability	Impact	Risk Rating
Peat slide Event	High rainfall and rainstorms	4	3	12	Instability	Due consideration given to the prevailing ground and weather conditions when scheduling site works. Monitoring of rainfall and weather forecasts. Contingency plans for wet weather working. Robust drainage plans.	2	2	4
Peat slide Event	Flooding	1	2	2	Localised instability	Due consideration given to the prevailing ground and weather conditions when scheduling site works. Use of granular fill and drainage ditches. Monitor or rainfall and weather forecasts. Contingency plans for wet weather working.	1	1	1
Peat slide Event	Concentrated loads placed at top of slope or on marginally stable ground or at reedy flush crossings	2	5	10	Rapid ground movements	Avoidance during geotechnical design stage. Storage site selection by geotechnical engineer. Detailed site investigations of infrastructure locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works. Monitoring of excavated materials	1	2	2
Peatslide Event	Blockage or crossing of acid flushes, in particular in the vicinity of turbine positions T4 & T8	3	3	9	Instability	Addressed in drainage plans Geotechnical supervision of earthworks operations. Due consideration given to the prevailing ground and weather conditions when scheduling site works. Detailed construction designs will be produced with input from a geotechnical engineer. A programme of geotechnical inspections will be implemented during excavation works.	1	2	2

Hazard / Risk	Cause	Construction Stage			Consequences	Mitigation	Following Mitigation Stage		
		Probability	Impact	Risk Rating			Probability	Impact	Risk Rating
Peat slide Event	Uncontrolled water flows	2	3	6	Rapid ground movements	Addressed in drainage plans Geotechnical supervision of dewatering operations. Due consideration given to the prevailing ground and weather conditions when scheduling site works.	1	2	2
Peat slide Event	Unstable excavations	4	2	8	Localised instability	Appropriate geotechnical design Routine geotechnical inspection. Contingency plans for slope stabilisation measures.	2	1	3
Peat slide Event	Removal of toe support to slopes	3	3	9	Slow ground movements	Avoidance action during geotechnical design stage. Routine geotechnical inspection. Contingency plans for slope stabilisation measures.	2	2	4
Peat slide Event	Steep slopes	3	4	12	Instability	Appropriate geotechnical design. Routine geotechnical inspection. Avoidance action during layout design stage.	1	3	3
Peat slide Event	Surface water erosion	3	1	3	Localised instability	Establish vegetation cover on slopes. Suitable temporary surface water management. Addressed in drainage plans.	2	1	2
Peat slide Event	Subterranean pipes	2	2	4	Localised instability	Blockage prevention using free draining fill. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works.	2	1	2
Peat slide Event	Pockets of soft wet ground for example in the vicinity of reedy flushes	5	2	10	Localised instability	Due consideration given to the prevailing ground and weather conditions when scheduling site works. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works. Programme and cost contingency.	3	1	3
Peat slide Event	Construction of cable trenches in road verge	2	3	6	Instability	Appropriate geotechnical design. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced.	1	1	1

Hazard / Risk	Cause	Construction Stage			Consequences	Mitigation	Following Mitigation Stage		
		Probability	Impact	Risk Rating			Probability	Impact	Risk Rating
						Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works. Geotechnical monitoring of verges post-construction.			
Peat slide Event	Tear in reinforcing geotextile fabric	2	3	6	Instability / Local settlements	Addressed in material specification. Addressed in construction supervision.	1	1	1
Peat slide Event	Mobilised temporary storage mounds	4	4	16	Localised instability	Storage site selection by geotechnical engineer. Routine maintenance of peat storage mounds.	2	2	4
Ultimate limit state failure (bearing capacity)	Construction loading and poor ground conditions	3	2	6	Bearing capacity failure / Ground deformation / Need to rebuild	Appropriate geotechnical design. Excavation of shallow peat along tracks. Expose competent formation at turbine sites. Adopt floating road construction over deep peat, if appropriate.	1	1	1
Serviceability limit state failure (settlement)	Construction loading and poor ground conditions	5	2	10	Excessive settlement / Construction delayed / Additional fill required	Ground improved with addition of rock fill. Adopt geotechnical monitoring of tracks. Contingency to re-level tracks on completion. Quantities contingency.	3	1	3
Unexpected Ground Conditions	Ground conditions differ from those indicted in the project ground investigations	3	3	9	Construction delayed / Design review required	Monitor works in progress. Use experienced staff on site. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works. Programme and cost contingencies.	1	1	1
Creep, long term settlement of tracks	Poor and variable foundation soils	5	1	5	Ongoing settlement	Contingency for routine maintenance.	3	1	3
Slope Instability	Use of unsuitable fill materials	2	3	6	Instability	Addressed in material specification. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. A programme of geotechnical inspections will be implemented during excavation works.	1	1	1

Hazard / Risk	Cause	Construction Stage			Consequences	Mitigation	Following Mitigation Stage		
		Probability	Impact	Risk Rating			Probability	Impact	Risk Rating
Erosion	Site clearance operations	4	3	12	Damage to root mat	Use low pressure construction plant. Preserve root mat wherever possible. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works.	1	1	1
Variation from Design Assumptions	Unexpected ground conditions	2	3	6	Settlement and / or slope failure	Appropriate geotechnical design. Geotechnical monitoring during construction. Programme contingency.	1	1	1
Uncertainty of Construction Technique	Variable foundation soils	2	3	6	Delay	Programme contingency. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works.	2	1	2
Uncertainty at transition zones and stream crossing points	Variable ground conditions	3	3	9	Variation in quantities and programme	Programme contingency Cost contingency.	2	2	4
Uncertain duration and degree of primary consolidation	Variable ground conditions	2	3	6	Delay / Additional fill requirement	Avoidance of areas of deep peat. Programme contingency. Cost contingency.	2	2	4
Design changes during construction	Change in loading, bearing and settlement characteristics	3	2	6	Various but could include slope failure, bearing failure or settlement	Design changes to be reviewed by geotechnical specialist.	1	1	1

Notes: 1. A 'Hazard' is a condition or physical situation with a potential for an undesirable event.
2. A 'Risk' is an uncertain event or set of circumstances that should it occur would have an effect on achieving the project objectives
3. Mitigation Measures include:

- Avoid the risk – by eliminating the uncertainty or using an alternative approach.
- Transfer the risk – by transferring the liability of the risk to another party.
- Mitigate the risk – by reducing the risk to an acceptable level by making it less likely that the risk event will occur.
- Accept and manage the risk – by assuming the risk as reasonable given the cost or effect on time or quality and even life.

Prepared by: Dr Douglas Nichol, Geotechnical Engineer, 28 November 2012

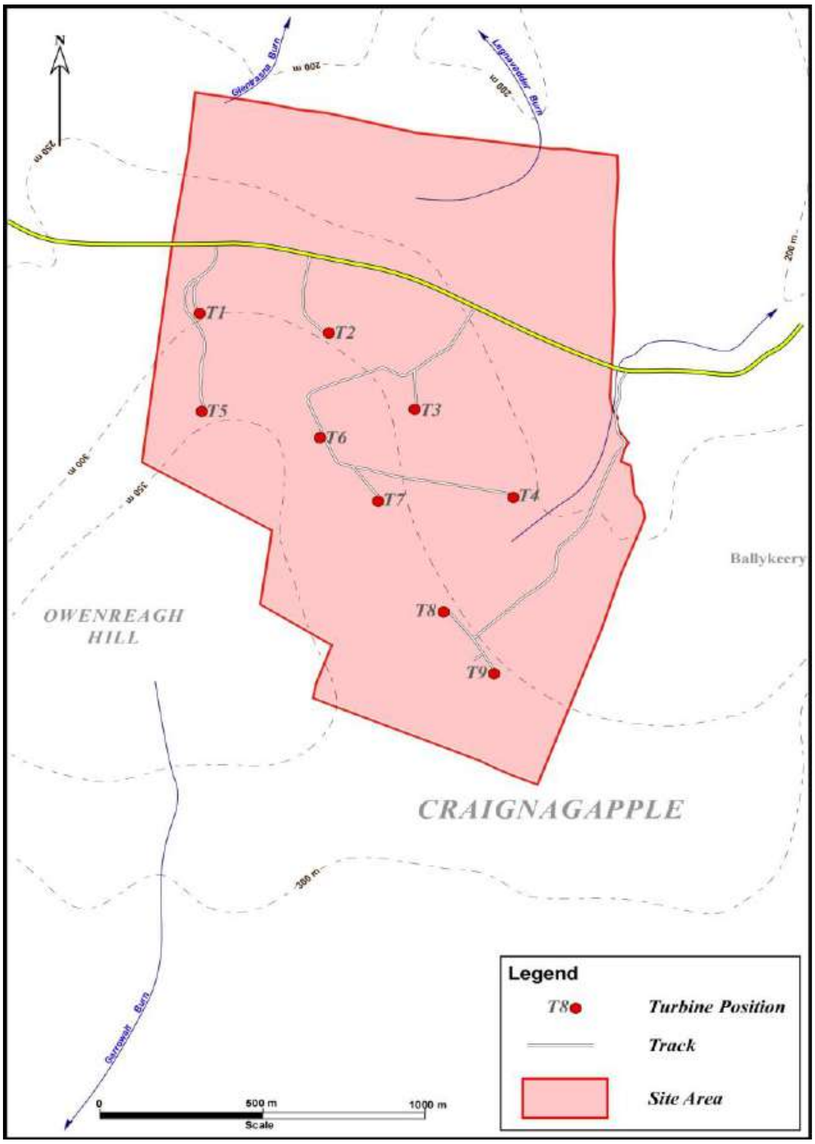
TECHNICAL NOTE No 4

Craignagapple wind farm project: review of peatslide risk assessment for final layout – July 2014

Introduction

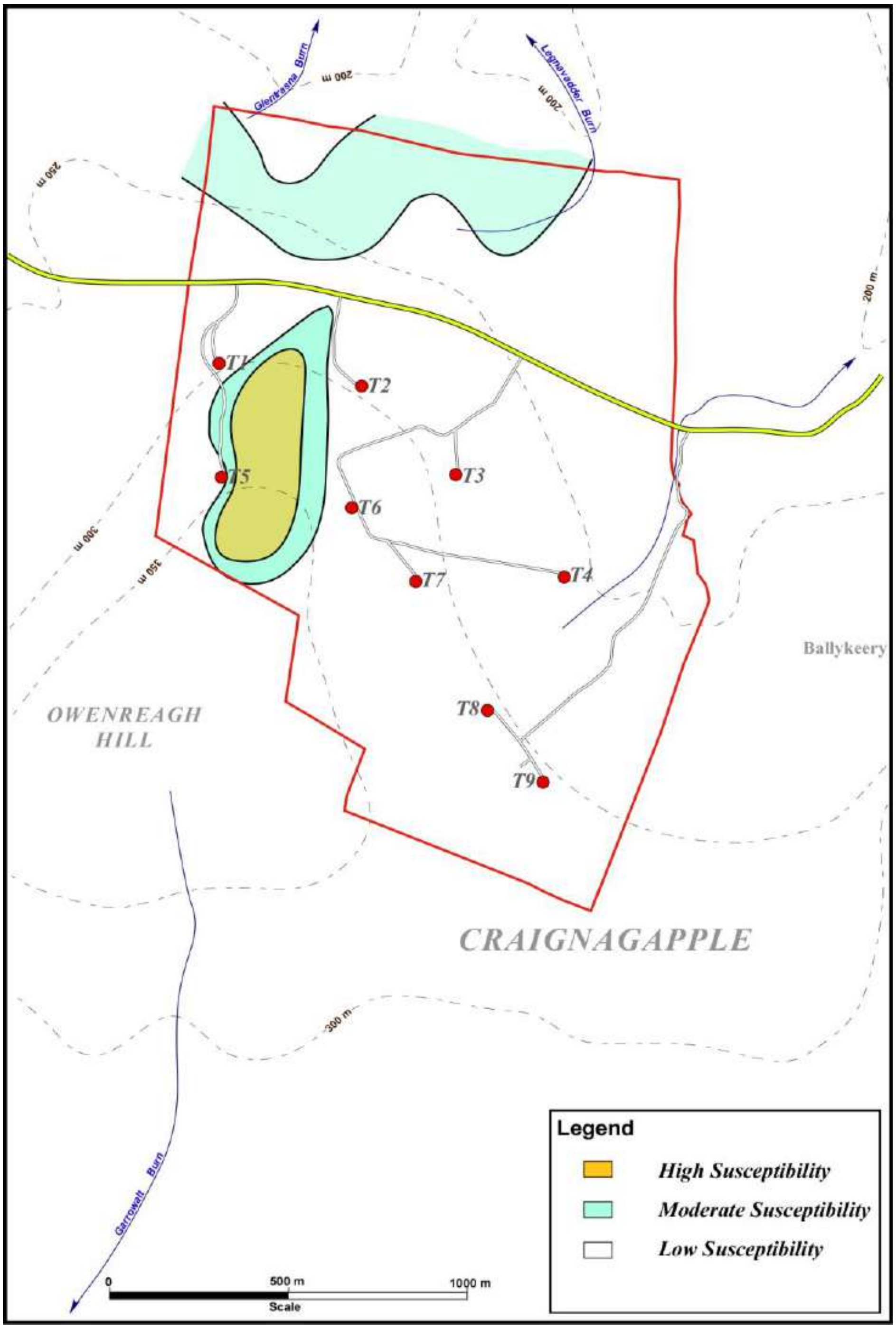
Further to report entitled "Craignagapple Wind Farm Peatslide Hazard and Risk Assessment" dated February 2012, the writer revisited the proposed development site at Craignagapple on the 3rd July 2014 to carry out a geotechnical re-assessment in respect of the risk of peatslide events for the proposed final layout of turbines and infrastructure and consider the mitigation measures required during the construction phase. The proposed final layout is illustrated in Figure 1.

Figure 1. Craignagapple wind farm project - proposed final layout



The original Peatslide Hazard and Risk Assessment reports prepared by SKM Enviros (2012) provide an assessment of the peat instability issues at the proposed wind farm development site at Craignagapple. The methods of investigation and format of reporting were undertaken with reference to the approaches outlined by the "Peat Landslide Hazard and Risk Assessments – Best Practice Guide for Proposed Electricity Generation Developments" (Scottish Executive, 2006). In accordance with the Best Practice Guide, a constraints based approach was adopted for the original PHRS survey and so the proposed final layout incorporates avoidance of higher risk localities and is designed to minimize peatslide occurrence and reflect an awareness of instability indicators across the site (see the peatslide zonation map presented in Figure 2).

Figure 2. Craignagapple wind farm project - peatslide zonation map

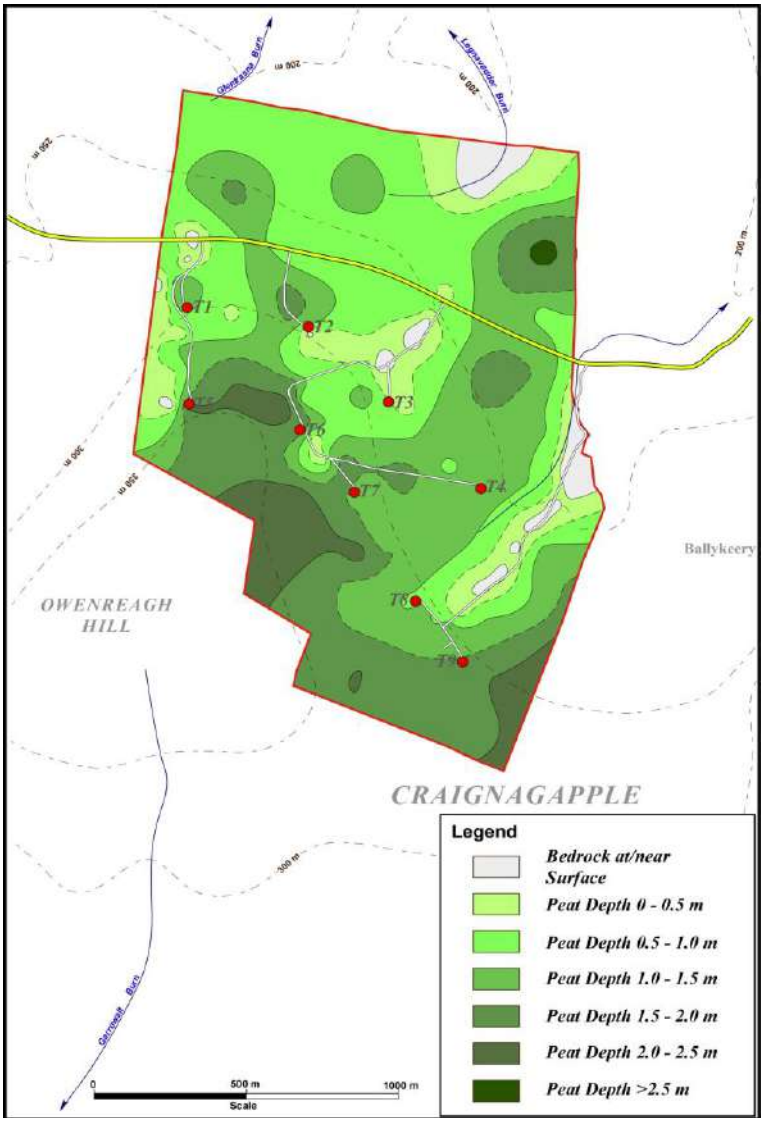


The majority of the site is characterised as low susceptibility with regard to peatslides, consistent with the peat being relatively thin and slope gradients being low. However, a localised area of higher susceptibility exists in the central western portion of the development site where a noteworthy ancient peatslide locality needs to be avoided during the construction phase to prevent re-activation of ground instability. The proposed final layout achieves the required avoidance action with adequate set back distances. The access track between turbines positions T1 and T5 encroaches on an area designated as moderate susceptibility to peatslide activity but this route is actually the existing main access track to the existing wind farm situated on the upper hillside and so no actual problem exists.

Supplementary investigations

In response to a submission by Geological Survey of Northern Ireland (2011), a supplementary probing survey was carried out by Ground-Check to provide additional measurements of peat depth across the proposed development site at Craignagapple with closer spaced probings at intermediate sampling stations. The findings of the Ground-Check investigations were combined with the results of previous probe surveys and the consolidated findings are presented in Attachment A. The resulting 195 peat depth values were then used to create a revised peat depth contour map to define the patterns of variation in peat depth across the proposed development site and particularly at the proposed turbine positions and along access tracks (see the peat depth contour map presented in Figure 3).

Figure 3. Craignagapple wind farm project - peat depth contour map



Turbine positions

The reviewed and revised Peatslide Hazard Rating System (PHRS) data sheets for the 9 turbine positions are presented in Attachment B and the results summarised in Table 1.

Table 1. PHRS scores for turbine positions at Craignagapple

Turbine position	PHRS score
T1	98
T2	89
T3	112
T4	97
T5	74
T6	93
T7	91
T8	88
T9	155

The PHRS scores for turbine positions range from 74 to 155 and average 99 which compares well with an average value of 90 previously calculated for the entire site. These results are also in general agreement with the findings of previous surveys. All of the PHRS scores fall within the low range for peatslide risk.

PHRS scores are intended as a means of comparing different sites and as a tool for prioritising mitigation works. The PHRS system itself does not attach any particular significance to the total score for each site and leaves it to the project engineers to draw their own conclusions based on an understanding of the local conditions that apply. However, as a rule of thumb, sites with an average rating of less than 200 are assigned a low priority while those with an average rating of more than 400 are identified for urgent attention.

A summary of risk estimations for turbine positions together with appropriate engineering responses are presented in Table 2.

In relation to Risk level 3 (Low) for turbine position T9, provision is made in the Geotechnical Risk Register (see Attachment C) for geotechnical supervision of earthworks here to provide a rapid response to any unforeseen ground conditions resulting from former peat extraction activities.

Access track routes

The network of track routes involves a total of four access positions from Glenmornan Road (GM). The routes avoid certain problematic areas of peatland and as far as possible make use of existing tracks in order to minimise earthworks quantities. GM1 leading to turbine positions T1 and T5 follows the existing main access track, GM2 leading to T2 is a new route utilising an existing access point, GM3 leading to T3, T6, T7 and T4 involves both old and new segments of track and GM4 leading to T8 and T9 is predominantly along an existing track with new segments for the final approaches to the turbine positions.

Each element of the access track routes was individually assessed for peatslide susceptibility by using PHRS scores of nearby grid positions and turbine positions in conjunction with walkover surveys. A summary of risk estimations for access track routes together with appropriate engineering responses are presented in Table 3.

In relation to Risk level 3 (Low) for the segment of track between turbine positions T7-T4, provision is made in the Geotechnical Risk Register (see Attachment C) for geotechnical supervision of earthworks here to provide supplementary drainage measures if necessary during excavation works as they progress in a down-slope direction on the hillside.

Table 2. Peatslide risk estimation – engineering response for turbine positions

Risk class	Hazard	Engineering response	Turbine position
Risk level 1	Negligible	Do nothing. Acceptable	T1, T2, T3, T5, T6 & T7
Risk level 2	Very low	Monitor and review. Manage by normal slope maintenance procedures	T4, T4(ALT) & T8
Risk level 3	Low	Further investigation of the peatslide hazard may possibly be required. Manage by normal slope maintenance procedures	T9
Risk level 4	Low-Moderate	Peatslide stabilisation works may possibly be required	-
Risk level 5	Moderate	Peatslide stabilisation works may be required, but further studies required to refine judgements	-
Risk level 6	High	Peatslide stabilisation works likely to be required. Further investigations will be required, including comprehensive assessment of risks	-
Risk level 7	Very high	Large-scale mitigation works will be required. Urgent requirements for further investigations, including comprehensive assessment of risks	-

Table 3. Peatslide risk estimation – engineering response for access track routes

Risk class	Hazard	Engineering response	Turbine position
Risk level 1	Negligible	Do nothing. Acceptable	GR1-T1; T1-T5; GR2-T2; GR3-T3; T3-T6; GR4-T8/T9
Risk level 2	Very low	Monitor and review. Manage by normal slope maintenance procedures	T6-T7
Risk level 3	Low	Further investigation of the peatslide hazard may possibly be required. Manage by normal slope maintenance procedures	T7-T4
Risk level 4	Low-Moderate	Peatslide stabilisation works may possibly be required	-
Risk level 5	Moderate	Peatslide stabilisation works may be required, but further studies required to refine judgements	-
Risk level 6	High	Peatslide stabilisation works likely to be required. Further investigations will be required, including comprehensive assessment of risks	-
Risk level 7	Very high	Large-scale mitigation works will be required. Urgent requirements for further investigations, including comprehensive assessment of risks	-

Conclusions

A PHRS study of the proposed final layout for the Craignagapple wind farm project has confirmed the proposed final layout of turbines and associated infrastructure aligns with the original hazard assessment and is acceptable in relation to peatslide risk.

Recommendations for peatslide risk management are made with regard to the detailed design and construction phase of the project to eliminate or minimise the risk of peatslides occurring and specific recommendations are presented in the latest version of the Geotechnical Risk Register for the project.

Overall, based on the findings of the PHRS scores, the level of potential damage or degree of loss due to instability of peat within the development envelope appears low to negligible.

Dr Douglas Nichol
Geotechnical Engineer DN/Craignagapple 4: 05/08/14

References

Geological Survey of Northern Ireland, 2011. Consultation report on proposed development of wind farm comprising 9 turbines and associated works at Craignagapple, Co. Tyrone BT82 0SR. GSNI Ref: E1-11-084.

Scottish Executive, 2006. Peat landslide hazard and risk assessments – best practice guide for proposed electricity generation developments. Scottish Executive, Edinburgh.

SKM Enviros, 2012. Craignagapple Wind Farm Peatslide Hazard and Risk Assessment. Volume 1 Factual Report and Volume 2 Interpretive Report.

Attachment A: Craignagapple consolidated probe data
Attachment B: Field data and PHRS scoring sheets for turbine positions T1-T9 inclusive
Attachment C: Craignagapple Geotechnical Risk Register 04 July 2014

Attachment A. Craignagapple consolidated field probe data

ID Ref.	Grid Ref. Easting	Grid Ref. Northing	Peat Depth (m)	Notes
Grid positions				
A5	242225	397000	0.61	Boundary fence adjacent
A6	242198	396800	0.75	Boundary fence adjacent
A7	242173	396600	0.70	Boundary fence adjacent
B2	242300	397600	0.66	
B3	242300	397400	0.92	
B4	242300	397200	0.97	
B5	242300	397000	0.97	On access track
B6	242300	396800	0.29	
B7	242300	396600	1.17	
C2	242500	397600	0.74	
C3	242500	397400	1.80	
C4	242500	397200	0.91	
C5	242500	397000	0.27	
C6	242500	396800	1.95	
C7	242500	396600	1.74	
D2	242700	397600	0.42	
D3	242700	397400	0.74	
D4	242700	397200	0.38	
D5	242700	397000	1.74	
D6	242700	396800	0.66	
D7	242700	396600	1.86	
D8	242700	396400	2.27	
D9	242700	396200	2.21	
E2	242900	397600	0.90	
E3	242900	397400	1.39	Stream nearby
E4	242900	397200	0.44	
E5	242900	397000	0.85	
E6	242900	396800	0.70	
E7	242900	396600	0.83	
E8	242900	396400	1.02	
E9	242900	396200	2.30	
E10	242900	396000	1.24	
E11	242900	395800	2.02	
F3	243100	397400	0.55	
F4	243100	397200	0.91	
F5	243100	397000	0.64	
F6	243100	396800	0.61	
F7	243100	396600	0.97	old turbary area nearby
F8	243100	396400	1.37	
F9	243100	396200	1.59	
F10	243100	396000	1.45	
F11	243100	395800	1.60	
G3	243300	397400	0.05	
G4	243300	397200	1.15	
G5	243300	397000	1.19	
G6	243300	396800	1.77	
G7	243300	396600	1.24	
G8	243300	396400	1.51	
G9	243300	396200	0.79	
G10	243300	396000	0.87	old turbary area nearby
G11	243300	395800	1.96	
G12	243300	395600	1.82	
H3	243500	397400	0.47	
H4	243500	397200	3.05	
H5	243500	397000	0.84	
H6	243500	396800	1.51	
H7	243500	396600	1.13	
H8	243500	396400	0.98	
H9	243500	396200	1.27	
H10	243500	396000	1.25	
H11	243500	395800	2.31	intermittent stream nearby
H12	243500	395600	2.39	wet ground
Turbine positions				
T1	242314	397028	1.15	
T2	242736	396954	1.45	
T3	242986	396707	0.75	
T4	243224	396495	1.10	
T5	242322	396696	1.30	

T6	242693	396609	1.80	
T7	242874	396395	1.10	
T8	243071	396033	0.55	
T9	243224	395828	1.60	
Track positions				
P1	243174	397045	0.05	track to turbine position T9
P2	243150	397001	0.06	
P3	243097	396916	0.08	
P4	243015	396859	0.05	
P4a	243032	396869	0.90	
P5	242928	396826	0.90	
P6	242837	396826	0.07	
P6a	242837	396821	0.80	
P7	242742	396793	0.95	
P8	242727	396700	0.05	
P8a	242726	396699	1.30	
P8b	242758	396607	1.50	
P9	242758	396605	0.04	rock
P10	242812	396522	1.50	
P11	242870	396438	1.80	
P12	242913	396348	1.45	
P13	242960	396261	1.10	
P14	243016	396178	1.40	
P15	243060	396091	1.10	
P16	243111	396003	1.20	
P17	243173	395925	1.50	
P18	243235	395848	1.40	
P19	242956	396818	0.10	track to turbine position T4
P20	242994	396731	0.30	
P21	243069	396665	0.30	
P22	243149	396605	1.50	
P23	243208	396524	1.50	
P24	242892	396842	0.02	track/rock
P24a	242889	396850	0.50	
P24b	242886	396850	0.60	
P25	242822	396915	0.08	
P25a	242822	396913	1.10	
P25b	242815	396916	0.60	
P26	242754	396965	0.09	
P26a	242755	396966	1.30	
P26b	242754	396965	1.30	
GC10	242363	397261	0.01	track roadside to T5
GC11	242338	397169	0.01	track to T5
GC12	242269	397100	0.01	track to T5
GC13	242292	397007	0.01	track to T5
GC14	242329	396917	0.01	track to T5
GC15	242319	396695	0.01	track to T5
GC16	242736	396937	0.01	track to T5
GC17	242656	397219	0.85	track to T2
GC18	242656	397119	1.60	track to T2
GC19	242694	396966	1.50	track to T2
GC20	243174	397045	0.01	track to T4
GC21	243123	396959	0.01	track to T4
GC22	243057	396888	0.01	track to T4
GC23	242975	396831	0.01	track to T4
GC24	242884	396843	0.60	track to T4
GC25	242791	396808	0.70	track to T4
GC26	242697	396774	1.80	track to T4
GC27	242666	396701	2.10	track to T4
GC28	242706	396610	1.95	track to T4
GC29	242751	396521	0.25	track to T4
GC30	242848	396499	1.65	track to T4
GC31	242945	396473	1.40	track to T4
GC32	243044	396458	1.75	track to T4
GC33	243142	396443	1.40	track to T4
GC34	243229	396429	1.35	track to T4
GC35	242989	396840	0.01	spur to T3
GC36	242997	396731	0.65	spur to T3
GC37	242999	396696	0.55	spur to T3
GC38	242797	396509	0.10	spur to T7
GC39	242862	396432	2.00	spur to T7
GC40	242891	396398	0.90	spur to T7
GC41	243631	396826	0.40	track to T8
GC42	243614	396729	0.01	track to T8
GC43	243611	396636	0.01	track to T8

GC44	243603	396552	0.01	track to T8
GC45	243564	396460	0.05	track to T8
GC46	243528	396366	0.01	track to T8
GC47	243474	396284	0.01	track to T8
GC48	243421	396205	0.10	track to T8
GC49	243375	396123	0.10	track to T8
GC50	243297	396060	0.10	track to T8
GC51	243220	395997	0.10	track to T8
GC52	243187	395961	1.20	track to T8
GC53	243147	395965	0.80	spur to T8
GC54	243073	396050	1.00	spur to T8
GC55	243179	395922	1.40	spur to T9
GC56	243241	395825	1.65	spur to T9
Substation				
positions				
Ss1	243150	396900	0.30	
Ss2	243139	396918	0.50	
Ss3	243123	396936	0.20	
Ss4	243135	396945	0.40	
Ss5	243147	396945	0.60	
Construction				
compound				
Cc1	243176	396923	0.55	
Cc2	243211	396960	0.50	
Cc3	243193	396979	0.75	
Cc4	243171	397000	1.00	
Cc5	243147	396945	0.08	
Suppliers				
compound				
Sc1	243150	397018	1.10	
Sc2	243132	397039	0.85	
Sc3	243122	397038	1.05	
Sc4	243110	397020	0.60	
Sc5	243119	397014	0.40	
Sc6	243135	397009	0.40	
Other				
positions				
Z1	242314	397027	1.00	
Z2	242734	396955	0.50	
Z3	242738	396950	0.65	
Z4	242741	396955	0.70	
Z5	242987	396710	0.40	
Z6	243202	396498	0.50	floor of old turbary
Z7	242328	396694	2.00	
Z8	242327	396691	2.00	
Z9	242694	396609	2.00	
Z10	242873	396395	1.40	
Z11	243070	396035	0.80	
Z12	243224	395828	1.80	
Z13	242324	397103	1.72	
Z14	242363	396709	1.87	
Z15	242932	396730	1.25	
Z16	242832	396127	1.52	
Z17	243187	396242	1.35	
Z18	243164	395898	1.31	
Z19	243543	396364	0.20	
Z20	243469	396134	1.13	
Z21	243500	395400	2.36	
Z22	243700	395800	3.45	
Z23	243700	395600	1.85	
Z24	243700	395400	2.72	
Z25	243204	396495	0.50	former position of T4
Z26	242327	396693	2.00	former position of T5
Trial				
pits				
X1	242333	396898	1.37	
X3	242705	395699	1.90	
X4	242208	396233	2.05	

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T1**	
Co-ords: X	242314	**Y**	397028	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	03 July 2014	2744 looking northwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch adjacent	**3**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.15 m	Peat	**6**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 28 kPa 23 kPa 27 kPa	Use 23 kPa	**17**
Slope angle Slope regularity	6^o uneven	Disturbed and incised	**12**
Geomorphology & site history:		Old turbary area nearby Access track adjacent	**11**
Sub-profile drainage pipes		No surface indications	**5**
Peatslide history		Major peatslide nearby	**19**
Potential peatslide severity		Low. Public road nearby	**12**
TOTAL SCORE			**98**

COMMENTS

Surface vegetation: heather, grass, reeds and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T2**	
Co-ords: X	242718	**Y**	396963	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	03 July 2014	2751 looking northwest

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch nearby	**3**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 0.65 m	Peat	**3**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 29 kPa 28 kPa 33 kPa	Use 28 kPa	**12**
Slope angle Slope regularity	7^{o} uneven	Undulating and incised	**15**
Geomorphology & site history:		Mid-slope of hillside Rough grazing	**9**
Sub-profile drainage pipes		Reedy patches nearby	**19**
Peatslide history		No evidence	**3**
Potential peatslide severity		Low. Public road nearby	**12**
TOTAL SCORE			**89**

COMMENTS

Surface vegetation: heather, grass, reeds and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T3**	
Co-ords: X	242986	**Y**	396707	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	[redacted] / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	09 February 2012	2752 looking eastwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch adjacent	**3**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 0.40 m	Peat	**3**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 25 kPa 30 kPa 30 kPa	Use 25 kPa	**15**
Slope angle Slope regularity	9^{o} uneven	Undulating and disturbed	**25**
Geomorphology & site history:		Old turbary area nearby Rough grazing	**26**
Sub-profile drainage pipes		Reedy flush nearby	**18**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**5**
TOTAL SCORE			**112**

COMMENTS

Surface vegetation: heather, grass and moss with patches of reeds

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T4**	
Co-ords: X	243299	**Y**	396409	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	12/11/12	**Date**	03 July 2014	2756 looking eastward

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry	**3**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 0.96 m	Clayey peat	**5**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 31 kPa 35 kPa 39 kPa	Use 31 kPa	**8**
Slope angle Slope regularity	5^o uneven	Gently undulating Disturbed and incised	**10**
Geomorphology & site history:		Reedy flush adjacent Rough grazing	**24**
Sub-profile drainage pipes		Reedy flush nearby	**26**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**4**
TOTAL SCORE			**97**

COMMENTS

Surface vegetation: heather, grass reeds and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SINCLAIR KNIGHT MERZ
SKM ENVIROS

Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T5**	
Co-ords: X	242323	**Y**	396696	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	03 July 2014	2745 looking southwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry	**3**
Rockhead / Subsoil		Boulder clay Exposed nearby	**8**
Peat profile Peat depth	Simple 1.46 m	Peat	**11**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 35 kPa 42 kPa 42 kPa	Use 35 kPa	**4**
Slope angle Slope regularity	8^{o} uneven	Gently undulating & incised Access road nearby	**21**
Geomorphology & site history:		Upper hillside Rough grazing	**10**
Sub-profile drainage pipes		No surface indications	**5**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**3**
TOTAL SCORE			**74**

COMMENTS

Surface vegetation: heather, grass and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SINCLAIR KNIGHT MERZ SKM ENVIROS

Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T6**	
Co-ords: X	242693	**Y**	396609	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	03 July 2014	2753 looking northeast

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Numerous pools	**23**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.80 m	Peat	**16**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 22 kPa 23 kPa 25 kPa	Use 22 kPa	**18**
Slope angle Slope regularity	4^{o} even	Gently undulating	**8**
Geomorphology & site history:		Platform area on mid-hillside Rough grazing	**5**
Sub-profile drainage pipes		No surface indications	**4**
Peatslide history		No evidence	**3**
Potential peatslide severity		Low	**3**
TOTAL SCORE			**93**

COMMENTS

Surface vegetation: grass and moss with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T7**	
Co-ords: X	242874	**Y**	396395	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	03 July 2014	2754 looking northeast

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	North facing slope	**5**
Presence of water on slope		Dry Drainage ditch nearby	**4**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.10 m	Peat	**7**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 30 kPa 28 kPa 25 kPa	Use 25 kPa	**15**
Slope angle Slope regularity	6^{o} uneven	Undulating	**12**
Geomorphology & site history:		Upper hillside Rough grazing	**6**
Sub-profile drainage pipes		Reedy flush nearby	**27**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**3**
TOTAL SCORE			**91**

COMMENTS

Surface vegetation: heather, grass, reeds and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T8**	
Co-ords: X	243071	**Y**	396033	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	03 July 2014	2757 looking northeastward

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	East facing slope	**5**
Presence of water on slope		Occasional pools	**12**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 0.65 m	Peat	**4**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 34 kPa 30 kPa 31 kPa	Use 30 kPa	**9**
Slope angle Slope regularity	5^{o} even	Gently undulating Hummocky ground	**10**
Geomorphology & site history:		Platform area upper hillside Rough grazing	**4**
Sub-profile drainage pipes		Reedy flush nearby	**29**
Peatslide history		No evidence	**4**
Potential peatslide severity		Low	**3**
TOTAL SCORE			**88**

COMMENTS

Surface vegetation: grass, reeds and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

SKM ENVIROS Field Data & PHRS Scoring Sheet

PROJECT		LOCATION		LANDMARK	
Craignagapple wind farm		Co Tyrone, Northern Ireland		**T9**	
Co-ords: X	243224	**Y**	395828	**Ref**	Turbine position

GENERAL		DATE & PERSONNEL		PHOTOGRAPHS
Survey	NEW / UPDATE	**Rated by:**	Douglas Nichol	**Photo Reference No**
Date of last survey	09/02/12	**Date**	03 July 2014	2758 looking westwards

CATEGORY		REMARKS	CATEGORY SCORE
Rainfall & climate	1100mm	Northeast facing slope	**5**
Presence of water on slope		Numerous pools Drainage ditch nearby	**32**
Rockhead / Subsoil		Boulder clay	**8**
Peat profile Peat depth	Simple 1.60 m	Peat	**14**
Peat strength estimate Reading No 1 Reading No 2 Reading No 3	 28 kPa 24 kPa 22 kPa	Use 22 kPa	**18**
Slope angle Slope regularity	7^{o} even	Gently undulating & incised Upper hillside	**15**
Geomorphology & site history:		Disturbed ground. Sausage turbary area. Rough grazing	**54**
Sub-profile drainage pipes		No surface indications	**3**
Peatslide history		No evidence	**2**
Potential peatslide severity		Low	**4**
TOTAL SCORE			**155**

COMMENTS

Surface vegetation: grass and moss

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup of Neoproterozoic age

Terrain Analysis: Category I

Managing Geotechnical Risk: Geotechnical Risk Register for Craignagapple Wind Farm (revised 05 July 2014)

Probability (P)		
Very likely	1 in 10	5
Likely	1 in 100	4
Probable	1 in 1000	3
Unlikely	1 in 10000	2
Negligible	1 in 100000	1

Impact (I)		Time	Cost
Very High	5	>10 weeks on completion	>20%
High	4	> 1 week on completion	5-20%
Medium	3	>4 weeks: < 1 week on completion	2-5%
Low	2	1-4 weeks: none on completion	0.5-2%
Very Low	1	< 1 week to activity: none on completion	<0.5%

Risk rating (R) = Probability (P) x Impact (I)

		I	I	I	I	I
		5	4	3	2	1
P	5	25	20	15	10	5
P	4	20	16	12	8	4
P	3	15	12	9	6	3
P	2	10	8	6	4	2
P	1	5	4	3	2	1

Risk ratings	
1 to 4	***Trivial***, but no action required
5 to 8	***Tolerable***, but must consider solutions or improvements
9 to 12	***Substantial*** and work must not start until risk has been reduced
13+	***Intolerable*** and work must not start until risk has been reduced

Geotechnical Risk Assessment

Hazard / Risk	Cause	Construction Stage			Consequences	Mitigation	Following Mitigation Stage		
		Probability	Impact	Risk Rating			Probability	Impact	Risk Rating
Peat slide Event	High rainfall and rainstorms	4	3	12	Instability	Due consideration given to the prevailing ground and weather conditions when scheduling site works. Monitoring of rainfall and weather forecasts. Contingency plans for wet weather working. Robust drainage plans.	2	2	4
Peat slide Event	Flooding	1	2	2	Localised instability	Due consideration given to the prevailing ground and weather conditions when scheduling site works. Use of granular fill and drainage ditches. Monitor or rainfall and weather forecasts. Contingency plans for wet weather working.	1	1	1
Peat slide Event	Concentrated loads placed at top of slope or on marginally stable ground or at reedy flush crossings	2	5	10	Rapid ground movements	Avoidance during geotechnical design stage. Storage site selection by geotechnical engineer. Detailed site investigations of infrastructure locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works. Monitoring of excavated materials	1	2	2
Peatslide Event	Blockage or crossing of acid flushes, in particular in the vicinity of turbine positions T4 & T8	3	3	9	Instability	Addressed in drainage plans Geotechnical supervision of earthworks operations. Due consideration given to the prevailing ground and weather conditions when scheduling site works. Detailed construction designs will be produced with input from a geotechnical engineer. A programme of geotechnical inspections will be implemented during excavation works.	1	2	2

Hazard / Risk	Cause	Construction Stage			Consequences	Mitigation	Following Mitigation Stage		
		Probability	Impact	Risk Rating			Probability	Impact	Risk Rating
Peat slide Event	Uncontrolled water flows	2	3	6	Rapid ground movements	Addressed in drainage plans Geotechnical supervision of dewatering operations. Due consideration given to the prevailing ground and weather conditions when scheduling site works.	1	2	2
Peat slide Event	Unstable excavations	4	2	8	Localised instability	Appropriate geotechnical design Routine geotechnical inspection. Contingency plans for slope stabilisation measures.	2	1	3
Peat slide Event	Removal of toe support to slopes	3	3	9	Slow ground movements	Avoidance action during geotechnical design stage. Routine geotechnical inspection. Contingency plans for slope stabilisation measures.	2	2	4
Peat slide Event	Steep slopes	3	4	12	Instability	Appropriate geotechnical design. Routine geotechnical inspection. Avoidance action during layout design stage.	1	3	3
Peat slide Event	Surface water erosion	3	1	3	Localised instability	Establish vegetation cover on slopes. Suitable temporary surface water management. Addressed in drainage plans.	2	1	2
Peat slide Event	Subterranean pipes	2	2	4	Localised instability	Blockage prevention using free draining fill. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works.	2	1	2
Peat slide Event	Pockets of soft wet ground for example in the vicinity of reedy flushes	5	2	10	Localised instability	Due consideration given to the prevailing ground and weather conditions when scheduling site works. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works. Programme and cost contingency.	3	1	3
Peat slide Event	Construction of cable trenches in road verge	2	3	6	Instability	Appropriate geotechnical design. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced.	1	1	1

Hazard / Risk	Cause	Construction Stage			Consequences	Mitigation	Following Mitigation Stage		
		Probability	Impact	Risk Rating			Probability	Impact	Risk Rating
						Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works. Geotechnical monitoring of verges post-construction.			
Peat slide Event	Tear in reinforcing geotextile fabric	2	3	6	Instability / Local settlements	Addressed in material specification. Addressed in construction supervision.	1	1	1
Peat slide Event	Mobilised temporary storage mounds	4	4	16	Localised instability	Storage site selection by geotechnical engineer. Routine maintenance of peat storage mounds.	2	2	4
Ultimate limit state failure (bearing capacity)	Construction loading and poor ground conditions	3	2	6	Bearing capacity failure / Ground deformation / Need to rebuild	Appropriate geotechnical design. Excavation of shallow peat along tracks. Expose competent formation at turbine sites. Adopt floating road construction over deep peat, if appropriate.	1	1	1
Serviceability limit state failure (settlement)	Construction loading and poor ground conditions	5	2	10	Excessive settlement / Construction delayed / Additional fill required	Ground improved with addition of rock fill. Adopt geotechnical monitoring of tracks. Contingency to re-level tracks on completion. Quantities contingency.	3	1	3
Unexpected Ground Conditions	Ground conditions differ from those indicted in the project ground investigations	3	3	9	Construction delayed / Design review required	Monitor works in progress. Use experienced staff on site. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works. Programme and cost contingencies.	1	1	1
Creep, long term settlement of tracks	Poor and variable foundation soils	5	1	5	Ongoing settlement	Contingency for routine maintenance.	3	1	3
Slope Instability	Use of unsuitable fill materials	2	3	6	Instability	Addressed in material specification. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. A programme of geotechnical inspections will be implemented during excavation works.	1	1	1

Hazard / Risk	Cause	Construction Stage			Consequences	Mitigation	Following Mitigation Stage		
		Probability	Impact	Risk Rating			Probability	Impact	Risk Rating
Erosion	Site clearance operations	4	3	12	Damage to root mat	Use low pressure construction plant. Preserve root mat wherever possible. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works.	1	1	1
Variation from Design Assumptions	Unexpected ground conditions	2	3	6	Settlement and / or slope failure	Appropriate geotechnical design. Geotechnical monitoring during construction. Programme contingency.	1	1	1
Uncertainty of Construction Technique	Variable foundation soils	2	3	6	Delay	Programme contingency. Detailed site investigations of foundation and track locations will be carried out at the pre-construction stage, prior to detailed construction designs being produced. Detailed construction designs will be produced with input from a geotechnical engineer. The geotechnical risk register will be updated following site investigations and detailed design at the preconstruction stage. A programme of geotechnical inspections will be implemented during excavation works.	2	1	2
Uncertainty at transition zones and stream crossing points	Variable ground conditions	3	3	9	Variation in quantities and programme	Programme contingency Cost contingency.	2	2	4
Uncertain duration and degree of primary consolidation	Variable ground conditions	2	3	6	Delay / Additional fill requirement	Avoidance of areas of deep peat. Programme contingency. Cost contingency.	2	2	4
Design changes during construction	Change in loading, bearing and settlement characteristics	3	2	6	Various but could include slope failure, bearing failure or settlement	Design changes to be reviewed by geotechnical specialist.	1	1	1

Notes: 1. A ‘Hazard’ is a condition or physical situation with a potential for an undesirable event.
2. A ‘Risk’ is an uncertain event or set of circumstances that should it occur would have an effect on achieving the project objectives
3. Mitigation Measures include:

- Avoid the risk – by eliminating the uncertainty or using an alternative approach.
- Transfer the risk – by transferring the liability of the risk to another party.
- Mitigate the risk – by reducing the risk to an acceptable level by making it less likely that the risk event will occur.
- Accept and manage the risk – by assuming the risk as reasonable given the cost or effect on time or quality and even life.

Prepared by: Dr Douglas Nichol, Geotechnical Engineer, 28 November 2012. Revised 05 July 2014

Craignagapple Wind Farm FEI

Brookfield Renewable

TECHNICAL NOTE: Craignagapple Wind Farm: Review of Peatslide Risk Assessment for 2016 Layout

7 November 2016

Craignagapple Windfarm

Appendix 5.2.1: Outline Peat Management Plan

FINAL

for

Brookfield Renewable

Fluid Environmental Consulting Ltd
108/15 Great Junction Street, Edinburgh, EH6 5LD
Tel: 07725 033 725 dsaunders@fluidec.com
Registration No. SC385700

Craignagapple Windfarm

Appendix 5.2.1: Outline Peat Management Plan

November, 2016

FINAL

Prepared by :	Fluid Environmental Consulting Ltd
For :	Brookfield Renewable
Author :	Duncan Saunders
Signature:	

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Table of Contents

Figures

Appendices

1 Introduction

This Outline Peat Management Plan (PMP) document has been prepared for the construction of the Craignagapple Windfarm (the 'Proposed Development') located approximately 8.5km east of Strabane, County Tyrone, Northern Ireland. The site is located on both sides of the Glenmornan Road, approximately 650m west of Legalougha Bridge and approximately 200m east of Owenmore Bridge. The site comprises the northern slope of Owenreagh Hill which slopes down to the north from 350 mAOD to 210 mAOD to the north of the Glenmornan Road. This document forms Appendix 5.2 of the Further Environmental Information (FEI) Report.

The planning application boundary for the Proposed Development covers an area of about 239.84 hectares with access tracks leading to a total of six turbines. The infrastructure of the final layout is comprised of 2.3km of new excavated tracks, 0.34km of existing tracks that that will require upgrading, 0.29km of existing tracks that will require no additional work, six wind turbine locations, a substation, temporary construction compound and temporary suppliers compound. The total area of the windfarm footprint final layout is approximately 3 hectares. The area of actual development (ground disturbance) is larger, as the excavated area of the track is wider than the track width, and covers an area of 33,552m^2.

The PMP will be further developed prior to construction, should the application be consented. The PMP will then become part of the final detailed Construction Environmental Management Plan. Further details and specific plans will be determined during the detailed design process and once further site investigations have been undertaken. The final detailed PMP will then be included as a part of the Principal Contractor's detailed Construction Environmental Management Plan (CEMP).

The PMP has been developed due to identification of the presence of peatland and peat habitats (including active blanket bog and degraded or dry modified blanket bog) on the proposed Craignagapple Windfarm site (Appendix 6.2, Vegetation and Habitat Survey Report, 2016), and should be read in conjunction with the Craignagapple Peat Survey Report (August 2016) included as Appendix 5.2.2 of the FEI Report, the Peat Slide Hazard Risk Assessment (2016) (Appendix 5.1 of the FEI Report) and the Outline Habitat Management and Enhancement Plan – HMEP (Appendix 6.1 of the FEI Report).

The PMP addresses the management of peat during the construction period for the windfarm and the restoration of the site during construction, operation and decommissioning.

The PMP also address the concerns raised by the Northern Ireland Environment Agency Natural Environment Division (NIEA-NED), in a letter dated 12 October 2015. In November 2014, Brookfield Renewable provided Further Environmental Information (FEI) in support of the proposed development. The NIEA-NED letter raised a number of concerns with the proposed development, those specific to the Peat Management Plan provided as Appendix C within the 2014 FEI are summarised below:

- NIEA NED acknowledged that additional peat storage areas will be required and that excess peat would be used in the reinstatement of other excavated areas and for habitat restoration, however were concerned that no peat storage or reinstatement areas have been identified on a drawing and the Peat Management Plan merely states *“that peat or excavated soils will not be spread on ecologically sensitive habitats.”*;

- NIEA-NED requested more detail on the measures being proposed including drawings showing the location of peat storage areas, reinstatement areas and areas identified for drain blocking; and
- NIEA NED also highlighted that excess peat should not be spread on modified blanket bog habitats which still contain typical blanket bog vegetation as these areas still qualify as Northern Ireland priority habitats.

2 Objectives

The PMP has been developed to demonstrate that peat has been appropriately considered and protected during the design phase of windfarm development and, should consent be granted, will be carefully managed and preserved throughout the construction, operation and decommissioning periods. The PMP aims to propose mitigation measures that will minimise any impacts, and the long term habitat restoration and management plans for key areas of the site are designed to enhance the site and nearby management areas (Appendix 6.1 of the FEI, OutlineHMEP).

The PMP outlines the overall approach of minimisation of peatland disruption that has been adopted. It aims to demonstrate that, where practical, all further opportunities to minimise peat disturbance and extraction will be taken.

The PMP seeks to identify that appropriate proposals to reuse surplus peat can be accommodated within the site layout, without significant environmental or health and safety implications, to minimise risk in terms of carbon release and human health. The document also demonstrates that there will be no long term peat storage on site.

3 Structure

The structure of the PMP is as follows:

- Legislation, policy, and guidance;
- Classification of excavated material;
- Definition of peat, details of peatland characteristics and peat conditions on site;
- Avoidance and minimisation of peat disturbance;
- Peat balance between excavation and reuse on site of surplus peat;
- Peat excavation and handling methods / controls and temporary peat storage; and,
- Reuse in infrastructure construction restoration and in habitat enhancement.

Tables are included showing:

- Where surplus peat will be generated and the associated quantities;
- What quantity of this surplus peat will be catotelmic, what quantity will be acrotelmic and what, if any, quantity will be amorphous; and,

- The principles of where catotelmic, acrotlemic and amorphous peat, if any, will be re-used and approximately how much will be re-used and in which locations.

4 Legislation, Policy and Guidance for Peat Management

4.1 Legislation Policy and Guidance

When considered as part of a carbon landscape, peat has a capacity to act as a carbon sink. The management of peat therefore has implications for carbon emissions and climate change. There is a substantial body of legislation and guidance regarding climate change and carbon which is relevant to the management of peat including:

- The Kyoto Protocol (1997) and the Kyoto Protocol and National Accounting for Peatlands (2012);
- The UK Climate Change Act (2008);
- Carbon Landscapes and Drainage, 2012 'The Carbon and Water Guidelines', www.clad.ac.uk; and
- Forestry Commission, 2011, 'Forests and climate change: UK Forestry Standard Guidelines.

Other key documents relied upon to inform this Outline PMP include:

- Good practice during windfarm construction, A joint publication by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland, Version 3, 2015;
- Scottish Environment Protection Agency Guidance: Developments on Peatland – Site Surveys (2013);
- Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste, Scottish Renewables, 17 January 2012;
- Forestry Commission (2012). Forests & Water Guidelines. 5th Edition. HMSO;
- Scottish Executive (2006). (Scottish Government Official Website publication date January 2007) Peat Landslide Hazard and Risk Assessments. Best Practice Guide for Proposed Electricity Generation Developments. Scottish Executive;
- Towards an assessment of the state of UK Peatlands, JNCC 2011;
- Northern Irish Planning policy Statement 18 - Renewable Energy (RE);
- British Standard 42020:2013;
- NIEA Wind Farms and Groundwater Impacts: A guide to EIA and Planning considerations (April 2015);
- NIEA Guidance Note on Active Peat (November, 2012);
- NIEA Keeping or Deposit of Waste arising from Peat Working;
- NIEA Mining Waste Directive (2010);

- Annex I of the Habitats Directive 92/43/EEC; and,
- Interpretation Manual of European Union Habitats (2007)

4.2 Role of the Peat Management Plan

The PMP is intended to be a working document to be used throughout the key stages of the design, construction, operation, re-instatement and decommissioning phases of the Proposed Development as part of an overall Construction Environmental Management Plan (CEMP) as follows:

Stage 1: Environmental Impact Assessment (EIA)

It is necessary to show how, through site investigation and iterative design, the Proposed Development has been designed to minimise, so far as reasonably practicable, the quantity of peat that will be excavated; that volumes of peat anticipated to be excavated by the proposed development have been considered; and how excavated peat will be managed. The overall aim is to minimise the impacts associated with excavation of peat by using the following hierarchy of design principles: prevent excavation; reduce volumes of peat excavated; and reuse excavated peat in a manner to which it is suited. This hierarchical approach comprises:

1. Initial assessment of peat coverage on site based on broad 200m grid;
2. Design of layout based on various constraints including peat occurrence on site;
3. Further detailed site surveys undertaken to obtain peat depth across the proposed layout and micrositing allowance and iteration as necessary;
4. Calculation of estimated volumes of excavated peat and potential reuse volume requirements based upon the proposed site design / layout;
5. Determine whether there is likely to be negative or positive overall peat balance, and whether the generation of excess material can be avoided, and, if not, where reductions in the volumes of excavated materials may be achieved;
6. Site layout is refined to avoid areas of deeper peat and hence reduce carbon impacts of the project construction activities;
7. Further surveys undertaken if required in new sections of infrastructure;
8. Record specific examples of how overriding principles of prevention and minimisation of peat disturbance are to be taken into account in the design of the site;
9. The assessment should be consistent with and feed into the peat stability and carbon payback assessment (if required); and
10. Identify limitations and make recommendations for further site investigation (post-consent) in order to steer detailed design and micrositing such that opportunities for further reductions in excavated peat volumes can be implemented where possible.

Stage 2: Post Consent / Pre-Construction

As part of the EIA it will have been demonstrated that, on the basis of the investigation and data gathered, it is likely that the excavated materials for the Proposed Development can be managed in an appropriate manner. The peat mass balance calculations may be further developed and refined post planning consent, and prior to the relevant works commencing, as a consequence of any further or more detailed ground investigation or survey works required to inform detailed design, or that may be required under planning consent conditions.

Stage 3: Construction Stage

Actual peat volumes excavated during construction will be recorded against the overall predicted volumes provided in Table 3 of this PMP. Within micrositing allowances, the alignment and design of tracks, hardstanding orientation and construction methods will be reviewed to avoid/minimise peat disturbance as much as possible in light of the more detailed information available once construction actually commences. A regular review and update of the peat mass balance table will be undertaken by the appointed Principal Contractor and monitored by the Environmental Clerk of Works (ECoW) on site, and made available to regulators as required.

5 Classification of Excavated Peat Material

Waste is an environmental issue regulated by both European and National legislation. The overarching framework for National (i.e. UK) legislation is set by European Community (EC) Directives, with the relevant Directive on waste matters being 2008/98/EC, the Waste Framework Directive (WFD), which came into force 12 December 2008. Article 4 of this Directive sets out the waste hierarchy and requires that it is applied 'as a priority order in waste prevention and management legislation and policy'. The waste hierarchy is defined as follows:

1. Prevention;
2. Preparing for re-use;
3. Recycling;
4. Other recovery e.g. energy recovery; and
5. Disposal.

The Directive also states that *'Member States shall take into account the general environmental protection principles of precaution and sustainability, technical feasibility and economic viability, protection of resources as well as the overall environmental, human health, economic and social impacts.'*

The main national legislation potentially relevant to waste management activities involving waste peat falls under the Pollution Prevention and Control (Northern Ireland) Regulations 2013.

Where excavated or disturbed peat does not have a genuine and identified reuse for which it is suitable, the peat will be classified as a waste material and regulated as such under the relevant legislation. However, the Northern Ireland Environmental Agency (NIEA) as the Regulatory Authority aims to regulate in a proportionate manner such that the ultimate management of any excavated peat will be designed to deliver environmental benefits. This will include consideration, on a site by site basis, of ecological and carbon stock benefits as well as economic, social and practical aspects. For the purposes of waste description, excavated peat that does not have a genuine and identified reuse would fall under Chapter 17 of the European Waste Catalogue (EWC), *'Construction and demolition wastes'*, and the EWC Code *'17 05 04, soil and stones'* (non-hazardous) would apply.

The construction of the Proposed Development will take the appropriate environmental management steps to avoid *'waste'* peat. However, as excavated peat may or may not be classed as waste in accordance with the legal definition of waste, in order to allow compliance with relevant waste legislation, excavated materials will be required to be classified on site.

The following criteria will be used to determine whether peat is classified as waste or whether it can be reused as part of the works:

- The use is a necessary part of the planned works;
- The material is suitable for that use;
- The material does not require any processing or treatment before it is reused;
- No more than the quantity necessary is to be used;
- The use of the material is not a mere possibility but a certainty;
- Use of the material will not result in pollution of the environment or harm to human health; and
- The use of the material will not result in degradation of the material.

Any peat that is not immediately suitable for reuse on site without the requirement for treatment will be classed as waste and requires to be dealt with in accordance with the Contractor's developed Site Waste Management Plan under the CEMP which will be prepared should consent be granted.

6 Peat Conditions

6.1 Definitions of Peat

Organic material less than 0.5m depth is not defined as peat. This is in accordance with Northern Irish guidance and research which are based on England and Wales and Scotland guidance:

- The Soil Survey of Scotland (1984) defines peat as *'the organic layer or layers exceeding 50 cm depth from the soil surface and with an organic matter content of greater than 60 %';*
- The Forestry Commission use 45 cm as the critical depth for peat to occur (Understanding the GHG implications of forestry on peat soils in Scotland, 2010);
- The Macaulay Land Use Research Institute define shallow peat as having 'a prescribed depth of organic matter of 50 – 100 cm'; and
- Developments on Peatland: Site Surveys SNH, SEPA, Scottish Government and The James Hutton Institute 2014.

- The Northern Ireland Soil Survey (Agri-Food and Biosciences Institute - AFBNI) has developed a modified version of the England & Wales soil mapping classification (Cruickshank 1997) which refers to peat being >0.5m depth;
- Northern Ireland classification Soil Map Unit shows peat present as being greater than 0.5m depth;
- Phase I Habitat Survey defines peat as being and organic soil >0.5m depth (JNCC 2010);
- The Forestry Commission. Soil carbon and the Woodland Code (2011) states that In Scotland and Northern Ireland, organic soils are those with an organic layer of at least 50cm; and,
- Information from the National Soil Data for Northern Ireland.

Peat can be separated into three main layers: acrotelmic (the upper living layer), catotelmic (the middle to lower layer) and occasionally amorphous (lower layer) peat:

- Acrotelmic peat is the living layer of the peat including the peat turf or turve being a thin, floating vegetation mat layer. The acrotelm is generally found within the top layer of peat (often less than 0.5 m) depending on the degree of decomposition and fibrous nature of the peat (approximately H1 to H5 on the Von Post classification scale). The acrotelm is generally of high permeability, decreasing with depth. The water table fluctuates in this layer and conditions vary from aerobic to anaerobic. Material may be fibrous or pseudofibrous (plant remains recognisable), spongy, and when excavated strength is lost but retains integral structure and can stand unsupported when stockpiled >1 m.
- Catotelmic peat is the dead layer of peat found deeper than acrotelmic peat which has some remnant plant structures. Material has high water content and is permanently below the water table (saturated) therefore organic matter decomposes anaerobically. Some plant structures may be recognisable but are highly humified losing most of their characteristics (approximately H6 to H8 on the Von Post classification scale) and strength. Water flow through the catotelm is slow unless peat structures such as sink holes or peat pipes are present.
- Amorphous peat is highly decomposed organic material where all recognisable plant remains are absent (approximately H9 to H10 in the Von Post classification scale). These deposits are dark brown to black in colour, plastic, are low tensile strength and are unable to stand unsupported >1 m when stockpiled.

6.2 Peat Conditions on Site

Desk Based Review

The site was assessed for peatland vegetation through desktop review of aerial imagery, maps and plans, a number of site walkovers by ecologists, hydrologists and peat slide experts; and an intrusive site investigation in terms of extensive peat depth probing and coring across the windfarm site and infrastructure locations including access track routes.

Peat Surveying Methodology

To obtain a detailed understanding of the spatial and depth distribution of peat and its properties, a series of tasks have been completed which include:

- Peatland habitat and NVC mapping (undertaken by Woodrow Ecology, Appendix 6.2, Vegetation and Habitat Survey Report);
- Peat Slide Risk Assessment (undertaken by Jacobs, Appendix 5.1 Peat Slide Risk Assessment Technical Note 5);
- Depth penetration probing in a 200 m grid over the entire windfarm site (Doug Nichol 2009 and 2013);
- Higher frequency of depth penetration probing at all infrastructure and track locations:
    - Track – every 50 m with 10 m offset to either side of track and in some locations also at 25m offsets;
    - Turbine base and crane hardstanding – 20m grid on the footprint of the turbine base and crane hardstanding area with a 20m grid in the surrounding 25m micrositing area;
    - 20 m grid for the footprint of all other infrastructure with a 20m grid in the surrounding 25m micrositing area; and,
    - A 20m or 30m grid across a wider area to the north of the road around the suppliers compound area.
- Coring campaigns with a total of 42 cores obtained within the infrastructure footprint;
- Development of a depth of penetration map to indicate the maximum depth of probe penetration at all investigation points across the site;
- Development of an interpreted maximum depth of peat contour map to indicate the potential peat depth based on the depth penetration probing results and verified by coring;
- Examination of the variability of the depth of the acrotelm, the thickness of the catotelm and the thickness of amorphous peat if present;
- Calculation of the maximum potential peat volumes that will be removed due to excavation for infrastructure based on the depth penetration probing results; and
- Examination of areas where peat will be reused avoiding deep peat, moderate peat slide risk areas, sensitive ecological and hydrological receptors to allow calculation of reuse volumes.

Peat Surveys

The site has previously been used extensively for peat cutting and there is an area of active peat cutting adjacent to the site. The most recent peat extraction within the site boundary is located in the south eastern section of the site where there is evidence of "sausage cutting" peat extraction. There was some evidence of peat or heather burn in parts of the site south of the road. The western side of the site is currently used to access the Owenreagh Wind Farm located to the south west of the site.

There are several existing access tracks on site which will be used to gain access to parts of the site from the Glenmoran Road. An access track together with bell mouth junction for the Owen Reagh Wind Farm is present in the west of the site. A 4x4 access track is present in the central areas from the Glenmoran Road and a 4x4 track in the south eastern section of the site links the most recent peat extraction area with a track which fords the Leglougha to the east and joins the Glenmoran road to the east of the site.

Previous peat probing was undertaken by Doug Nichol for SKM in 2009 and 2013 which included 184 peat probes. Nine probes were outside the current site boundary.

The first phase of depth of penetration probing and coring for the 2016 surveys was undertaken between 6th June 2016 and 8th June 2016 and comprised 386 probes and 26 cores and was focused on obtaining sufficient probe density at the proposed infrastructure locations.

The second phase of probing was undertaken between 24th June 2016 and 25th June 2016 to examine areas where adjustments to the proposed infrastructure layout were considered and to inform micrositing. This comprised a total of 273 probes and 16 cores.

The total number of locations examined in 2016 is 659 probes and 42 cores. The total number of locations examined for all phases is 824 probes and 42 cores and are presented in Figure 2 of Appendix 5.2.2: Peat Survey Report.

For both these phases the following tasks were completed:

- Record the depth of penetration at each probe location along with an estimate of the geology at the limit of penetration;
- Collect data from cores on total peat depth, Von Post measurements every metre, the thickness of the acrotelm, catotelm and amorphous peat, the underlying geology and comments on water table if possible;
- Take a photographic record of all cores;
- Present all data in tables with appropriate labelling of locations according to the specification document;
- Provide a peat depth contour plan across the area of probing and coring; and
- Provide a factual report detailing the work completed and the data collected.

Both phases of peat probing and coring were focused on the infrastructure layout to help accurately estimate peat volumes that will be excavated during construction and enables the layout to be refined to avoid peat wherever possible. The depth of penetration probing exercise was carried out on site where a probe has been used to ascertain the depth of penetration to 0.1 m accuracy. The detailed probing and coring at the infrastructure enables assessment of the peat characteristics and distribution around the infrastructure and to identify micro-siting requirements. Cores were also undertaken to verify the probe penetration depths to assess whether they were representative of the peat depth. An updated peat depth contour plan was constructed to show all peat probe locations in relation to the infrastructure and was used to inform design changes including crane hardstanding orientation, track amendments and final construction compound and substation locations.

Peat Survey Results

The peat survey indicates that the site is mostly covered in peat, about 92.5%, with a high portion of this either modified or bare peat due to historical peat cutting, drainage and heather burning.

In general, the depth of penetration probing indicated the presence of peat across the majority (70%) of the infrastructure footprint, with areas of active blanket bog being avoided with a preference for avoidance of peat or location on degraded areas. Areas with between 0 m and 0.5 m depth of penetration (30%) are indicative of organic soils or soft mineral soil rather than peat deposits.

Of the 834 locations probed a total of 220 probes (26.4%) recorded depths of 0.5m or less, 303 probes (36.3%) recorded depths of penetration between >0.5m and 1.0m and 311 probes (38.0%) recorded depths of penetration >1.0m. The average depth of penetration across the entire site based on all probes undertaken was 0.91 m.

Inspection of the subsurface formation extracted in cores compared to probe interpretation generally indicated the presence of organic soils where probe penetration depths was shallow (up to 0.5 m depth) with occasional occurrence of mineral rich soils and grits. As depths of 0.5 m or less are not classified as peat this does not alter the interpretation of likely peat depth across the site, or the volume of peat that will be extracted.

These data validate the peat probing results with probe and coring depths of peat >0.5m almost entirely being within 0.1m difference and therefore no over or under estimate of peat depth appears to be occurring.

Generally the coring across the site identified a distinctive acrotelm layer and within the 42 coring locations acrotelm was recorded with a range between 0 and 0.20m with an average depth of 0.11m.

The total area of the proposed windfarm infrastructure footprint is about 3 ha. Across 30% of the area of infrastructure, the peat depth is less than 0.5 m in depth and therefore not considered to be located on peat deposits. A total of 42.3% of the infrastructure is located on peat between 0.5 m and 1.0 m. Deep peat, probe depths greater than 1.0 m, was identified at 27.5% of the infrastructure. The average peat depth across the infrastructure was calculated to be approximately 0.77 m.

A total of 2.07 ha of the infrastructure (70%) is therefore located on peat, of which 0.81 ha (27.5%) is located on peat >1m depth.

Table 1 Peat Penetration Depth across the Infrastructure

Depth Range (m)	Area of infrastructure footprint (m^2)	Area of infrastructure footprint (%)
0 to 0.5 (no peat)	8,978	30.24
>0. 5 – 1.0	12,559	42.30
>1.0 – 1.5	7,010	23.61

Depth Range (m)	Area of infrastructure footprint (m^2)	Area of infrastructure footprint (%)
>1.5 – 2.0	1,084	3.65
>2.0	60	0.20
Total	**29,691 m^2**	**100%**

The deepest depth of penetration probes were located within the higher altitude areas in the south of the site and in a localised deep pocket in the northern section of the site. The peat survey identified the two types of peat layers (acrotelm and catotelm).

The total excavated footprint is 33,552 m^2 which is greater than the infrastructure footprint as this incorporates the 6.5m width of the excavated track (this comprises the 4.5m track plus a 1m allowance for drains on either side) although part of the track footprint already exists (section leading to Turbine 1).

Table 2 Peat Depth Distribution across Excavated Area

Depth Range (m)	Area of infrastructure footprint (m^2)	Area of infrastructure footprint (%)
0 to 0.5 (no peat)	9,331	27.8
>0. 5 – 1.0	14,764	44.0
>1.0 – 1.5	8,150	24.3
>1.5 – 2.0	1,247	3.7
>2.0	60	0.2
Total	**33,552 m^2**	**100%**

Habitat Conditions

Habitat mapping was undertaken by Woodrow Consulting and is detailed within Chapter 6 Appendix 6.2 Vegetation and Habitat Survey Report (2016). Woodrow Consulting observed that the area has been extensively cut-over for peat with many cut peat banks and drainage channels evident. Additionally, extensive mechanical peat cutting has been carried out in the southeastern part of the site, which is clearly visible on orthophotography. The whole area has also been modified by extensive grazing and burning.

Almost the whole of the site is underlain by peat, and subsequent to a comprehensive vegetation survey (including analysis of quadrats) the majority of the vegetation was classified as modified blanket bog. According to National Vegetation Classification (NVC) definitions (Rodwell *et al*, 1991), the most widespread vegetation community present in this area is a modified form of **M19 *Calluna vulgaris-Eriophorum vaginatum* blanket mire**, generally dominated by heather (*Calluna vulgaris*) and hare's-tail cottongrass (*Eriophorum vaginatum*) with pockets of bog-mosses (most frequently, red bog-moss, *Sphagnum capillifolium*). Hypnoid mosses (such as heath plait-moss, *Hypnum jutlandicum*, and *Rhytidiadelphus* species) are abundant, particularly associated with the drier microhabitat provided by *Calluna* and *Eriophorum* tussocks. Although this vegetation community has the potential to be peat-forming, survey of this site indicates that it lacks the hydrological integrity necessary for peat accumulation. This is corroborated by the relatively dry nature of the bog habitat and the comparative paucity of species indicative of waterlogging, such as blunt bog moss (*Sphagnum palustre*) and papillose bog-moss (*S. papillosum*). In some areas, this modified bog vegetation has undergone a transition towards a type of acid grassland vegetation most resembling **U4e *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland, *Vaccinium myrtillus-Deschampsia flexuosa* subcommunity.** These areas have developed a tussocky vegetation in which bilberry (*Vaccinium myrtilllus*), wavy hair-grass (*Deschampsia flexuosa*) and hypnoid mosses are particularly evident.

At intervals, the modified bog vegetation that dominates this site is intersected by strips of species-poor flush vegetation that are associated with water flux, often occurring in excavated drainage channels. This vegetation type tends to be dominated by soft-rush (*Juncus effusus*), sometimes with abundant flat-topped bog-moss (*Sphagnum fallax*) and/or feathery bog-moss (*S. cuspidatum*). These areas were variously classified as NVC community **M6c Carex *echinata-Sphagnum recurvum/auriculatum* mire: *Juncus effusus* subcommunity** and **M23b - *Juncus effusus/acutiflorus-Galium palustre* rush-pasture, *Juncus effusus* sub-community**, differentiated largely by the presence and abundance of these two *Sphagnum*.species. Care was taken to avoid flushed areas when determining the micrositing of turbines and location of access roads.

Within the southern part of the site, in the general vicinity of the proposed T8 and T9 turbines, is an area that corresponds most closely to the NVC community M17 - *Scirpus cespitosus-Eriophorum vaginatum* blanket mire. In the proposed vicinity of Turbine T9, this community is noticeably degraded through peat cutting and drainage, and is not considered to represent active blanket bog. However, southeast of the proposed T8 location, there is an area of this vegetation type which appears to be relatively intact. Peat-building Sphagnum species, such as blunt bog moss *Sphagnum palustre* and *papillose* bog-moss (*S. papillosum*) are well-represented here and therefore this community is considered to be recovering and potentially active. Consequently, this area was regarded as a constraint to development and was avoided in subsequent layout and micrositing of access roads and turbines (Figure 6 of HMEP, Appendix 6.1 of the FEI).

Peat Characteristics

The peat profile at Craignagapple comprises light brown to dark brown slightly fibrous peat beneath the present-day root mat. There are many areas where the peat body at the site has been disturbed through peat cutting although a number of areas show signs of slow recovery. A number of man-made drainage channels are present across the site, which in turn discharge to natural watercourses. These man-made ditches are thought to have dewatered the peat over time. Active, natural subsurface drainage pipes in the peat profile are also present on occasion.

Samples of peat were observed in the field as part of the peat depth probing programmes and descriptions noted with respect to its characteristics, including fibre content, decomposition and moisture content.

The Von Post test was carried out at the 42 core locations. Von Post scores for the acrotelm ranged between H1 and H4, with an average of H3. A score of H3 is defined by Ekono (1981) (1981) as "*Very slightly decomposed peat which, when squeezed, releases muddy dark brown water, but from which no peat is passed between the fingers. Plant remains are still identifiable, and no amorphous material present*." This effectively means that there is no amorphous peat in category H3. H scores of 5 or more begin to have amorphous material, with significant amorphous material occurring at scores of H9 and above.

For the catotelm, Von Post scores ranged between H4 and H9, with an average of H6/H7. A score of H7 is defined as “Highly decomposed peat. Contains a lot of amorphous material with very faintly recognizable plant structure. When squeezed, about one-half of the peat escapes between the fingers. The water, if any is released, is very dark and almost pasty.” In terms of reuse, consideration has to be given to the increasingly amorphous and plastic nature of that catotelm with Von Post scores of H7 and above.

Peat Slide Risk Assessment

A Peat Slide Risk Assessment was undertaken by Jacobs and the most recent updates to the assessment based on the 2016 layout are detailed within Chapter 5 Appendix 5.1 Peat Slide Risk Assessment Technical Note 5 (2016) of the FEI Report.

Jacobs observed that natural erosion features such as hags, mounds, ridges, pools and incised streams, as well as disruption of the ground surface by grazing, burning, forestry, drainage ditches, tracks, fence lines and man-made cuttings for fuel were present on site. All these features have the potential to affect the integrity of the near surface layers of peat and the tensile strength of the root-mat, in particular. In addition, they may create localised over-steepening of slopes or unsupported blocks of peat.

During the site visit of June 2016, numerous collapsed peat pipes/sink holes were observed within the central eastern flank of Owenreagh Hill. A number of minor peat slides were identified during the walkover survey of June 2016. These were located on the central eastern flank of the Hill, directly upslope of former peat workings. These slides appear to have been initiated by the removal of material supporting the toe of the respective peat blocks. While the slides were noted to be dormant during the 2016 site walkover survey, it is anticipated that movement could recommence if adverse groundwater conditions were to arise through severe or prolonged rainfall; particularly if such rainfall was to follow a sustained period of dry weather, when shrinkage cracks are likely to form within the peat, providing a direct route for surface water ingress. In addition to the noteworthy peat slide and flow, observed previously to the north of operational turbines T15/T16, a further significant peat slide was also identified on the eastern flank of Owenreagh Hill, the extent of which is indicated on Figure 2 of Appendix 5.1 Peat Slide Risk Assessment Technical Note 5 (2016) of the FEI Report. None of the wind turbine locations in the 2016 layout fall within influence of these historical peat slides

Turbines 4 and 9 are located within proximity to natural drainage features, so an increase in the risk score with regard to sub-profile drainage pipes was applied for these locations.

All of the PHRS scores assessed by Jacobs for wind turbine locations fall within the low priority range, as outlined in Table 5 Appendix 5.1 Peat Slide Risk Assessment Technical Note 5 (2016) of the FEI Report. A summary of risk estimations for turbine positions, together with appropriate engineering responses, are presented in Table 5 Appendix 5.1 Peat Slide Risk Assessment Technical Note 5 (2016) of the FEI Report.

The network of track routes comprises four access positions from Glenmornan Road. The design of the routes has taken into consideration the problematic areas of peatland as determined by Appendix 5.1 Peat Slide Risk Assessment Technical Note 5 (2016) of the FEI Report and, as far as possible, makes use of existing tracks formed during historical peat cutting activities, in order to minimise earthworks quantities. Each element of access track was assessed individually for peatslide susceptibility, using PHRS scores of nearby grid positions and turbine locations. A summary of risk estimations for access track routes together with appropriate engineering responses are presented in Table 6 Appendix 5.1 Peat Slide Risk Assessment Technical Note 5 (2016) of the FEI Report. All access tracks are within the very low to negligible peat slide hazard risk range. A full review of peat slide hazard risks is presented in Appendix 5.1 Peat Slide Risk Assessment Technical Note 5 (2016) of the FEI Report.

7 Excavation and Reuse Volume Estimates and Reuse Requirements

7.1 Peat Balance

The windfarm infrastructure and dimensions used in the peat balance calculations are summarised in Table 3. These relate to the actual excavated dimensions (total 3.35ha).

Table 3 Infrastructure Description and Excavated Dimensions

Infrastructure	Dimensions	Excavated Area (m^2)
Turbines (6 in total)	20m diameter	1,878
Crane hardstanding (6 in total)	18m x 40m	4,320
Construction Compound	46m x 50m	2,300
Suppliers Compound	56m x 50m	2,800
Substation	46m x 50m	2,300
New Track (excavated)	Approx 4.5m wide x 2,849m including some irregular shapes with 1m drains on either side	19,957
Total		**33,555**

It is assumed that any peat excavated for cable trenches is stored adjacent to the trench while the cable is laid and then replaced once each section of the cable is in place, therefore this volume is not applicable to the excavated volume.

Excavated Volumes

Peat excavation volumes associated with the project have been calculated using the GIS package ArcGIS based on the following data and assumptions:

- A contour map of assumed peat depth based on interpolation of values from probing across the site;
- Dimensions of the proposed areas for excavation for site infrastructure based on the layout shape files provided;
- An estimated acrotelm depth of 0.11 m across infrastructure area where peat (>0.5 m organic soil) is present based on the peat core data;
- An estimated catotelm thickness of the average depth of the peat minus the acrotelm (0.11 m) across infrastructure areas where peat is present, and based on the peat core data;

- No occurrence of amorphous peat; and,
- An assumption that the probe depth is representative of the actual depth of the peat (validated by a spatial coverage or cores and detailed in Appendix 5.2.2 Peat Survey Report).

The contoured surface of the peat created has been used to determine the average depth of peat under the excavation footprint of all proposed infrastructure and therefore the total volume of peat to be excavated as well as the volume of acrotelmic and catotelmic peat. This data is presented in Table 4.

The peat volume estimates have been calculated to take into account the windfarm layout and the table also provides clarification on the reuse options (on-site uses), dimensions and other assumptions used to generate these conservative and preliminary volume estimates.

At this stage of development, and based on the location of site infrastructure in relation to peat depth and site topography, it is calculated that the excavation of 23,600 m^3 of peat will be required. Table 4 gives details of the initial estimates of peat excavations.

Table 4 Excavated Volumes for All Infrastructure

Infrastructure	Total volume of peat excavated (m^3)	Volume of acrotelm peat excavated (m^3)	Volume of catotelm peat excavated (m^3)
Turbine 1	273	34	239
Turbine 2	77	15	61
Turbine 3	133	24	109
Turbine 4	365	34	331
Turbine 8	263	34	229
Turbine 9	526	79	491
Crane hardstanding 1	534	74	455
Crane hardstanding 2	512	0	438
Crane hardstanding 3	1	0	0
Crane hardstanding 4	708	79	628
Crane hardstanding 8	946	79	867
Crane hardstanding 9	1024	79	945
Temporary Suppliers Compound	0	0	0
Temporary Construction Compound	1780	205	1,574
Substation	753	134	619
New Track (excavated)	15,673	1,757	13,916
Total	**23,566**	**2,665**	**20,902**

The total calculated excavation volume estimates are:

- Total volume of peat which will be excavated = 23,566 m^3;
- Total volume of acrotelm which will be excavated = 2,665 m^3; and

- Total volume of catotelm which will be excavated = 20,902 m^3.

These values are estimates based on the available data and the above assumptions.

In order to further determine accurate peat volumes, peat probing and / or other ground investigation techniques will be employed as necessary prior to and during the works in order to inform micrositing requirements.

Final implementation of peat reuse and classification will be subject to geotechnical on site tests e.g. shear vane testing, to determine peat stability and type and use potential and a geotechnical risk register.

Peat Reuse Volumes

From Table 4 above, the volume of peat that will be removed by excavation of the infrastructure is ~2,700 m^3 of acrotelm, and ~20,900 m^3 of catotelm. This volume of peat will be reused around the site in the following areas, as presented in Figure 1, Craignagapple Peat Survey Report and detailed in Table 5 with photographs of proposed restoration areas provided in Appendix I:

- 1m wide berms. Berms will be put in place in appropriate locations around the infrastructure perimeter such as track verges, the edges of crane hardstandings and around the edge of the substation area in a 1 m wide strip at a thickness of about 0.3 m where the infrastructure is located in a peat area. This should essentially be the reinstatement of excavated peat turves and tie in with the adjacent peat as presented on Figure 1 of the Craignagapple Peat Survey Report. The length of the infrastructure coincident with peat as defined by the peat contour mapping has been calculated at 4,873 m (from a total perimeter of 7,306 m).
- Reinstatement of temporary construction compound and temporary suppliers' compound. The temporary construction compound occupies an area of 2,300m^2. After construction the stone will be removed and the peat reinstated in this area to a similar depth, i.e. 0.83 m in the construction compound area, as is currently present. The suppliers compound is not located on peat, therefore there will be no restoration of peat in this area.
- For peat habitat restoration purposes. Large volumes of peat have been removed from the site over many years and peat/ heather burning has taken place. As part of the Peat Management Plan peat removed for construction of the wind farm will be deposited in accordance with best practice in the peat cells identified. There are various cells that could be used for peat restoration and the specific cells should be determined as part of a detailed restoration programme. The following cells have been determined to offer the potential for peat restoration through peat reinstatement based on a number of criteria including:
    - Age of peat cutting – more recent cut cells are selected as these have had less time to regenerate;
    - Vegetation – cells where the vegetation is not present (bare peat) or not considered of value are priority;
    - Steep slopes – cells where slopes are shallow have been selected;

- Watercourse proximity – locations away from watercourses, allowing 50m buffer from watercourses and 20m from drainage routes that will not be altered as part of the development; and
- Peat slide risk – cells are selected where they have a low to negligible peat slide risk.

There is the potential for many more peat cells to be reused on the site if additional peat is encountered, if conditions in these peat cells are not optimum or if there is a need to alter the programme.

Table 5 Estimated Potential Reuse Volumes

Reuse Type	Reuse Summary	Area (m^2)	Acrotelm volume (m^3)	Catotelm volume (m^3)	Total Volume (m^3)
Berms along infrastructure and track margins where peat is present (4,873 m)	1 m width with 0.3m depth of peat using average 0.03m depth of acrotelm peat and 0.27m catotelm	4,873	146.2	1,316	1,462
Temporary Construction Compound (46 m x 50 m)	Cover whole area with 0.83m depth as per current depth of peat in this location, using 0.83m catotelm	2,300	0	1,909	1,909
Peat Cutting Restoration / Reuse Area 1	Cover about half of the area with 0.3m depth as per previous depth of peat in this location, using 0.03m average acrotelm and 0.27m catotelm	19,840	595	5,357	5,952
Peat Cutting Restoration / Reuse Area 2	Cover whole area with 0.3m depth as per previous depth of peat in this location, using 0.03m average acrotelm and 0.27m catotelm	6,586	197.6	1,778	1,976
Peat Cut Track infill / restoration Area 3	Cover whole area with an average 1.2m depth as per previous depth of peat in this location, using 0.03m average acrotelm and 1.17m catotelm	2,725	81.8	736	818
Peat Cutting Restoration / Reuse Area 4	Cover part of areas with 0.5m depth as per previous depth of peat in this location, including the reinstated temporary construction compound, using 0.03m average acrotelm and 0.47m catotelm	15,000	450	7,050	7,500
Peat Cut Track infill / restoration Area 5	Cover whole area with an average 0.3m depth as per previous depth of peat in this location, using 0.03m average acrotelm and 0.27m catotelm	487	14.6	131	146
Peat Cutting Restoration / Reuse Area 6	Cover whole area with 0.3m depth as per previous depth of peat in this location, using 0.03m average acrotelm and 0.27m catotelm	2,898	86.9	782	869
Peat Cutting Restoration / Reuse Area 7	Cover whole area with 0.3m depth as per previous depth of peat in this location, using 0.03m average acrotelm and 0.27m catotelm	1,787	53.6	482	536
Total			**1,626**	**21,994**	**23,620**

These areas are presented on Figure 1. It is assumed that the cable trenches will have no impact on peat as the removed volume will be replaced and clay will be used at regular intervals to prevent preferential pathways developing in the sand/cable layer at the base of the trench.

The re-use of the excavated peat has taken a conservative approach in that a realistic value for acrotelm reinstatement has been used.

Net Peat Balance

The volume of peat predicted to be excavated does not exceed the potential reuse volume so no disposal of excess peat off site is expected for this windfarm development. The excavated peat volumes and volumes of peat to be re-used are summarised in Table 6.

Table 6 Net Peat Balance

	Acrotelm volume (m^3)	Catotelm / Amorphous volume (m^3)	Total Volume (m^3)
Excavated Peat	**1,584**	**21,982**	**23,566**
Peat Reuse	**1,626**	**21,994**	**23,620**
Total Balance	**42 (2.6%)**	**12 (0.1%)**	**54 (0.2%)**

Due to the potential for peat reuse being significantly higher than the peat excavation volumes Table 5 presents only sufficient preferential reuse areas in order to balance the reuse with the amount of peat excavated. In order to achieve an exact balance the acrotelm will be required to be laid in a 3 cm thickness. There are substantially more areas that have the potential for peat restoration however only those areas with the best characteristics for restoration have been selected at this stage in sufficient amount to achieve balance; these are areas 1, 2, 3, 4, 5, 6 and 7 (Figure 1).

8 Avoidance and Minimisation of Peat Disturbance

8.1 Avoidance

The infrastructure layout has been designed to avoid and minimise the impact on blanket bog habitats (detailed within the updated HMEP Appendix 6.1). In practice this has been undertaken by avoiding the deepest peat where possible considering other constraints, which is normally where the best quality blanket bog habitats occur and are to some extent preserved. Areas identified as having moderate to very high peat slide risk have also been avoided (Appendix 5.1 Peat Slide Risk Assessment Technical Note 5).

The design elements aimed at minimising effects on blanket bog systems have been incorporated:

- Avoiding the deepest peat with tracks and turbines;
- Avoiding areas considered to have moderate or higher peat slide risk;
- Using existing access tracks where feasible;
- Staying where possible to the outer edge of blanket bog systems; and
- Skirting around these areas rather than cutting across them where possible.

8.2 Protection of In Situ Habitats

The layout of the wind farm and its design has taken into account any constraints relating to sensitive areas as identified in Figure 3.1 Environmental Constraints, Figure 3.7 Micro-siting Boundary and Figures 6 and 7 of the Outline HMEP, Appendix 6.1 of the FEI report.

Areas of valuable vegetation communities will be strictly fenced off and designated as '"no side casting areas" during the entire wind farm construction period. Ahead of the construction phase, the wind farm layout and access track route will be marked up by the Principal Contractor (and/or Designer) on an Access Plan and will be laid out and off-road tracking of heavy plant will not be permitted outside of this route.

The Access Plan and the route of the access track will be drawn up by the Principal Contractor (and/or Designer) and will provide a designated controlled route and a permissible corridor within which service vehicles and plant can operate prior to peat and topsoil stripping.

The purpose of the Access Plan is to protect in situ valuable peatland habitats (NI priority habitats) in areas that are not affected by the wind farm development and to prevent unnecessary vehicle and plant tracking across these areas.

The following rules will apply to the Access Plan:

- There will be no vehicle access to areas of the site outside the area marked on the Access Plan (the wind farm layout marked on the plan);
- There will be no stopping of vehicles outside the area marked on the Access Plan; and
- Servicing or refuelling activities will only take place within clearly designated areas within the Access Plan.

Access routes and working areas will be clearly delimited throughout the construction phase to ensure that peat compaction and damage in areas not directly involved in the works will be avoided. The construction works will be phased to ensure that peat is stripped in each part of the site ahead of mineral subsoil.

Adherence to the Access Plan will be strictly enforced by the Principal Contractor (and / or Designer) in conjunction with an onsite Environmental Clerks of Works (ECoW).

The ECoW appointed for the scheme will:

- Identify areas of sensitive habitat;
- Clearly mark sensitive habitats near to construction areas and make the Principal Contractor aware of the sensitivity of peat habitats and inform all sub-contractors;
- Walk the areas affected by the proposed development with engineers before construction commences;
- Provide toolbox talks on areas that are designated as no – go and no side casting;
- Authorise minor movement of infrastructure within the micro-siting available where impact can be reduced; and
- Monitor that any micrositing does not result in movements into more sensitive habitats, deep peat areas or increase peat slide risk unless unavoidable.

8.3 Further Minimisation

The disturbance of peat by the construction of the tracks, crane hardstandings and turbine foundations and other infrastructure will be minimised as much as practicably possible, taking into account the other constraints to the development, in order to try and reduce any peat waste on site and reduce potential carbon losses from the peat excavation process.

Throughout the construction process, the appointed Principal Contractor (and / or Designer) will look to minimise the volumes of excavated peat. As far as possible, appropriate handling and storage of excavated materials will be undertaken such that their integrity and subsequent reuse is not jeopardised. This will be implemented through the finalised CEMP prepared in advance of construction which will be subject to approval by Derry City and Strabane District Council and the relevant statutory authorities.

Further measures to minimise peat disturbance will be incorporated in the development and construction process. The principles of the waste hierarchy (outlined above) will be adhered to in order to:

- Avoid and/or minimise production of excavated peat;
- Reuse, where possible, excavated peat on site in landscaping and re-profiling works, to minimise visual impacts and to facilitate habitat, ecological and hydrogeological restoration, improvement and enhancement; and
- Avoid waste peat being sent for disposal, recovery and/or reuse off site.

All contractors will be made aware of the sensitivity of peat and wetland habitats through the use of toolbox talks delivered by the ECoW. The ECoW will assist the Principal Contractor to clearly mark out no go areas and no side casting areas within the construction corridor and 25m micro siting areas. Contractors will be required to work within the 20m construction corridor at all times.

The Principal Contractor (and / or Designer) will have experience in working in areas of peat where sausage cutting has been employed in order to effectively manage the excavation and restoration of this modified peat. A specific method statement should be drawn up for this section of work and approved by the ECoW and Geotechnical Engineer.

All plans and method statements will be accompanied by justification of the final design and/or construction methods identified by the Principal Contractor, including reasons for discounting alternative methods. This is required in order to demonstrate that all avenues for avoiding hydrological disruption and reducing the disturbance and excavation of peat have been considered.

9 Handling Excavated Materials

9.1 Excavation

The following methodologies for excavation of peat are recommended:

- Areas of peat within the footprint of any excavation will have the top layer of vegetation stripped off as turf prior to construction by an experienced specialist contractor. When excavating areas of peat, excavated turves should be as intact as possible. Often it is easiest to achieve this by removing large turves up to 500 mm in order to keep the peat intact.

- These turves should be stored adjacent to the construction area such that they remain moist and viable (see temporary storage below). Excavated turves should be as intact as possible so as to minimise carbon losses.
- Peat will then be removed, stored separately and kept damp (Carbon and Water Guidelines 2012). The moisture content of stored/stockpiled peat will be monitored and if it falls below 25% of that in surrounding, intact peat then it will be watered.
- Excavated soils and turves will be handled so as to avoid cross contamination between distinct horizons and allow reuse potential to be maximised.
- Prior to any excavations, the Principal Contractor will produce a detailed Method Statement identifying where and how excavated peat will be used in reinstatement or landscaping works. Specific requirements for the excavation, handling, storage and reinstatement of peat will be outlined in this Method Statement. The Contractor will consider potential impacts on downstream hydrological receptors and also the potential for instability issues with the excavated material.
- Care will be taken when stripping and removing topsoil and peat turves and appropriate storage methods used on site, i.e. excavated material will be stored in separate horizons and vegetation rich top layers will be stored vegetation side up.
- Classification of excavated materials will depend on their identified re-use in reinstatement works. At this site it is anticipated that the material to be excavated will comprise peat (which may be sub-divided into turf, acrotelm and catotelm/amorphous), peaty soils and mineral soils (subsoil and topsoil).
- Locations for stockpiling of mineral subsoil will be determined by the Principal Contractor's Project Manager in liaison with the ECoW, but site selection will follow the same criteria as for temporary storage of peat as outlined below in Section 9.2.
- During peat and soil stripping, handling and temporary stockpiling, all efforts will be made to prevent unnecessary trafficking over peat;
- Where required, separate stockpiles will be created for peat and mineral soil. Documentation and physical control measures will be set in place by the Principal Contractor to prevent accidental mixing and to ensure that peat and mineral soils are appropriately segregated.
- Peat stripping and handling will not take place in adverse weather conditions and the criteria for cessation of works during heavy rainfall conditions is outlined below in Section 10.5 PMP Audit Procedure. Peat stripping and excavation will generally follow the methodologies recommended for mineral soil by MAFF (2000)[1] and Defra (2009)[2].

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[1] Ministry of Agriculture, Fisheries and Food (MAFF) (2000) Good Practice Guide for Handling Soils by Machine.
[2] Department of the Environment, Food and Rural Affairs (Defra) (2009) Code of Practice on Sustainable Soils on Construction Sites.

9.2 Temporary Storage

Following excavation, peat may be required to be temporarily stored before reuse as it may not always be possible to take the material directly to the restoration areas. Temporary areas that could be utilised during construction have been identified in Figure 1. The temporary areas identified are habitats of lower ecological and hydrological sensitivity and/or degraded habitats of lower ecological significance, located outside of zones of potential peat slide risk, within proximity to the construction works to avoid tracking over other habitats and to improve currently degraded areas.

Excavated peat should be stored in stockpiles to minimise carbon losses while being stored. Excavated turves will be stored adjacent to the construction area such that they remain moist and viable.

All proposed temporary storage areas will be subject to approval from the site ecologist and geotechnical engineer during construction.

The Principal Contractor will also be required to complete a Method Statement for use of temporary peat storage areas taking into account constraints and mitigation requirements identified in the consolidated final CEMP.

The CEMP will describe any intended drainage, pollution prevention and material stability mitigation measures that may be required. The following general guidelines will apply:

- The appropriate temporary storage areas for excavated peat will be as close to the excavation as practicable and will not be located on deep peat (peat >1.0m). Areas 8, 9, 10 and 11 have been identified as potential areas for peat storage if required, comprised 841 m^2, 6,244 m^2, 965m^2 and 17,460m^2 respectively (Figure 1).
- The design and location of stockpiles, including incorporated drainage elements, will be agreed with the ECoW and Geotechnical Consultant / Geotechnical Clerk of Works prior to excavation works commencing.
- Temporary peat storage areas should be located ideally on flat areas so that erosion and run off is limited, leachate from the material is controlled, and stability of the existing peatland in the vicinity is not affected.
- Excavated material is to be stockpiled at least 50 m away from watercourses. This will prevent the runoff of any wetting required on stored peat and discharge into adjacent watercourses.
- The temporary storage areas should not be located close to any sensitive habitats.
- Any edges of cut peat that may remain exposed, or areas of peat excavation on steep slopes, will be covered with geotextile or similar approved. This will allow re-turfing and re-vegetation and reduce erosion risks.
- Suitable storage areas are more appropriately sited in areas with lower ecological value and low slopes. Cleared areas of forestry are preferred to areas of higher ecological value or areas close to watercourses.
- Temporary peat storage should be in locations where the water table can be kept artificially high.

- An up-gradient cut off ditch should be installed around the edge of the storage bund in order to collect up-gradient surface water runoff and divert water runoff from eroding the toe of the bund.
- It is desirable to keep haul distances of excavated peat as short as possible and as close to intended re-use destinations to minimise plant movements in relation to any earthworks activity, including peat management, in order to minimise the potential impact on the peat structure. It is important that temporary storage is safe and keeps the material suitable for its planned reuse.
- The handling and storage of peat will look to avoid that excavated peat does not lose either its structure or moisture content. Peat turves require careful storage and wetting to be maintained and to prevent drying out and subsequent oxidisation such that they remain fit for re-use.
- Stockpiling of peat should be in large volumes, taking due regard to potential loading effects. Piles should be bladed off at the side to minimise the available drying surface area.
- Higher piles are more likely to become dewatered, while smaller piles expose a greater area to evaporation. Reducing mound size may also increase likelihood of erosional losses as particulate organic carbon (POC). Overall volumes of stockpiling should be minimised and height and surface areas kept to a minimum.
- Stockpiles should be battered so as to limit instability and erosion and should be bunded using impermeable material. The bunds should extend to a level above the toe of the stockpiled material to provide restraint to surface runoff.
- There will be frequent, routine and regular inspections of peat in all stockpiles and temporary storage areas as part of the final Peat Management Plan audit process. Inspections will assess in situ peat physical conditions, integrity of containment, temporary drainage conditions and to confirm that stockpile design and management is adequate to prevent erosion and peatslide. Stockpiles will also be inspected to check that peat turves and peat is maintaining sufficient wetness for restoration activities to be successful. It is recommended that these inspections take place weekly during the stockpile creation and storage.
- Ground monitoring pegs will also be utilised on temporary peat stockpiles which can be visually inspected (i.e. deviation from the horizontal could be due to movement) and should also be surveyed during routine weekly inspections.
- Should any problems be observed during regular visual inspections of peat stockpiles, this will invoke implementation of an appropriate corrective action which will be recorded and monitored for effectiveness. Types of corrective actions will include but will not be limited to: modification of temporary drainage, additional or modified bunding, incorporating of sediment fencing if required, or light re-grading to correct any areas of surface erosion, etc.
- When planning the temporary storage areas any additional disturbance areas should be minimised.
- Transport of peat to temporary storage areas, restoration areas or designated spoil areas will be by low ground pressure vehicles to avoid excessive compaction of the peat.

10 Reuse of Peat in Infrastructure Restoration

10.1 Bare Peat

There are a number of important methodologies regarding the exposure of bare peat including:

- The amount of time any bare peat will be exposed will be minimised to preserve its integrity.
- The phasing of work should be carried out to minimise the total amount of exposed ground at any one time. By stripping turf and replacing as soon as possible after peat has been re-distributed there will be minimal areas of bare peat.
- Any peat areas on steep ground, or that remains partially bare, will be covered using geotextile or a similar method to stop erosion.
- Any areas of bare peat, where vegetation is not re-growing, will be seeded with a seed mixture obtained from the existing habitat. This approach has been shown to be effective on other peat sites and the turves re-grow quickly both establishing vegetation and consolidating the peat. The re-vegetated areas will be monitored. Any areas of bare peat, where vegetation is not re-growing, will be seeded. The seed mix used on site would be agreed with the ECoW and NIEA NED and would use local native species akin to the local ecological baseline using a seed mixture obtained from the existing habitats on site. The procedure for re-seeding is outlined in Section 6.3 of the HMEP, Appendix 6.1 of the FEI. Stock exclusion in these areas will continue until vegetation is properly established. A Decommissioning and Site Reinstatement Plan has been prepared for this development (and is contained within the outline CEMP, Appendix 5.3 of the FEI) and will be carried out in conjunction with this outline PMP.

10.2 Infrastructure Re-use

Peat reuse around and within infrastructure areas is an important aspect of the development as it allows an opportunity to maintain the integrity of the excavated peat, enhance habitats and create new habitats. The following will be undertaken:

- The Principal Contractor will be required to provide appropriate plant for undertaking all reinstatement works such that no unnecessary disturbance of the ground surface occurs. In order to minimise disturbance and damage to the ground surface, any mobile plant required for reinstatement and landscaping works will be positioned on constructed access tracks, hardstanding areas or existing disturbed areas wherever possible. The use of a long reach excavator for excavations and reinstatement works is preferable as it enables sufficient room to allow initial side casting and subsequent pulling back of turves over reinstated peat or soil.
- Excavated catotelm or amorphous peat will only be used in restoration works where the topography allows straight forward deposition with no pre-treatment or containment measures and without risk to the environment. Suitable scenarios may be present in those disturbed areas where natural topography profile allows such use. A fibrous layer of acrotelm and turf will be placed above any catotelm or amorphous peat reinstated.

- Reinstatement of vegetation will be focused on natural regeneration utilising peat vegetated turves. To encourage stabilisation and early establishment of vegetation cover, where available, peat turves (acrotelmic material) or other topsoil and vegetation turves in keeping with the surrounding vegetation type will be used to provide a dressing for the final surface.
- Consideration should also be given to the impacts of poor drainage control in any areas where peat is used in reinstatement, for instance track verges, reinstatement of construction compounds, etc. Surface Water and Drainage Management will be undertaken prior to construction of infrastructure and needs to be planned carefully to take into account peat deposition. The details of the Surface Water Management and Drainage management proposed are outlined in Appendix 5.4 and 5.5.
- Any reinstatement and re-profiling proposals will consider, and mitigate against, identified significant risks to environmental receptors. In particular, in areas of replaced peat, water management will be considered in the Principal Contractor's Construction Method Statements to allow an appropriate hydrological regime to be re-established within areas of disturbance. Particular attention will be paid to maintaining hydrological continuity and preventing the creation of preferential subsurface flow paths (for instance within backfilled cable trenches).
- Peat turves should be replaced on all disturbed areas, including constructed roadside drainage channel embankments where possible.
- When constructing tracks rapid restoration will be undertaken as track construction progresses.
- Immediately following construction some turves will be replaced along the road edges to allow quicker re-vegetation and to soften the road edges
- Any landscaping or road batters should be limited to the areas of ground already disturbed.
- Track edges, passing places and the crane hardstanding areas on the opposite sides of the access tracks from the turbine bases that are no longer required would be reinstated post construction through the removal of capping material and the reuse of peat turves. Where peat turves are used to reinstate track edges this will be undertaken in a manner to allow works to tie in with the surrounding topography, landscape and ground conditions.
- The design and construction of tracks on peat shall be undertaken in such a way so as to reduce impacts on the existing peat hydrology at the site. The built track should allow for the transmittance of water, so natural drainage can be maintained as far as possible.
- The revegetation of temporary hardstanding areas will depend on the identified reinstatement use and associated vegetation character bounding the areas of restoration, with the aim being to match turves and topsoil to similar ground conditions. Where appropriate, excess peat turves, if acrotelm in nature and considered suitable by the ECoW and geotechnical engineer, could be used for screening bunds, landscaping or as part of a HMP in conjunction with reseeding. The seed mix used on site would be agreed with the ECoW and would use local native species akin to the local ecological baseline.

- Monitoring the effectiveness of the peat reuse and habitat management measures around the infrastructure will continue for the lifetime of the development (25 years) and contingency measures are further detailed within Appendix 6.1 Outline HMEP (2016) should monitoring indicate unfavourable results.
- All peat re-use measures will also be carried out in consultation with both a suitably qualified ecologist and with a suitably qualified geotechnical engineer.

10.3 Peatland Restoration

Proposed Restoration Areas

A total of seven proposed restoration areas have been identified at the Site (Figure 1 and Appendix I).

- Proposed restoration areas 1 and 2 comprise large areas of bare and degraded peat due to significant mechanical peat extraction that would benefit from restoration in order to reduce peat erosion and surface water run off rates, improve local water quality, carbon sequestration and ecosystem benefits.
- Areas 3 and 5 are access tracks cut into the peat that are required to be reinstated through backfilling with $815m^3$ and $146m^3$ of peat respectively. This will not have any negative effects on the peat stability in the area.
- Areas 4, 6 and 7 comprise areas of cut peat from mechanical peat extraction that have revegetated to some extent, however due to the lack of land management and control of hydrology the habitat is of limited value and peat restoration would be beneficial.

It should be noted that the peat restoration in Area 7 would be undertaken outside of the 20m buffer zone associated with the minor drain to the north as defined on the ground during the actual restoration programme. For location of this minor drain, refer to Figure 5.1 Hydrological Features, Chapter 5 of the FEI.

Also, the peat restoration in Area 6 would only be undertaken outside of the 20m buffer for the relocated minor drain during construction and within the buffer once construction is complete because the drain will be relocated to the west of the track (on the opposite side to the proposed peat restoration Area 6) which will act to protect the watercourse and therefore the buffer zone as indicated is no longer applicable post construction.

It is understood that peat extraction has been undertaken across much of the site and that in those areas greater than 0.5m depth of peat remains. The 'Growing' surface of peat (acrotelm) has been destroyed and there is a lack of seed or vegetation across areas 1 and 2 proposed for restoration. There is evidence of surface water runoff down slope of areas 1 and 2 which is further eroding the peat deposits and that the water quality of the adjacent watercourses may potentially be influenced by the sediment laden runoff. Therefore areas 1 and 2 were identified as areas of poorly vegetated peatland actively undergoing erosion that would benefit from restoration to re-establish vegetation and reduce runoff.

It is recognised that the potential for restoring the larger areas of bare peat, Areas 1 and 2, will be more difficult than restoring an isolated localised area of bare peat, such as a peat gully e.g. Area 3. The physical removal of peat leads to major functional changes in hydrological storage capacity and permeability rates. The restoration of a functioning acrotelm on top of a previously extracted surface is a challenging objective and the overall result may be slightly different to the surrounding peatland. However it is considered that if the peatland is partially restored and vegetation can re-establish this will be a great improvement on the current condition and the potential effects on the wider environment.

The management of surface water and drainage on site will be critical to the peat restoration and recovery and should be planned and undertaken prior to the movement of peat to restoration areas on site. The surface water and drainage management plans are presented in Appendix 5.4 and 5.5 of the FEI.

Proposed Restoration Method

Providing the mechanism and conditions for the return of key peat-forming vegetation is an essential stage in stabilising the peat structure, promoting a reversion to characteristic hydrological regimes and stimulating ecosystem stability.

The restoration program will include peat cutting re-profiling, water table management (including drain blocking), stabilization and vegetation.

Areas will be restored in a grid system of berms to encourage attenuation of runoff within small cells and to reduce erosion of any bare peat. Excavated peat from the wind farm development will be used to raise the area by approximately 30cm to a similar level to the top of the existing bunds that are raised above their associated drainage ditches (these bunds are now dry as they are raised above the groundwater level and have been drained). Cross berms will be created to further limit runoff and erosion. Drains and dams will be backfilled to prevent these becoming preferential drainage routes of the peat.

General Principles of restoration

Reprofiling

The surface crust of hard peat or laminated layer of peat between 5 and 10cm will be broken up so that all plants introduced are in contact with the water level in the peat substrate.

Compaction of peat during operations will reduce its capacity to hold water. It is important, therefore that operations are scheduled to minimise movement over peat areas during both extraction and placement. This is particularly important with respect to the acrotelm which needs water-logging in order to facilitate growth of peat forming vegetation. Where restoration is being undertaken on a slope it is likely that the area may need to be split into individual discrete water control areas 'paddyfield' style. Where this is the case, it is important that mechanical land-forming works are undertaken from downslope towards upslope. This will enable a level finish between the water control berms. Working down the slope is likely to accentuate the slope and make water control more difficult.

Water levels

The formation of peatland is reliant on a high water table, whether permanent or temporary. Water level control is therefore central to restoration of peatland areas as this helps create and maintain a viable habitat. In many, if not most, cases control of water levels will need to be achieved through artificial bunds, dams and/or sluices. The use of berms can:

- control water levels and provide access;

- facilitate the spreading of heather brash or another material such as straw to help provide access into the area;
- facilitate the creation of shallow hollows or basins which can help retain water after rain events to better encourage vegetation growth; and
- protect the adjacent hollows by reducing the wind impact on spread mulches and also by reducing wave action in any open water areas (which can displace vegetation at early colonisation stages).

Berms can be created using compacted decomposed peat. The following guidelines have been taken from the Canadian 15 'Peatland Restoration Guide' (Quinty and Rochefort, 2003) but are considered applicable in the Northern Ireland context:

- Use well decomposed peat whenever possible because it is more impermeable than fibrous peat.
- It is necessary to compact the peat thoroughly once it has been pushed into a mound, to ensure it is impermeable and to make it more resistant to water and wind erosion.
- The presence of wood, branches or other debris in the peat can weaken the berm and lead to leaking.
- Clean peat surfaces provide a better contact between the berm and the peat surface and limit the risk of water infiltration and leaking. Scrape the surface peat and any vegetation at the location of a berm prior to building on it. One way to work is to push or move the peat into a mound and then push it back on the clean peat surface.
- It is better to build wide berms instead of high berms. They are more resistant to pressure from water bodies.
- Peat is a material that erodes easily even when it is compacted, and breakages can be common. One way to prevent the erosion of berms is to install devices to allow discharge of surplus water.
- It is important to push the peat up the slope rather than down the slope. Pushing the peat toward the bottom of the field will accentuate the existing slope while pushing peat toward the top of the slope will help create flat terraces.

Berms can be used in many ways, including across the slope so as to allow water level control in sections of sloping ground. They can also be used in a 'chessboard' fashion whereby they are used to form a number of discrete water control units. This can be particularly useful where a project is being undertaken over a period of time. It can also allow for access routes into a site during operations without impacting on the fragile peatland habitats.

Blocking the flow of peat sediment along erosion channels reduces the loss of peat downstream and stimulates the recovery of a characteristically high water table, helping to re-wet degraded areas.

As gully blocking is delivered independently of other bare restoration treatments the dams can be installed at any stage.

Stabilisation

The major issue on the areas of bare peat are the mobility of the substrate and the climatic conditions. Bare peat needs to be stabilised to encourage seedlings to establish and persist. Peat stabilisers include:

- Nurse crops. These help stabilise the peat and provide a microclimate for peatland species seedlings to grow. They can include lowland species which are alien to the habitat and unlikely to hybridise with native species or persist beyond the restoration phase. They are likely to require some fertiliser input.
- Common cottongrass *Eriophorum angustifolium* plugs taken from other areas of the site or from donor sites. Once the peat has been stabilised, heather seed can be introduced and has a better chance of establishing successfully.
- Geojute (a hessian jute-fibre that forms a biodegradable mesh with a high water absorption capacity).
- Heather brash. Careful design of the project to include berms can protect these from windblow.

Substrate stabilisation methods, including heather brash (cut heather in the form of double-chopped brash or baled brash) and geo-textiles (currently in the form of jute mesh) act as a skin on top of bare peat, reducing the effects of erosion and creating a protective microclimate, buffering seeds from harsh weather conditions. Heather brash also provides a source of heather seeds, spores and fungi, otherwise absent from bare peat areas.

However, in order to ensure that this continues, vegetation must be re-established. To do this, favourable conditions for vegetation must be created and seeds supplied; exactly what is required will differ from site to site. The sown seeds grow through the stabilisation materials tying them together, creating a "scab" over the bare peat. This provides stabilisation for a longer period of time, allowing moorland vegetation to establish.

Vegetation Reestablishment

Methods for reestablishment of vegetation include:

- The majority of viable seeds will be found in the upper / surface layer of a peatland. Retaining this upper layer could increase potential for successful colonisation of a restored peatland. Retaining viable turves may also bring success over a shorter time period. To increase the prospect of success, turves will require to be kept fully wetted, ideally within a prepared receptor area with a high and stable water level. The ability to move the turves directly from the donor areas of the site to the (appropriately prepared) restoration site should further increase likelihood of success.
- Turves should be taken up ideally in autumn or winter when most plants are dormant and outside the bird breeding season (March to August). Realistically, turves are likely to be sourced during the autumn since sites are likely to become harder to work on as the winter progresses.
- Peat taken from the acrotelm must be protected from compaction or dessication and should be kept as intact as possible. Ideally operations should be designed so that it is moved from source point to end placement point in a single movement.

- Turves should be kept as large as feasible to increase the likelihood of a continued viable acrotelm (without unnecessarily increasing the compaction on other areas during transport).
- If turves are being spread over a larger area than the source area, spreading them out is likely to enhance vegetation spread over bare peat areas (which may be formed using stored peat), but is also likely to increase the need for keeping water levels high through artificial means.
- Sphagnum mosses are the key to active peat-forming systems. They require wet and (largely) acidic conditions. Some species, such as Sphagnum subnitens will tolerate higher pH levels and may be a transitional species suitable for early stages of peatland restoration on worked peatlands. Sphagnum mosses flourish in areas where rainfall is between 700 mm and 1000 mm and the number of rain days is between 150 and 175 per annum (Bord na Mona, 2001).
- Sphagnum would be harvested from an area of the site where possible. The top 10cm are removed using a rotovator to first break up plant fragments and facilitate collection. This material is then spread using a back mounted manure spreader. The recommended harvest area to spread area ratio is 1:10

The steps above provide a receptive environment for peat habitat restoration, significantly reducing the erosion of bare peat. However, they do not create appropriate blanket bog communities, which require a completely different range of species. Viable seed sources may be available on the periphery of the site, far from the centre of large areas of bare peat (such as Areas 1 and 2). The influx of seeds from stabilised or intact donor areas within the site may happen over long timescales. However little is known about how effective this process may be or even how long it takes before the reinstated vegetation becomes established. Therefore to aid the succession from nurse crop to moorland vegetation reseeding using seed stock would be taken prior to construction for use during restoration phases. If required, five key moorland species will be chosen for propagation to be planted out as individual plug plants. The method for which seed collection will be undertaken is outlined within Section 6.3 of the HMEP, Appendix 6.1 of the FEI.

Where appropriate, creation of blanket bog or heathland habitat will be achieved by replacing up to 1m of stripped peat, consisting firstly of ‘loose’ peat, then surface dressing with stored peat turf, to achieve approximately the same peat profile depths as prior to construction. It is anticipated that if peat turf has been correctly stored, no further re-seeding will be required. If re-seeding of the turves is required, the methods adopted will be those detailed in the HMEP in Appendix 6.1 of the FEI Report.

As with all such projects, the key objectives are to achieve and sustain a high water table and to reinstate a vegetation community characteristic of the peatland habitat. With peat excavation sites, the latter objective is likely to be particularly difficult since the peat surface will be devoid of vegetation and unlikely to hold any viable seed source. In such situations, the intention is to restore a working acrotelm. If that can be achieved, then it could be argued that a sustainable, peat-forming habitat has been restored.

Monitoring

Long term monitoring of the effectiveness of the peat reuse and habitat management measures within these restoration areas will continue for the lifetime of the development (25 years) and contingency measures are further detailed within Appendix 6.1 outline HMEP (2016) should monitoring indicate unfavourable results.

Regular, frequent inspections of peat conditions during construction and restoration phases of work will be carried out by the geotechnical engineer in conjunction with the ECoW. Peat surface, peat profile and peat consistency conditions have already been carried out as part of the peat depth survey prior to the start of construction (Appendix 5.2.2 Peat Survey Report 2016). This information provides the baseline conditions for each part of the infrastructure footprint and monitoring against these baseline conditions will be undertaken during weekly inspections.

In addition, the following inspections will be carried out:

- Temporary peat stockpiles and storage of peat turves will be inspected weekly according to the final PMP. If any non-compliances are found, corrective actions will be invoked according to the process described in Section 9.2.
- Restored peat conditions will be inspected by the ECoW immediately after restoration to ensure that the methods outlined in Section 10.3 above have been correctly implemented and to inform any corrective actions should they be required.
- Peat physical conditions must be retained as carefully as possible both at the peat storage and the peat restoration stages. This is particularly important for vegetation establishment.

Visual inspection of stockpiles will follow the checklist in Appendix II. Visual inspections of restored areas will record any locations where any of the following conditions occur after restoration, in order to formulate remedial actions:

- Bare peat surfaces without peat turf which require stabilisation and re-seeding;
- Any areas of eroding peat turf, for example where replacement of turf on a gradient has occurred and stabilisation is required; and
- Any areas of ponded water where temporary or permanent adjustment/re-design of the surface water drainage system is required.

10.4 Peatland Enhancement

Additional to the reuse and restoration of peat around the infrastructure footprint within the windfarm boundary, a further area to the immediate south of the proposed development boundary will also be managed to further promote peatland restoration and enhancement. This area is identified as Management Area 3 within the HMEP, Figure 3. This area occurs to the south of the proposed site boundary and does not include any of the proposed development works. The area consists of Dry Modified Bog which, as one moves south, grades into an area of Dry Heath/Acid Grassland mosaic and then into Acid Grassland and finally Improved Grassland. There is also a small area of active Blanket Bog in this area which consists of a number of often interconnecting pools and high Sphagnum cover. This area is subject to recent drainage.

This management area will be subjected to a re-wetting regime which will be achieved through strategic damming of drainage channels and the cessation of activities which would further damage habitats in this area such as turf-cutting and the digging of drainage channels.

As shown in Figure 9 of the HMEP, Management Area 3 has a significant network of both vegetated and relatively recently opened drains and therefore has a high potential for re-wetting. The exact location and number of dams required will be finalised on the ground and reported on within the HMEP Year 1 report. All peat dam works will be overseen by an ECoW with practical experience of peatland / wetland management.

In addition to the proposed re-wetting measures to be implemented, a controlled grazing regime will also be implemented this will mitigate against the impacts of potential over-grazing of moorland habitats, such as the expansion of grassland and erosion of peat, especially in areas of deeper peat. The areas that will be subject to a grazing regime are identified within Figures 8 & 9 of the HMEP.

The procedures and methods for peat enhancement are further detailed within Appendix 6.1 of the HMEP (2016).

10.5 PMP Audit Procedure

This section of the outline PMP addresses the auditing process required to ensure that the correct checks and inspections are carried out, that non-compliances are identified, reported and rectified, with measures put in place to prevent future occurrences, and that the required inspections are carried out, correctly interpreted, reported and acted upon as required.

The auditing process for recording peat conditions in storage/stockpile areas will form part of the CEMP documentation procedure (outline CEMP presented in Appendix 5.3). The auditing process will include documentation, incident reporting and a procedure for implementing corrective actions. It will also describe any required review procedures.

Detailed PMP Audit Procedure

The detailed PMP will include a series of checklists and reports which control and record PMP activities, particularly the results of peat inspections.

Peat Stripping and Stockpiling Documentation and Plans

The documentation and database to be used to log and chronicle the origin, handling, transport, storage/stockpiling, inspections and final peat reuse will be developed in detail by the Principal Contractor prior to the start of construction on site.

The written procedure for peat stripping and storage/stockpiling will form part of the Principal Contractors Method Statement.

During the peat restoration works, the Principal Contractor will draw up a peat replacement phasing plan, which will include matching documented stockpiles to appropriate areas of restoration, defined movement routes for vehicles and machinery to minimise tracking over replaced peat and peaty topsoils.

As construction activities proceed, the detailed PMP will indicate locations and quality of in situ peats and peaty soils: particularly the depth of peat, together with schedules of actual volumes of peat stripped and their expected after-use. Documentation will identify the person(s) responsible for supervising and overseeing peat management during the works. Drawings will also be produced to show all areas to be protected from peat stripping activities and locations of haul roads, compounds etc.

The practical implementation, administration and day to day auditing of the detailed PMP will be incorporated into the detailed CEMP.

Scheduling of PMP Audit Activities and Reporting

The scheduling of detailed PMP audit activities will be developed as part of the PMP and will be held in the detailed CEMP.

Audit Checklist and Reporting

An audit checklist for the PMP is provided in Appendix II. This should be used to ensure that weekly inspections and checks are implemented and recorded in a timely manner and that monthly status reports are prepared on schedule.

Reporting of Non-compliances

Non-compliances will be reported as soon as they are identified by programmed inspections. They will be reported via the PMP auditing procedure to the developer's Project Manager and corrective actions will be identified and implemented promptly. This will require timely decision making. If further inspections are required to ensure that acceptability criteria have been achieved, this will be prescribed and implemented. To facilitate speedy rectification of any non-compliances, the Principal Contractor's Project Manager will be responsible for day to day decisions on routine non-compliance issues.

Criteria for Cessation of Works

Experience has shown that the combination of wet weather and wet peat conditions create very difficult conditions for vehicle and plant operations and elevate the possibility of peatslide and peat erosion, leading, for example to impaired water quality impacts. For this reason, appropriate weather criteria are prescribed in this section to provide thresholds beyond which peat stripping, handling and stockpiling activities will cease.

If sustained heavy rainfall occurs during soil/peat stripping operations, work must be suspended and not restarted until the ground has at least one full dry day to recover. Rainfall quantities and soil/peat wetness conditions considered to be cutoff thresholds for cessation of soil/peat stripping/handling works will be agreed in advance of any works occurring on site between the Principal Contractor and all stakeholders, including the relevant environmental regulators.

If sustained snowfall and freezing conditions occur, soil/peat stripping and/or stockpiling, and/or restoration activities will cease. When thawing conditions occur, the Principal Contractor's Project Manager will use forecast meteorological conditions to determine the appropriate timescale for restarting any peat management activities (stripping, handling, storage, restoration). The decision-making will pay due attention to the potential for rapid and turbulent snowmelt runoff, peat erosion and peatslide risk.

What constitutes 'adverse weather and snow conditions' which are the criteria for cessation of works will be agreed with relevant stakeholders by the Principal Contractor in advance of the start of any site construction works on site.

Use of Tool Box Talks

Regular Tool Box talks will be used to ensure that all site staff are aware of the PMP and applicable peat handling and protection procedures. The Tool Box Talks will be site-specific, discussing peat conditions at Craignagapple Wind Farm site.

11 Conclusions

Adjustments were made to the wind farm layout design to avoid deep peat, peat slide risk areas, watercourse buffer zones and priority habitats, where possible. The updated layout was based on the peat depth, characteristics and distribution investigations (Appendix 5.2.2 Peat Survey Report), the revised peat slide risk assessment (Appendix 5.1 Peat Slide Risk Assessment Technical Note 5), the revised Chapter 5 geology, hydrogeology and hydrology, Surface Water Management Plan and Drainage Management Plan (Appendix 5.4 and 5.5 of the FEI Report respectively) and the revised HMEP (Appendix 6.1 of the FEI Report) which were completed following updated surveys undertaken across the development area in 2016.

Based on the peat surveys undertaken across the development area and the revised windfarm infrastructure layout, a surplus of peat is not expected to be generated by the Proposed Development. All estimated excavated peat is planned for reuse for reinstatement and restoration work during the construction, post-construction, and decommissioning phases of the windfarm.

The infrastructure, where located on peat, is considered to be of negligible to low peat slide risk based on Appendix 5.1 Peat Slide Risk Assessment Technical Note 5 of the FEI Report produced by Jacobs. Peat slide mitigation measures will include monitoring, reviewing and management by normal slope maintenance procedures as detailed in Appendix 5.1. Further investigation will be undertaken prior to works commencing to confirm peat depth, distribution, peat characteristics and peat slide risk. The additional survey data will be used to inform any micro-siting and design, if required.

The interaction and management of the hydrology (surface water and drainage), ecological conditions, peat slide risk and excavation and storage of peat will be critical for the effectiveness of the peat reuse and restoration proposals.

The calculations and proposed restoration methodology outlined in this PMP adhere to good practice and demonstrate that the plan achieves a neutral peat balance were no peat generated during wind farm construction is taken off site. The PMP calculations are based on relevant topographic and peat probe data and should allow micro siting to occur without producing a surplus of peat that will need to be transported elsewhere on site.

The Principal Contractor, site geotechnical engineer and ecologist, will have experience of working on similar sites where there has been sausage cutting peat extraction and will maintain a record of actual peat volumes excavated and the subsequent peat reuse to compare the predicted and actual peat volumes. This record during the construction, operation, restoration and decommissioning phases of the windfarm will be made available for review by regulators as and when required.

Appendix I – Proposed Peat Restoration Areas – Photographic Record

Reuse Type	Photo
Peat Cutting Restoration / Reuse Area 1	   
Peat Cutting Restoration / Reuse Area 2	 

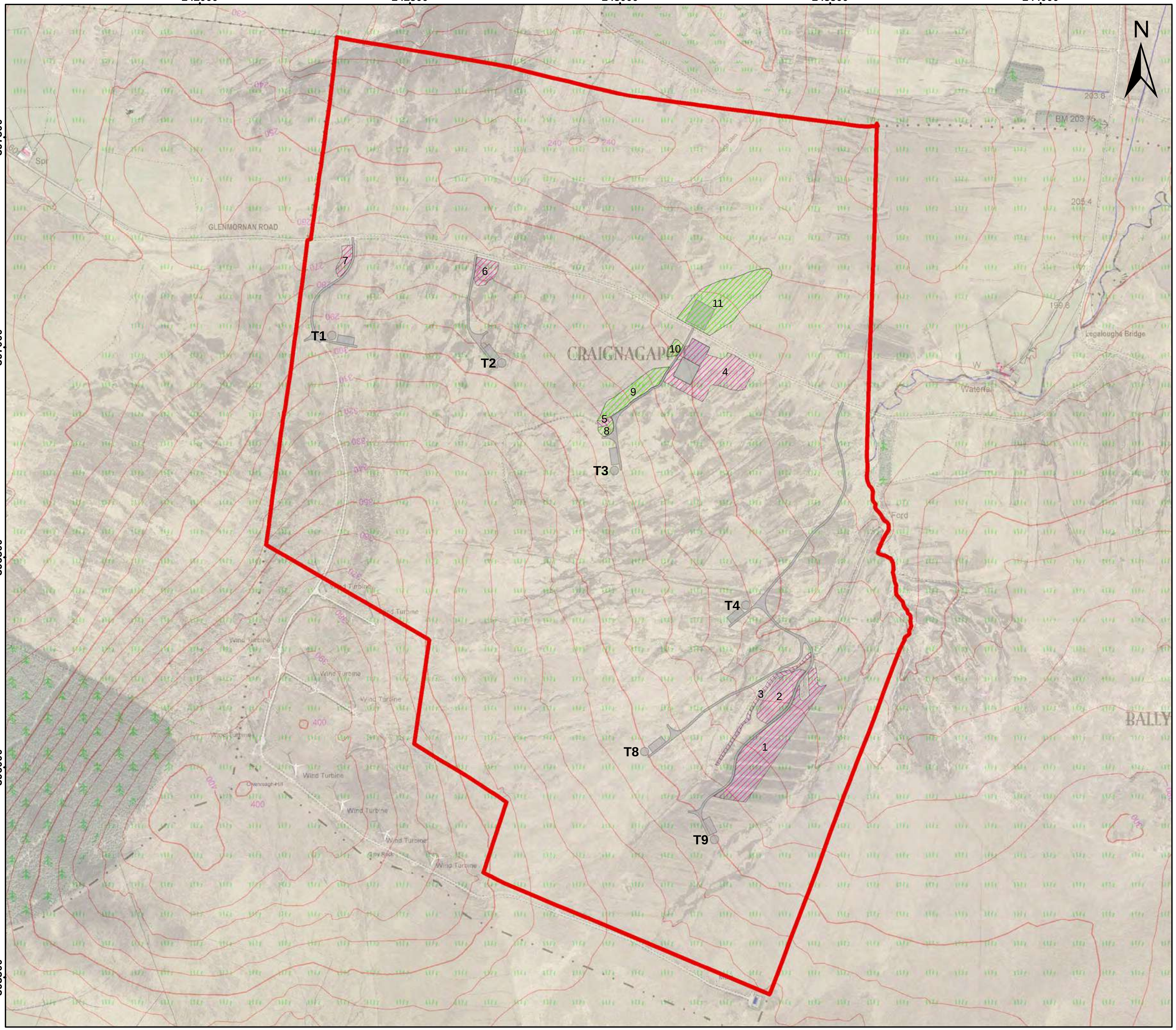
Reuse Type	Photo
Track Infilling Restoration Area 3	   
Peat Cutting Restoration / Reuse Area 4	   

Reuse Type	Photo
Track Infilling Restoration Area 5	 
Peat Cutting Restoration / Reuse Area 6	 
Peat Cutting Restoration / Reuse Area 7	 
Peat Storage Area 8	 

Reuse Type	Photo	
Peat Storage Area 9		

Appendix II – Indicative Audit Checklist for the Peat Management Plan

Activity	Checklist
Transportation of peat	• Check that transportation of peat is by low ground pressure vehicles if off the construction working area • Check that no transportation occurs over areas of intact peat • Provide advice on restoration of any impacted areas from trafficking
Peat excavation/ movement	• Assess turves are being moved as intact as possible • Assess depth of turve removed – as close to 500mm as possible
Storage and stockpiling of peat	• Check peat is being stored as close to excavated area as possible • Check peat is being kept damp and is being watered if moisture content falls below 25% of that in surrounding intact peat • Check peat layers are not being mixed • Check peat is being stored within the areas designated for storage • Check drainage around storage areas is functioning adequately • Check vegetation rich top layers are stored vegetation side up • Check only peat is stored within peat storage areas and mineral soil is taken elsewhere or has a reasonable separation • Check peat is stored at least 50m from watercourses • Check that edges of cut peat that remain exposed are covered with geotextile or similar • Check that peat stored temporarily is bladed off at the sides to minimise the available drying surface area • Check that peat storage is not higher than the 2m limit • Check for signs of surface erosion from water
Peat Restoration	• Check that restoration areas are being prepared in advance so that temporary storage areas are not being used longer than necessary • Check that any areas on steep ground, or that remains partially bare, will be covered using geotextile or a similar method to stop erosion • Check that any areas of bare peat or where vegetation is not re-growing is seeded • Check whether water erosion is occurring and that appropriate hydrological management controls are bring used



Key:

Site Boundary

Craignagapple Layout

Proposed Peat Restoration Areas

Peat Cutting Restoration

Track Infill

Note: Areas of permanent peat storage where previous peat cutting has taken place and/or where tracks in the peat will be infilled.

Proposed Storage Areas

Temporary Peat Storage Area

Areas

Area 1:	19,840 sq m	Area 8:	841 sq m
Area 2:	6,586 sq m	Area 9:	6,244 sq m
Area 3:	2,725 sq m	Area 10:	965 sq m
Area 4:	15,000 sq m	Area 11:	17,463 sq m
Area 5:	487 sq m		
Area 6:	2,898 sq m		
Area 7:	1,787 sq m		

0 100 200 300 400 500 m

PROJECT

CRAIGNAGAPPLE WIND FARM

SCALE

1:9,000 @ A3

FIGURE 1

Proposed Peat Restoration And Storage Areas

FLUID ENVIRONMENTAL CONSULTING

Craignagapple Windfarm

Appendix 5.2.2: Peat Depth Survey Report

FINAL

for

Brookfield Renewable

Fluid Environmental Consulting Ltd

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Registration No. SC385700

Craignagapple Windfarm
Appendix 5.2.2: Peat Depth Survey Report
November 2016
FINAL

Prepared by :	Fluid Environmental Consulting Ltd
For :	Brookfield Renewable
Author :	Duncan Saunders
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Table of Contents

Figures

Appendices

1 Introduction

Fluid Environmental Consulting Ltd (Fluid) were commissioned by Brookfield Renewable (Brookfield) to complete depth of penetration probing and coring at the site of the proposed Craignagapple Windfarm, (the 'Proposed Development') located approximately 8.5km east of Strabane, County Tyrone, Northern Ireland. The site is located on both side of the Glenmornan Road, approximately 650m west of Legalougha Bridge and approximately 200m east of Owenmore Bridge. The site comprises the northern slope of Owenreagh Hill which slopes down to the north from 350 mAOD to 210 mAOD to the north of the Glenmornan Road. This document forms Appendix 5.2.2 of the Supplementary Environmental Information Report. Probing and coring had been completed previously by Doug Nichol in 2009 and 2013.

1.1 Scope of Works

Fluid were commissioned to undertake probing and coring in the following frequencies to help define the optimum layout of the proposed infrastructure:

- Complete depth of penetration probing at the following (where probing information does not already exist):
  - along all sections of proposed access tracks and revisions as the site design is improved at 50m intervals with 10m offset probes and in some sections 25m offsets to assist further micrositing;
  - at all 6 turbine bases and associated crane hardstanding (area of 100m x 80m) on a 20m grid (approx. 30 probes per turbine base and harstanding area);
  - at the temporary construction compound (area of 50m x 50m) on a 20m grid (16 probes);
  - at the substation (area of 50m x 50m) on a 20m grid (16 probes); and
  - at the suppliers compound (area of 50m x 50m) on a 20m grid (16 probes) plus a wider area of approx. 100m to the east on a 20m grid, 100m to the west on a 20m grid and a larger area to the north on a 30m grid.
  - This specification provided a total of 659 probes.
- Complete coring in the following areas/frequencies:
  - One core at each turbine base (6 cores);
  - One core at each hardstanding (6 cores);
  - One core at the temporary construction compound;
  - One core at the substation;
  - One core at the suppliers compound;
  - Nine cores in the area around the suppliers compound; and
  - At 200m intervals along the tracks (17 cores).
  - This totals 42 cores.

The total number of locations examined in 2016 is 659 probes and 42 cores. These are presented on Figure 2 along with probing from previous campaigns.

The following tasks were required to be completed:

- Record the depth of penetration at each probe location along with an estimate of the geology at the limit of penetration;

- Collect data from cores on total peat depth, Von Post measurements every metre, the thickness of the acrotelm, catotelm and amorphous peat (if present), the underlying geology and comments on water table if possible;
- Take a photographic record of all cores;
- Present all data in tables with appropriate labelling of locations according to the specification document;
- Provide a peat depth contour plan across the area of probing and coring; and
- Provide a factual report detailing the work completed and the data collected.

2 Methodology

The project commenced with liaison between Fluid and Brookfield and an exchange of information including the proposed site layout, mapping information, shapefiles, specification of works, information on access contacts and other conditions relating to the site. Fluid reviewed all available information and produced a series of maps with the probing and coring locations marked. Fluid also completed a Risk Assessment and Health and Safety plan for the field work campaign.

Peat probing, coring and sampling was undertaken in accordance with the locations and frequencies outlined above and legislative guidelines. This task included field data collection and daily data management.

An extendable fibre glass peat probe of up to 7.5m length was used by our hydrological field technicians to obtain the depth data along with a gouge peat auger for obtaining profiles of the peat, actual depth and Von Post measurements along with observations on underlying geology and nearby water features. Probe locations were located and recorded using a handheld global position system (GPS) device, with Birdseye aerial imagery, to a six figure grid reference (to 1m) and georeferenced photographic records were obtained for all cores.

2.1 Site Visits and Field Work

Previous peat probing was undertaken by Doug Nichol for SKM in 2009 and 2013 and comprised a total of 184 probes. A total of 9 of these probes were located outside of the site boundary. This information is presented on Figure 1.

Subsequently, due to the need to adjust the layout to avoid various constraints and to obtain more detailed peat depth information, two further rounds of peat probing were undertaken to examine in detail all areas of proposed infrastructure.

The first phase of depth of penetration probing and coring was undertaken between 6th June 2016 and 8th June 2016 and comprised 386 probes and 26 cores and was focused on obtaining sufficient probe density at the proposed infrastructure locations.

The second phase of probing was undertaken between 24th June 2016 and 25th June 2016 to examine areas where adjustments to the proposed infrastructure layout were considered. This comprised a total of 273 probes and 16 cores.

Depth of penetration probing has been completed using narrow diameter fibre glass probes that do not allow a sample to be obtained. They are pushed into the ground until there is sufficient resistance to prevent further penetration and the depth recorded as the depth of penetration. A description of the resistant substrate below is made based on the feel of the resistance (grit, bedrock, clay, sand, rock or resistance where unable to differentiate).

This probe provides the depth of penetration in soft formations and if peat is present is often representative of the actual peat depth when the formation underlying the peat is sands and gravels or bedrock. However the depth of penetration can be an overestimate of the depth of peat where the substrate below is soft and penetrable, such as soft clay or silt. In some cases peat may not be present and the whole of the probe penetrates through silt or clay sediments. Coring is therefore necessary to verify some of the probe results by extracting a core of the deposits for examination.

A series of cores have therefore been obtained using a gouge auger to determine the actual depth of the peat and obtain a sample of the underlying formation. Observations on the soil and peat characteristics were determined from the cores using recognised criteria (Von Post assessment). The acrotelm, catotelm and amorphous layers (if present) within the peat have also been identified within the peat where possible. The probes and gouge auger used at Craignagapple Windfarm are of the types shown in Photo 1, Appendix I.

The data obtained from the current site investigation was verified with the coring data and is presented in Figure 2 along with the probe depths obtained from previous investigations. The depths were then contoured within ArcGIS to produce a contour plot of probe penetration (Figure 3).

In Northern Ireland peat is present where organic soils are present greater than 0.5m in depth and deep peat is classified at >1.0m.

A shaded contour interval of 0-0.5m, >0.5m-1m, >1m – 1.5m, >1.5m – 2m, >2m – 3m, >3m+ has been used on the figures.

The data obtained is presented within this factual report on peat occurrence and properties across the site along with the contour plot. The results of the probing and coring have been tabulated in Appendices I to IV along with photographs and a table of peat conditions.

2.2 Limitations

Extensive historical peat cutting and extraction areas were observed during the field work. Aerial imagery with site observations of vegetation recovery indicates that the peat extraction has been undertaken over several phases through time. The peat extraction has left areas of lower peat surrounded by higher walls or embankments where the peat has not been extracted. The lower extracted areas of peat can be up to 1.2m depth below the natural surface of the peat. Therefore, within small distances the peat depth may vary significantly where peat extraction has occurred.

It should be noted that the original peat depth probes were undertaken on a 200m grid system across the entire site with high intensity probing around proposed infrastructure undertaken both in previous campaigns and the 2016 campaign. In the areas away from proposed infrastructure there may be more localised peat depth variations between each 200m probing point.

3 Results

Depth of Penetration Probing

A total of 184 probes were undertaken across the Craignagapple site and wider area during the previous campaign and a further 659 probes during the 2016 campaign. This resulted in a total number of probes of 814 however 9 of these probes now lie outside of the study area so are not presented below. Each probe in the 2016 campaign recorded the depth of penetration and the potential substrate at the limit of penetration (Appendix II).

Of the 834 locations probed within the study area a total of 220 probes (26.4%) recorded depths of 0.5m or less, 303 probes (36.3%) recorded depths of penetration between >0.5m and 1.0m and 186 probes (22.3%) recorded depths of penetration >1.0m (Table 1).

Table 1 Depth of Penetration Distribution – Craignagapple

Depth Range (m)	Number of Probes	Percentage of Probes
0 to 0.5 (no peat)	220	26.4
>0. 5 – 1.0	303	36.3
>1.0 – 1.5	186	22.3
>1.5 – 2.0	103	12.4
>2.0 – 2.5	15	1.8
>2.5 – 3.0	6	0.7
>3.0	1	0.1
Total		**100%**

The depth of penetration at each probe location is presented on Figure 2.

Coring – Current Campaign

A total of 42 locations within the Craignagapple area have been cored during the 2016 campaigns. The data collected at each core including Von Post test results, acrotelm and catotelm thickness, observations on the peat structure and any observations on water features nearby are presented in Appendix III. Comparison of the probe depth of penetration and the peat depth verified from the core is also presented in Appendix III and full logs of each core including photographic record are presented in Appendix IV.

Of the 42 locations cored, a total of 32 identified peat greater than 0.5m depth.

Comparison of the coring to the depth of penetration probes demonstrated the following:

- The depth of penetration of the probe at 41 (98 %) of the 42 locations were the same (within 0.1m) as the core verified depth of peat. These are spread across a variety of depths – 9 at 0m – 0.5m, 16 at >0.5m – 1.0m, 9 at >1.0m – 1.5m, 6 at >1.5m – 2.0m, and 1 at 3.2m.

- One probe depth (code) at 0.10m was less than the core identified actual peat depth of 0.6m. This was due to the upper 0.3m in this location being a gritty peat overlying

0.3m of peat. This appears to be an anomaly and no other locations were encountered with these characteristics. The peat depth is assumed to be 0.6m and therefore the calculations are conservative in terms of peat volume.

These data validate the peat probing results with probe and coring depths of peat >0.5m almost entirely being within 0.1m difference and therefore no over or under estimate of peat depth appears to be occurring.

Generally the coring across the site identified a distinctive acrotelm layer and within the 42 coring locations acrotelm was recorded with a range between 0 and 0.20m with an average depth of 0.11m.

Based on the data collected an interpreted peat depth map (Figure 3) was produced to demonstrate the variation in peat across the site and at the various infrastructure locations.

Table 2 presents the variation in peat depth across the site.

Table 2 Peat Depth Distribution across Site

Depth Range (m)	Area of site (m^2)	Area of infrastructure footprint (%)
0 to 0.5 (no peat)	178,879	7.5%
>0. 5 – 1.0	992,933	41.4%
>1.0 – 1.5	820,249	34.2%
>1.5 – 2.0	342,970	14.3%
>2.0 – 2.5	44,850	1.87%
>2.5 – 3.0	8,155	0.34%
>3.0	7,195	0.30%
Total	**2,398,390 m^2**	**100%**

Table 3 presents a comparison of the peat depth with the site infrastructure footprint indicating that although the site is has only 7.5% of its area as not containing peat over 30% of the windfarm footprint is located on these areas.

Table 3 Peat Depth Distribution across Infrastructure

Depth Range (m)	Area of infrastructure footprint (m^2)	Area of infrastructure footprint (%)
0 to 0.5 (no peat)	8,978	30.24
>0. 5 – 1.0	12,559	42.30
>1.0 – 1.5	7,010	23.61
>1.5 – 2.0	1,084	3.65
>2.0	60	0.20
Total	**29,691 m^2**	**100%**

Note: These values are different from the actual excavation footprint as the constructed track width will be 4.5m however the excavated width would be 6.5m to allow for drainage and batter slopes. In addition there is a section of existing track of approximately 300m that will be utilised and therefore no excavation will be required in that area.

These data indicate that deep peat (>1.0m depth) is present across 27.5% of the proposed infrastructure footprint and no peat (0 – 0.5m depth) is present across 30.2% of the proposed infrastructure footprint.

The total excavated footprint is 33,552 m^2 which is greater than the infrastructure footprint as this incorporates the 6.5m width of the excavated track although is also reduced as part of the track footprint already exists (section leading to Turbine 1).

Table 4 Peat Depth Distribution across Excavated Area

Depth Range (m)	Area of infrastructure footprint (m^2)	Area of infrastructure footprint (%)
0 to 0.5 (no peat)	9,331	27.8
>0. 5 – 1.0	14,764	44.0
>1.0 – 1.5	8,150	24.3
>1.5 – 2.0	1,247	3.7
>2.0	60	0.2
Total	**33,552 m^2**	**100%**

4 Volume calculations

Volumetric calculations of the peat required to be excavated were undertaken on the Final layout provided and based on the following assumptions:

- The average depth of the acrotelm across the site is 11cm;
- The contour plot of the interpreted peat depth is based on sufficient data for an accurate peat depth map to be produced;
- The infrastructure dimensions as presented in Table 4; and
- The actual width of excavation of the tracks is 6.5m to account for the installation of drainage channels on either side.

Table 4 Infrastructure dimensions Final Layout

Infrastructure	Dimensions	Area (m^2)
Turbines (6 in total)	20m diameter	1,878
Crane hardstanding (6 in total)	18m x 40m	4,320
Construction Compound	46m x 50m	2,300
Suppliers Compound	56m x 50m	2,800
Substation	46m x 50m	2,300
New Track (excavated)	Approx 4.5m wide x 2,849m including some irregular shapes with 1m drains on either side	19,957
Existing Track	6.5m wide x 293m	1,885

Using the interpreted peat depth contour map (Figure 3) produced from all of the probing and coring data from the previous and 2016 campaigns, the volumes of peat that would be excavated during construction were calculated based on the infrastructure dimensions (ArcGIS shapefiles) provided for the Final Layout along with a buffer along the track to allow for the wider width that would be required to be excavated. These calculations produced the following volume estimates and are detailed in Table 5:

- A total volume of peat to be excavated of about 23,600m^3;
- A total volume of acrotelm to be excavated of about 1,600m^3; and
- A total volume of catotem to be excavated of 22,000m^3.

Table 5 Excavated Peat Volumes (First Iteration Layout)

Infrastructure	Excavated area (m^2)	Average peat depth over infrastructure area (m)	Percentage of infrastructure with >0.5m depth of peat	Area of infrastructure with >0.5m depth of peat (m^2)	Average peat depth over area of infrastructure with >0.5m depth of peat (m)	Volume of peat excavated (m^3)	Volume of acrotelm peat excavated (m^3)	Volume of catotelm peat excavated (m^3)
Turbine 1	313	0.87	100.0	313.0	0.87	273	32	242
Turbine 2	313	0.50	44.7	140.0	0.55	77	14	62
Turbine 3	313	0.56	70.4	220.4	0.60	133	22	111
Turbine 4	313	1.17	100.0	313.0	1.17	365	32	333
Turbine 8	313	0.84	100.0	313.0	0.84	263	32	231
Turbine 9	313	1.68	100.0	313.0	1.68	526	32	494
Crane hardstanding 1	720	0.74	100.0	720.0	0.74	534	73	460
Crane hardstanding 2	720	0.74	93.3	671.6	0.76	512	69	444
Crane hardstanding 3	720	0.35	0.1	1.0	0.38	0	0	0
Crane hardstanding 4	720	0.98	100.0	720.0	0.98	708	73	634
Crane hardstanding 8	720	1.31	100.0	720.0	1.31	946	73	872
Crane hardstanding 9	720	1.42	100.0	720.0	1.42	1,024	73	951
Construction Compound	2,300	0.83	81.2	1,868.1	0.95	1,780	191	1,589
Suppliers Compound	2,800	0.05	0.0	0.0	0.0	0	0	0
Substation	2,300	0.53	52.9	1,216.8	0.62	753	124	628
New Track	19,957	0.84	80.0	15,972.9	0.98	15,673	958	14,714
Total	**33,552**					**23,566**	**1,584**	**21,982**

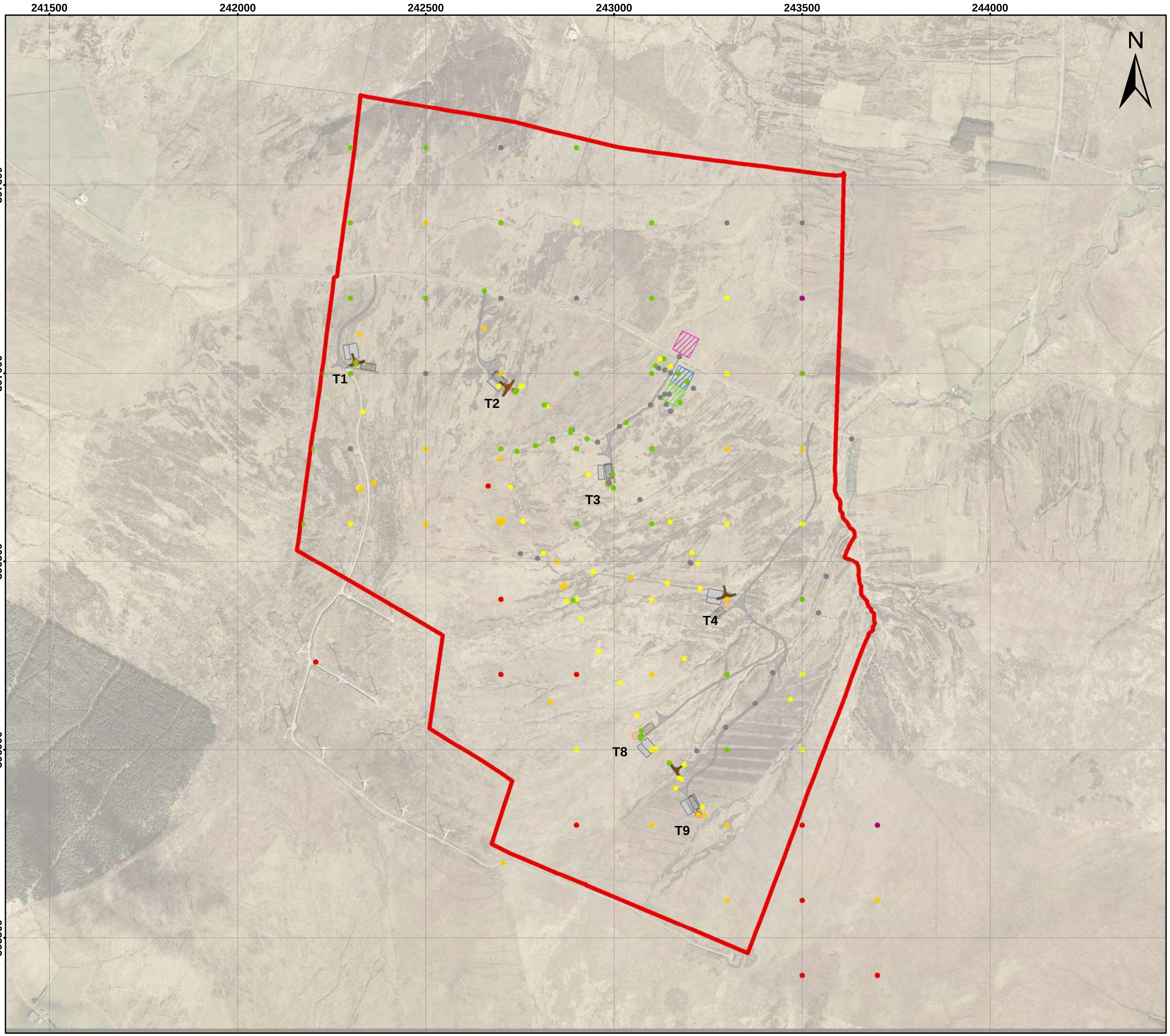
5 Summary

The following summarises the results of the peat survey campaign and subsequent peat depth contouring and excavated volume calculations:

- Acrotelm thickness across the site has an average depth of 11cm.
- No amorphous peat was identified at site.
- The coring results have verified the depth of penetration probing to be representative of peat depth.
- The various peat survey campaigns have provided a wide coverage of peat occurrence and depth across the proposed Craignagapple Windfarm site with higher frequency probing undertaken in the areas of proposed infrastructure.
- Peat has been determined to be present up to a depth of 4.3m based on 834 depth of penetration probes and 42 cores.
- The data collected has been used to produce an interpreted maximum depth of peat contour map using ArcGIS;
- The mapping indicates that the presence of peat at the site is variable although almost the whole of the site (93%) is covered in peat, with just over half (51%) of the site containing deep peat (peat >1m depth).
- The peat probing campaigns at infrastructure locations has informed a review of the windfarm layout, and allowed areas of deep peat to generally be avoided.
- The changes to the infrastructure layout included adjustment in the location of turbine bases and the associated crane hardstandings, realignment of track sections and selection of alternative routes.
- Based on the infrastructure Final Layout, deep peat (>1m depth) was present across 28.2% of the excavated footprint.
- There is no peat (0 – 0.5m depth) at 30.2% of infrastructure.
- The total volume of peat that is required to be excavated based on the Final Layout and allowing for a wider excavation corridor along the tracks has been calculated using ArcGIS spatial analysis and is estimated at 23,600m^3 which is comprised of about 1,600m^3 of acrotelm and 22,000m^3 of catotelm.

Figures

Appendices



Key:

- Site Boundary
- Turbine
- CranePad
- Track
- Substation
- Suppliers Compound
- Temporary Compound

Peat Depth (m)

- 0 - 0.5 m
- 0.51 - 1.0 m
- 1.01 - 1.50 m
- 1.51 - 2.00 m
- 2.01 - 3.00 m
- 3.01 - 4.00 m

0 100 200 300 400 500 m

PROJECT

CRAIGNAGAPPLE WIND FARM

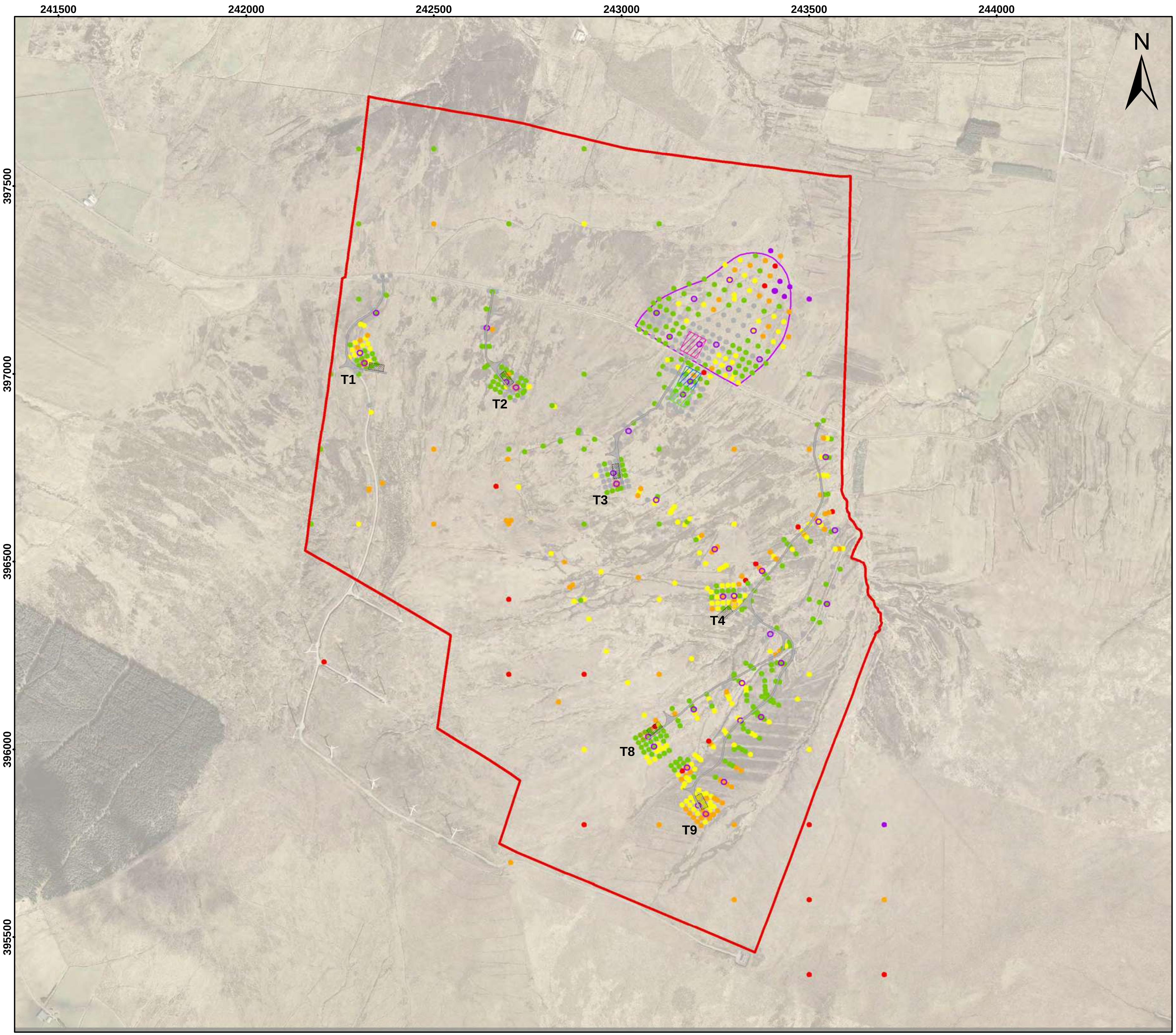
SCALE

1:10,000 @ A3

FIGURE 1

Craignagapple Peat Probing Locations Previous Campaigns

FLUID ENVIRONMENTAL CONSULTING



Key:

- Site Boundary
- Turbine
- CranePad
- Track
- Substation
- Suppliers Compound
- Temporary Compound
- Survey Area
- Core Locations

Peat Depth (m)

- 0 - 0.5 m
- > 0.5 -1.0 m
- >1.0 - 1.5 m
- >1.5 - 2.0 m
- >2.0 - 3.0 m
- >3.0 - 4.0 m

0 100 200 300 400 500 m

PROJECT

CRAIGNAGAPPLE WIND FARM

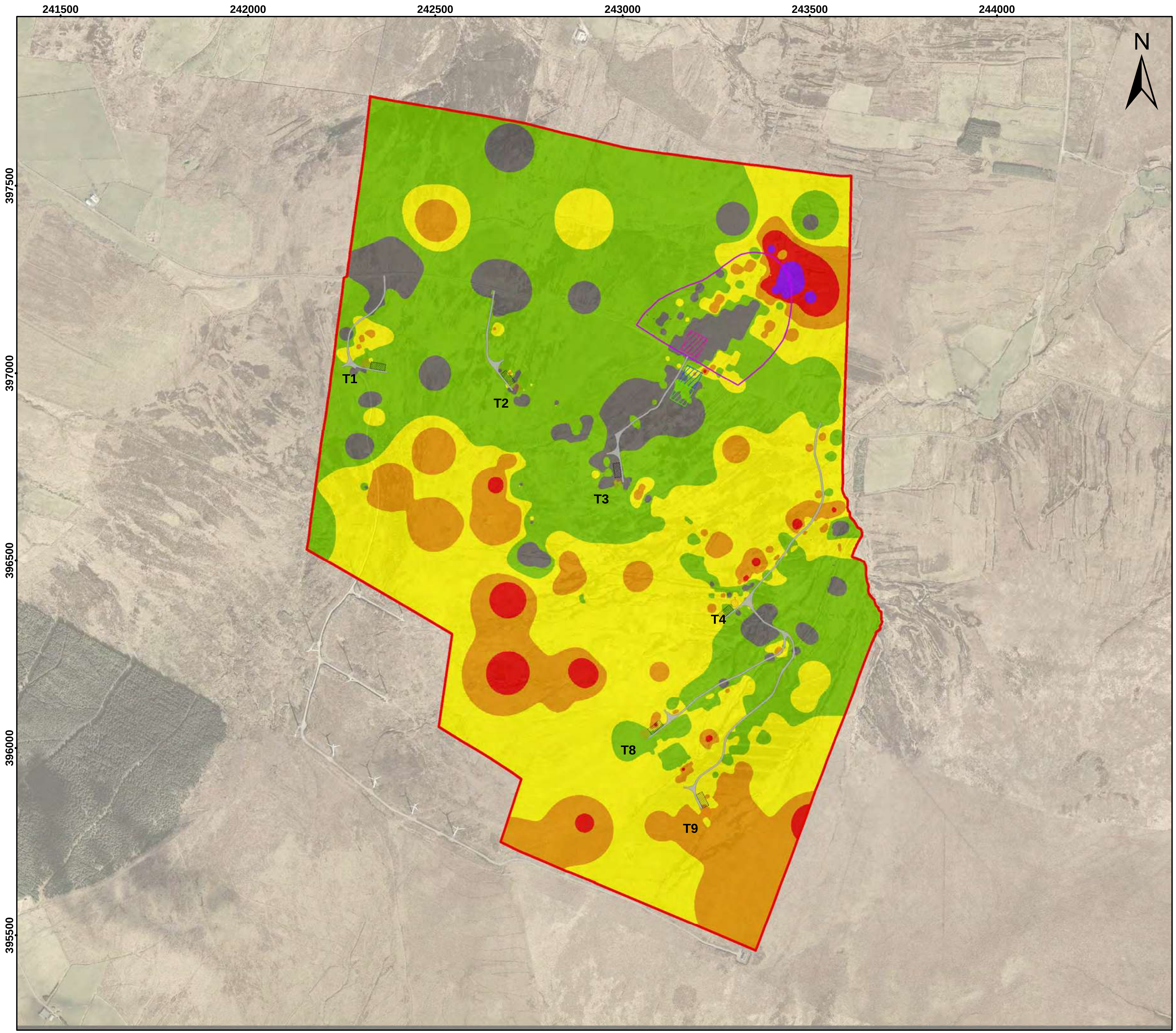
SCALE

1:10,000 @ A3

FIGURE 2

Craignagapple Peat Probing and Coring Locations 2016

FLUID ENVIRONMENTAL CONSULTING



Key:

- Site Boundary
- Turbine
- CranePad
- Track
- Substation
- Suppliers Compound
- Temporary Compound
- Survey Area

Interpreted Peat Depth (m)

- 0 - 0.5 m
- > 0.5 - 1.0 m
- > 1.0 - 1.5 m
- > 1.5 - 2.0 m
- > 2.0 - 3.0 m
- > 3.0 - 4.0 m

0 100 200 300 400 500 m

PROJECT

CRAIGNAGAPPLE WIND FARM

SCALE

1:10,000 @ A3

FIGURE 3

Craignagapple Interpreted Peat Depth Contour Plan

FLUID ENVIRONMENTAL CONSULTING

Craignagapple Wind Farm FEI

Brookfield Renewable

Outline Construction and Environmental Management Plan 2016

Final

14 November 2016

KU011501

Document history and status

Revision	Date	Description	By	Review	Approved
1	21.10.16	Draft for client review	Lynne Eastham	Steve Elkins	Joanne Moran
2	09.11.16	Client comments incorporated	Lynne Eastham		
3	13.11.16	Final review comments	Lynne Eastham	Steve Elkins	Joanne Moran
FINAL	14.11.16	FINAL FOR ISSUE	Lynne Eastham	Joanne Moran	Joanne Moran

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Brookfield Renewable (hereafter referred to as Brookfield) applied to Northern Ireland Planning Service in 2010 for planning permission to construct a wind farm comprising nine wind turbines, together with the required ancillary infrastructure (Planning Reference J/2010/0481/F). As a result of the consultation and environmental assessment process, the number of turbines has now been reduced to six, generating up to 2.3 megawatts (MW) each, resulting in a total generating capacity in the region of 13.8MW.

The proposed development is known as **Craignagapple Wind Farm** (adjacent to Owenreagh Wind Farm) and it is located on the north eastern flank of Owenreagh Hill in an area between the townlands of Craignagapple and Owenreagh, approximately 7km east of Strabane. The proposed development area is located within the District Council area of Derry City and Strabane.

The site and the surrounding area, within a radius of approximately 4km, are upland in character with extensive expanses of bog at higher altitudes and semi- / improved and marshy grasslands in the valley bottoms and on south-facing slopes. Small stands of coniferous plantation are also frequent and semi-natural woodland remnants are restricted to short lengths of the watercourses draining the site.

The proposed wind farm development will have associated on-site infrastructure, including a substation, underground cabling, access tracks, and crane hardstandings. The turbines and other infrastructure will be in place for 25 years.

This document has been prepared for Brookfield by Jacobs UK Ltd. to set out an outline of the project specific construction and environmental management issues related to Craignagapple Wind Farm. This outline document forms the basis of the site Construction and Environmental Management Plan (CEMP), and will be further developed during the detailed design and construction stages in consultation with the planning authority and other agencies where relevant. It will be updated as necessary by Brookfield and the Contractor appointed to the construction stage and will be the appointed Contractor's responsibility for the duration of the construction works.

It will be a condition of the construction contract that the site CEMP will meet the Developer's requirements, including all conditions included in the Craignagapple Wind Farm Environmental Statement 2010 (2010 ES), Further Environmental Information Report 2014 (2014 FEI), Further Environmental Information Report 2016 (2016 FEI), planning permission and associated documents. Any amendments to the CEMP will be made only on the basis that they do not increase the impacts as addressed in the 2010 ES and subsequent FEI Reports.

The CEMP will provide the management framework needed for the planning and implementation of construction activities in accordance with environmental and ecological commitments.

The CEMP is a working document which will be updated as part of the planning compliance process prior to any construction works commencing on site. This outline version of the CEMP is indicative, particularly where reference is made to planning conditions and Contractor specific items.

All elements of the works will be designed and constructed in accordance with the Employer's requirements and good construction practice.

1 INTRODUCTION

1.1 Background to the Outline Construction and Environmental Management Plan

Major construction projects require the preparation of a site specific construction management plan in order that the project is constructed in accordance with best practice and with the minimum impact on the surrounding environment.

This document is the Outline Construction and Environmental Management Plan (CEMP) for the proposed Craignagapple Wind Farm and has been prepared by Jacobs UK Ltd. on behalf of Brookfield as an update to previous Outline CEMP submitted in Appendix 9 of the 2014 FEI. The Outline CEMP will provide the management framework needed for the planning and implementation of construction activities in accordance with environmental and ecological commitments identified within the Environmental Statement (2010 ES) and Further Environmental Information Reports (2014 and 2016 FEI), and any subsequent updates of the plan will encompass the requirements of future planning conditions.

The Outline CEMP provided has been prepared based on the information available at the planning stage of the project and it will be developed further at the post-planning and construction stages by the Developer and the Contractor appointed to the project.

The Outline CEMP provides an overview of the information which will be contained in the Detailed CEMP to be developed at the construction stage of the project. The Detailed CEMP will also be developed in consultation with the planning authority, Roads Service, and other agencies where relevant. Any adjustments to the CEMP will be carried out on the basis that they do not increase environmental impacts as addressed in the 2010 ES, 2014 FEI and 2016 FEI.

1.2 Scope and Purpose of the Outline CEMP

1.2.1 Scope of the Outline CEMP

The Outline CEMP for the Craignagapple Wind Farm will provide a framework for all aspects of the proposed construction stage of the project, including:

- Introduction and Purpose.
- Organisational Hierarchy.
- Description of Existing Site.
- Description of Construction Works.
- Environmental Requirements.
- Management Plans for various aspects.
- Construction Methodologies and Method Statements.
- Quality Control Procedures.

In as much as is possible at this stage of the project, the relevant information is included in the Outline CEMP.

1.2.2 Purpose of the Outline CEMP

This Outline CEMP establishes the principles of the work practices, construction management procedures and management responsibilities relating to the construction of the proposed Craignagapple Wind Farm.

It outlines how the Contractor (when appointed) will implement a site construction management system on this project to meet the specified contractual, regulatory and statutory requirements, 2010 ES, 2014 and 2016 FEI mitigation measures and any relevant planning conditions. It is the Contractor's responsibility to fully develop and implement an effective construction management system to ensure that the Employer's requirements for the construction of this project are met.

By the time construction work begins on site, the detailed design will be in place and the Outline CEMP will have been replaced by an updated version known as the Detailed CEMP.

All site personnel will be required to be familiar with the Detailed CEMP's requirements as related to their role on site. The plan will describe the project organisation, set out the procedures that will be adopted on site and outline the key performance indicators.

A number of key roles and responsibilities are set out in sections 1.3 and 1.4 below.

1.3 The Employer

Brookfield Renewable's portfolio primarily consists of hydroelectric and wind facilities totalling more than 10,700 MW of installed capacity and is diversified across 15 power markets in seven countries. In 2014, Brookfield added one of the largest renewable energy portfolios on the island of Ireland to its portfolio. The Irish portfolio now consists of 478 MW of operating wind capacity and ~200 MW development pipeline, employing more than 80 people it is an important part of Brookfield's global growth plans in Europe.

1.4 Environmental Management Team – Structure and Responsibility

A preliminary organisation chart is included in Figure 1.1. Revisions to the project organisation chart shall be controlled independently of this plan following the appointment of the Contractor for the main construction works.

This section sets out a range of responsibilities for key roles within the Contractor's site team for the construction of Craignagapple Wind Farm. In addition, it outlines the lines of communication between the various parties.

The Construction Phase Contractor's Project Manager and/or Environmental Clerk of Works (ECoW) are the key roles relating to environmental management during the construction phase. The Contractor's Project Manager will be responsible for the delivery of all elements of the Environmental Management Plan. The Contractor's Project Manager will retain all responsibility for issuing, changing and monitoring the Environmental Management Plan throughout.

The ECoW will be responsible for monitoring all construction works to ensure they are carried out in compliance with all planning and environmental requirements. The ECoW will be the environmental point of contact for the Planning Authority, reporting to and liaising with Derry City and Strabane District Council and other statutory bodies as required. The ECoW will report directly to the Wind Farm Construction Contractor's Project Manager. A Project Ecologist, Drainage Engineer, Roads Engineer and Project Geotechnical Engineer will be employed for the construction stage of the project and will also report to the Contractor's Project Manager, although they will work closely with the ECoW.

The roles and specifically CEMP related responsibilities outlined below are indicative, based on our experience of similar projects, and will be subject to refinement and update upon appointment of the Contractor.

The responsibilities of the Contractor's site staff shall include as follows:

1.4.1 Contractor's Project Manager

The Contractor's Project Manager for the Works will report directly to the Contractor and will be responsible for, inter alia:

a. the implementation of the CEMP;
b. management of the project;
c. management of quality issues relating to the project;
d. co-ordinating the design and construction teams;
e. implementing the Contractor's Health and Safety Plan;
f. liaison with the Client's Representatives;
g. production of construction programmes; and
h. maintaining project records.

1.4.2 Quality Assurance (QA) Manager

The Contractor's QA Manager for the works reports to the Project Manager and responsibilities will include:

a. assisting with the implementation of the CEMP;
b. management of quality issues relating to the project;
c. co-ordinating the construction teams;
d. ensuring that method statements are in place;
e. implementing the Contractor's Health and Safety Plan; and
f. liaison with the client's representative staff.

1.4.3 Site Agent

The Contractor's Site Agent reports to the Project Manager. He is responsible for:

a. Assisting with the implementation of the CEMP;
b. management of the project, particularly in relation to the roadworks;
c. management of all plant and labour activities relating to the section of works for which he is responsible;
d. implementing the Contractor's Health and Safety Plan;
e. liaison with the client representative staff;
f. production of construction programmes; and
g. maintaining a project diary.

1.4.4 Health and Safety Officer

The Contractor's Health and Safety Officer for the Works is appointed by the Contractor and reports to the Project Manager. He is responsible for:

a. carrying out duty of Health & Safety Coordinator Construction Stage;
b. safety induction of all staff and personnel on site;
c. implementing the Contractor's Health and Safety Plan; and
d. auditing the Site Health & Safety & updating Plan as necessary.

1.4.5 Environmental Clerk of Works (ECoW)

The ECoW is appointed by the Contractor and reports to the Project Manager. He / She will be suitably qualified and experienced in the environmental management of similar schemes and will be responsible for:

- Ensuring all environmental obligations in the planning conditions and EIA are adhered to.
- Reviewing of Risk Assessment and Method Statements with respect to compliance with the CEMP and implementation of the site Environmental Management Plan.
- Management of environmental issues relating to the project.
- Liaising with the client and construction teams.
- Liaison with Project Ecologist, Drainage Engineer, Roads Engineer and Project Geotechnical Engineer.
- Ensuring that method statements take account of environmental issues.
- Liaison with the relevant environmental bodies.
- Maintenance of a site diary.
- Maintenance of the site environmental management plan and liaison with Project Quality Manager.
- Responsible for Internal Audits.

1.4.6 Project Ecologist

The Project Ecologist is appointed by the Contractor and reports to the Project Manager. He will be suitably qualified and experienced in the ecological management of similar schemes and will be responsible for:

- Co-ordinating and undertaking all general and specific ecology actions required across the site.
- Undertaking ongoing monitoring during construction.
- Production and maintenance of an ecological finds register.
- Review and sign off on all required habitat management and restoration works.
- Preparation of all required reports to record progress and results of all monitoring works.
- Monthly reporting in relation to compliance and non-compliance with relevant EIA, planning and contractual requirements.

1.4.7 Drainage Engineer

The drainage engineer is appointed by the Contractor and reports to the Project Manager. He will be suitably qualified and experienced, particularly in the design and construction of drainage systems for similar schemes and will be responsible for:

- Co-ordinating and undertaking all required general and specific actions across the site.
- Monitoring and reviewing the construction and performance of all drainage and ensuring compliance with the design and all contractual requirements.
- Production and maintenance of a drainage maintenance register.
- Undertaking all water quality monitoring as required by the water quality monitoring plan and the contractual requirements.
- Preparing all required reports to record progress and results of all monitoring works.
- Maintenance of the drainage system in accordance with all relevant documentation, contractual requirements and best practice guidance.
- Monthly reporting in relation to compliance and non-compliance with the relevant EIA and planning requirements.

1.4.8 Geotechnical Engineer

The Geotechnical Engineer is appointed by the Contractor and reports to the Project Manager. He will be suitably qualified and experienced, particularly in construction in peat environments and will be responsible for:

- Co-ordinating and undertaking all general and specific actions required across the site.
- Monitoring the construction and performance of all geotechnical works to ensure compliance with the design, contractual and planning requirements.
- Carry out a site specific geotechnical induction with all supervisory staff.
- Production and maintenance of a geotechnical risk register.
- Review the Contractors Method Statements and Risk Assessments for all excavation works.
- Monitoring the construction and performance of all peat related works and ensuring compliance with the design and contractual requirements.
- Monitoring the handling and storage of all excavated and deposited materials, including the stability of material storage areas.
- Monthly reporting in relation to compliance and non-compliance with relevant EIA, contractual and planning requirements.
- Conduct geotechnical site audits.

1.4.9 Project Archaeologist

The Project Archaeologist is appointed by the Contractor and reports to the Project Manager. He will be suitably qualified and experienced in similar schemes and will be responsible for:

- Co-ordinating and undertaking all required general and specific actions required across the site.
- Ensuring that all archaeological works are being carried out in accordance with the requirements of the contract and supporting documentation.
- Production and maintenance of an archaeological finds register.
- Preparation of method statements and obtaining all required archaeological licenses in advance of site clearance and ground breaking works.
- Ensuring all works are undertaken in accordance with licence and planning conditions.
- Preparing all required reports to record progress and results of all archaeological testing and monitoring.

- Monthly reporting in relation to compliance and non-compliance with relevant EIA and other requirements.

1.4.10 Community Liaison Officer

The Community Liaison Officer is appointed by the Contractor and reports to the Project Manager. He will be suitably qualified and experienced in similar schemes and will be responsible for:

- Liaising closely with the landowners and local residents, especially homeowners and landowners along the access routes throughout.
- Acting as the primary point of contact for landowners, community and public engagement.
- Managing any complaints/queries that arise in respect of landowners or the local community.
- Production and maintenance of a complaints/queries register.
- Ensuring all works are undertaken in accordance with licence and planning conditions with respect to public engagement and landowner liaison.
- Preparing all required reports in respect of community liaison issues.

1.4.11 Training, Awareness and Competence

All site personnel will receive environmental awareness information as part of their initial site briefing / induction. Update briefings will be carried out on a weekly basis, or as required, during the construction phase. The detail of the information should be tailored to the scope of their work on site. The contractor for the main construction works may decide to conduct the environmental awareness training at the same time as Health and Safety Training (often referred to as Site Inductions).

Through site inductions, all site personnel will be made aware of the CEMP, project environmental issues and constraints, planning compliance requirements and best practice environmental standards. An Environmental Constraints Map will be provided on the project notice board, in the site compound and supplied to on-site vehicles e.g. excavators. Ongoing tool box and site inductions talks will be held throughout the construction period to maintain awareness on-site of environmental and health and safety requirements. Daily task talks will be carried out in advance of the commencement of works each day and a task safety plan will be prepared. Environmental risks associated with the individual daily jobs will be highlighted to personnel at these talks.

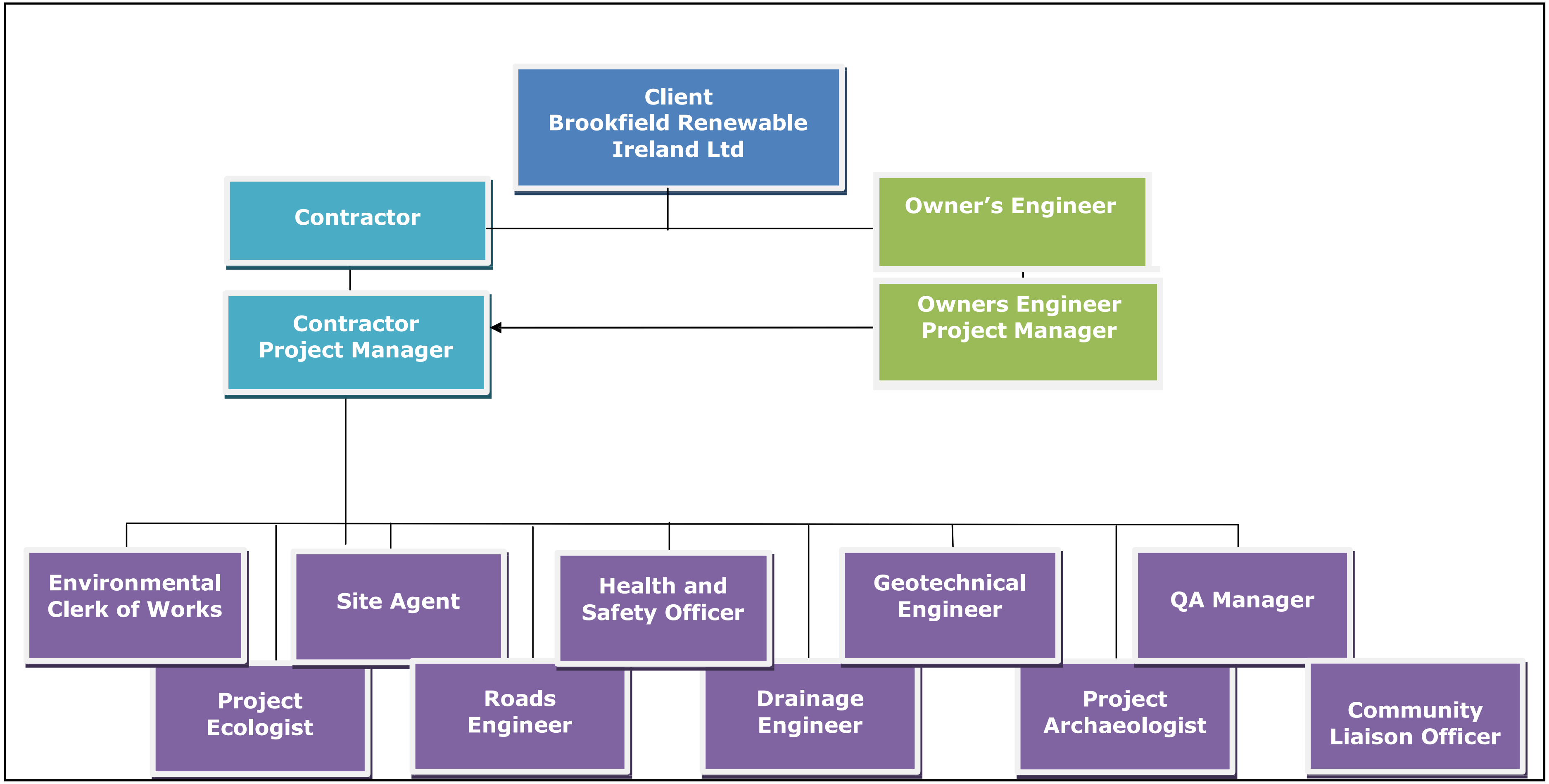
This will ensure that personnel are familiar with the environmental aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The CEMP will be posted on the main site notice board during the project. The environmental performance at the site is on the agenda of the monthly project management meetings for the project.

Elements of the CEMP will be discussed at these meetings including objectives and targets, the effectiveness of environmental procedures etc. Two-way communication will be encouraged by inviting all personnel to offer their comments on environmental performance at the site.

Figure 1.1 Typical Overall Project Organogram

It is envisaged that the project team to deliver the project will be as follows:



* Please note that in the above organisational chart the 'Owner' refers to Brookfield Renewable.

1.5 Proposed Development

Brookfield is currently seeking planning permission for a six turbine wind energy development located in the townlands at Craignagapple, Strabane County Londonderry. The 2016 Layout is presented on **Figure 1.2: 2016 Layout**, and has been designed with cognisance of the constraints outlined in the 2010 ES, 2014 FEI and 2016 FEI.

The 2016 Layout has been reduced from nine to six turbines with associated infrastructure as follows:

- six three-bladed, horizontal axis wind turbines (2.3 MW each) , each comprising a tubular tower and three blades, and the overall blade tip height will not exceed 111m;
- voltage transformers and related switchgear located inside each turbine;
- turbine foundations;
- hard-standing areas for the erection of cranes at each turbine location (crane pads);
- drainage infrastructure;
- upgrade of existing access points and existing internal access tracks;
- construction of new internal access tracks;
- a wind farm sub-station in a compound also containing a control building;
- an on-site electrical and control network of buried cables; and
- a temporary turbine supplier’s compound and a main construction compound.

Pre-Planning ES scoping was carried out in conjunction with the NI Planning Service (Planning Reference J /2010/0031). In response to this consultation The Northern Ireland Environmental Agency (NIEA) requested the production of an Environmental Management Plan, “*which details the construction phase, the lifetime of the proposed wind farm and the eventual decommissioning of the site should be included. This plan can then be utilised to control the implementation of the development so as to avoid or limit damage to Fauna or Flora and should include a record of pre-construction site conditions, details of how to minimise the environmental impact of construction activities, … working practices and method of construction would be specified and provisions for monitoring environmental effects during operation detailed*”.

The proposed site was selected based upon its high wind regime, existing infrastructure and the minimal environmental impacts this development would impose upon the surrounding area.

The proposed Craignagapple turbine layout has been developed using a constraints based approach; identifying and avoiding any significant issues at the earliest opportunity, defining a buildable area of the site.

Key constraints identified and considered during layout design included on-site slopes, hydrological features, peat depths, peatslide hazards and risks, ecological conservation, archaeological conservation, proximity to dwellings and proximity to road and railways. These constraints have been assessed and considered in the 2010 ES, 2014 FEI and 2016 FEI that accompany the planning application.

1.6 Reference Documents

The reference documents that apply to this Outline CEMP include:

- ES for Craignagapple Windfarm (2010 ES);
- Further Environmental Information 2014 (2014 FEI);
- Further Environmental Information 2016 (2016 FEI);
- Habitat Management and Enhancement Plan (HMEP) 2016 provided in 2016 FEI Appendix 6.2;
- Outline Peat Management Plan (PMP) 2016 provided in 2016 FEI Appendix 5.2;
- Surface Water Management Plan and Drainage Management Plan (2016) provided in 2016 FEI Appendix 5.4 and 5.5;
- Peat Hazard and Risk Assessment (2010), updated Peatslide Risk Assessment Technical Note 4 provided in the 2014 FEI Appendix 14.2, and updated Peatslide Risk Assessment Technical Note 5 provided in the 2016 FEI Appendix 5.1; and
- Tender documents which will be prepared prior to construction of Craignagapple Wind Farm, including any associated site investigation and geotechnical reports, etc.

The best practice guidelines that are considered to apply to this Outline CEMP include:

- Health and Safety Executive Northern Ireland, The Construction (Design and Management) Regulations (Northern Ireland) 2016;
- Planning and Environmental Policy Group, Planning Policy Statement 18 Renewable Energy August 2009;
- Best Practice Guidance Planning and Environmental Policy Group, Planning Policy Statement 18 Renewable Energy August 2009;
- Windfarm Planning Guidelines 2006, Department of Environment, Heritage and Local Government;
- Best Practice Guidelines for the Irish Wind Energy Industry, IWEA & SEI;
- Environmental Good Practice on Site (Second Edition, CIRIA C650, 2005);
- PPS 15: Planning and Flood Risk;
- Guidance on road construction and maintenance (Forests and Water Guidelines Fifth Edition 2013, Forestry Commission);
- Control of water pollution from constructions sites. Guidance for consultants and contractors C532 (CIRIA, 2001);Report 168: Culvert Design Guide (CIRIA, 1997);
- Control of water pollution from linear construction projects: technical guidance C648 (CIRIA, 2006);
- PPG1: General guide to the prevention of pollution (EA, SEPA & EHSNI);
- PPG2: Above ground oil storage tanks (EA, SEPA & EHSNI, 2004);
- PPG4: Treatment and disposal of sewage where no foul sewer is available (EA, SEPA & EHSNI, 2006);
- PPG5: Works and maintenance in or near water (EA, SEPA & EHSNI, 2007);
- PPG6: Working at construction and demolition sites (EA, SEPA & EHSNI);
- PPG8: Safe storage and disposal of used oils (EA, SEPA & EHSNI, 2004);
- PPG21: Pollution incidence response planning (EA, SEPA & EHSNI, 2004); and
- PPG26: Storage and handling of drums and intermediate bulk containers (EA, SEPA & EHSNI, 2006).

2 EXISTING SITE CONDITIONS

2.1 Site Description

The site is located in an area between Owenreagh, Craignagapple Hills and the townland of Craignagapple, centered at Irish Grid Reference 242958E 396706N. The application site is within the Derry City and Strabane District Council area.

The proposed development is located within the north-western slopes of the Sperrin Mountains to the north and east of Owenreagh Hill. The slopes of the site rise from 200mAOD in the extreme north to 375mAOD on Owenreagh Hill where the existing Owenreagh Wind Farm is situated. The site covers an area of approximately 240 hectares.

The proposed development area lies within County Tyrone, Northern Ireland. It is situated in hilly ground some 8km north-west of Plumbridge and 7km east-south-east of Strabane. The site occupies relatively open upland with an area of coniferous forest to the west. The main land use within the application area is for sheep farming and peat extraction. The surrounding land use is agriculture and forestry with an existing wind farm (Owenreagh Wind Farm) adjoining the application area. The land at the site is modified blanket bog, modified by grazing, drainage and peat cutting activities, acid grasslands, unimproved grassland and intact peat.

Land cover at the site comprises heather and mosses on the upper reaches of Owenreagh Hill and rough grassland on the lower reaches. The land use predominately comprises agricultural rough grazing. There is tertiary evidence that areas of the site have been used for peat extraction historically and peat in these areas is degraded. A coniferous plantation is located to the south west of the site adjacent to Owenreagh Hill. A larger plantation is located approximately 2.5km to the south of the proposed site boundary in an area known as Ligfordrum. This plantation extends both sides of the B536.

An unclassified road traverses the northern section of the site in an east-west direction from a crossroads at Owenmore Bridge to the north-west of the site to a T-junction at Legalougha Bridge to the north-east of the site. A second unclassified road traverses the south eastern section of the site in a north-south direction.

The location of the site is shown in **Figure 2.1: Site Location**.

2.2 Sites of Nature Conservation Importance in Vicinity

The site overlaps with the Sperrin Area of Outstanding Natural Beauty (AONB) a mountainous area with areas of moorland divided by narrow glens and deep valleys as well as lakes and glacial features.

There are also several other areas designated for nature conservation within 25km of the study area, however:

- The proposed application site does not lie within any Special Area of Conservation. Two Special Areas of Conservation are located within 10km of the Development; Owenkillew River SAC to the south and River Foyle and its tributaries to the east.
- The proposed application site does not lie within any designated Area of Special Scientific Interest (ASSIs). The nearest nature reserve (Silverbrook Wood ASSI) is located 4.5km north-west from the site boundary.
- The proposed application site does not lie within any designated Nature Reserve. The nearest nature reserve (Boorin National Nature Reserve (NNR)) is located c.11km south-east from the site boundary.
- The proposed application site does not lie within any Ramsar sites. The nearest Ramsar is the Fairy Water Bogs Ramsar site which is located 20km from the site boundary.

The proposed application site does not lie within any designated Special Protection Area (SPA). The nearest SPA (Lough Foyle SPA) is located c.25km south-east from the site boundary. The location of the site with respect to the designated areas within 15km of the proposed development is shown in **Figure 2.2: Environmental Designations within 15km of the Proposed Development.**

2.3 Hydrology

The catchment of the Sperrin Hills is generally characterised by fast-flowing moorland streams which are fairly straight and open in character, sometimes eroding deep channels between steep ridges of glacial moraine. Deep gullies, some with broken, eroded edges, create strong dendritic patterns, carving and moulding the steep slopes into striking forms.

The site lies within two hydrological catchments:

1) Glenmornan River to the north and west
2) Dunnyboe Burn to the south and east

The northern section of the site falls within the Glenmornan River catchment which includes the north western and northern slopes of Owenreagh Hill. Tributaries within the site boundary include the Glentrashna Burn, the Crockathede Burn and the Lagavadder Burn (all in close proximity to the site's northern boundary). Other tributaries within this catchment include the Glenwanda Burn, the Allnamoota Burn and the Curryenagh Burn, all situated west of the site. The Glenmornan catchment drains directly into the River Foyle within the Lower Foyle catchment.

The south eastern section of the site falls within the Dunnyboe Burn catchment. The Dunnyboe Burn catchment originates from the eastern slopes of Owenreagh Hill. Tributaries within the site boundary include the Legnahone Burn in the eastern section of the site. The Dunnyboe Burn is a tributary of the Burn Dennet which in turn is a tributary of the River Foyle within the Lower Foyle catchment.

2.4 Archaeology

As part of the desk review for the proposed development of Craignagapple Wind Farm a review of the nearest recorded monuments was carried out. There are no known archaeological features within the application area.

The nearest recorded monument to the proposed development site consists of a rath or ringfort (classified as a Killeen in Northern Ireland - SMR number 011:017) which is located 1.75km to the east. The nearest stone circle to the development is located c. 2.8km to the north-west.

2.5 Summary of Site Specific Assessments

The following is a synopsis of the detailed environmental assessments, relevant to the operation and construction of the proposed development, carried out as part of the Environmental Impact Assessment (EIA) process, as presented in full within the 2010 ES, 2014 FEI and 2016 FEI.

2.5.1 Summary of Hydrological Assessments

A Hydrological Assessment was carried out by Jacobs (formerly SKM Enviros) as part of the environmental impact assessment and is detailed within the 2010 ES as Chapter 6. This assessment was updated for the 2014 FEI and submitted within Appendix 7 of that report. A further hydrological site visit took place in 2016 to review the potential hydrological impacts of the revised 2016 site layout and the findings are presented in **Chapter 5: Hydrology, Hydrogeology and Geology**.

The magnitude and significance of potential impacts was assessed, and included sedimentation/erosion, pollution and alteration to natural drainage patterns. The assessment concluded that, all potential impacts can be mitigated or eliminated providing appropriate provisions are made in the design, construction planning and methodology.

Mitigation by avoidance has been applied to the Craignagapple Wind Farm layout, that is, a 50m (minimum) buffer between 1:10,000 scale Ordnance Survey Northern Ireland (OSNI) mapped watercourses and any site infrastructure has been incorporated into the overall layout design with the exception of sections at watercourse / drainage channel crossings.

The recommendations from the Hydrological Assessment have been taken into consideration in the development of this report.

Based on the findings of the Hydrological Assessment and a detailed examination of the proposed Wind Farm layout, a site specific Surface Water Management Plan (SWMP) was prepared by WDR & RT Taggart for the 2014 FEI. This report was reviewed for the 2016 FEI submission and the Drainage Management Plan updated for the revised six turbine layout. A copy of these reports is attached to **Appendix B** of this Outline CEMP.

The purpose of the SWMP is to provide a fully informed drainage design for the development, incorporating all required hydrological mitigation measures. It will be updated at the detailed design stage to consider the construction, operation and maintenance phases.

The SWMP, including all related mitigation measures, will be implemented in full at Craignagapple Wind Farm.

2.5.2 Summary of Geological Assessments and Site Investigations

As part of the environmental impact assessment, a detailed geological assessment was carried out and presented within the 2010 ES as **Chapter 6**: **Geology, Hydrogeology and Hydrology**. A Peatslide Hazard and Risk Assessment was also undertaken as part of the planning application submission, and was included in **Appendix 6.1 and 6.2** of the 2010 ES.

An updated assessment of peatslide risk was undertaken for the 2014 FEI to assess project design amendments made by Brookfield subsequent to the submission of the 2010 ES. A Technical Note assessing the 2014 Layout was provided in Appendix 12 of the 2014 FEI and the salient points are summarised as follows:

The majority of the site is covered by peat deposits overlying glacial till deposits which in turn overlie the bedrock. In some areas to the east no drift deposits were encountered and bedrock is exposed. A comprehensive multi-factor approach was adopted to search the area of the Craignagapple Wind Farm for peatslide prone sites. The results of the study were used to establish constraints to avoid areas identified as potentially vulnerable to ground movements albeit at a low level of probability.

Three principal design constraints that are specific to Craignagapple apply:

- Pockets of deep peat are to be (and have been) avoided.
- Areas of wet ground in proximity to watercourses should be avoided by adopting set back distances of at least 50m for 1:10,000 scale OSNI mapped watercourses.
- Steep scarp slopes should be avoided and, as far as possible, development restricted to areas having gradients of less than 10°.

A further site visit was undertaken in 2016 in relation to the reduced six turbine layout considered in the 2016 FEI as presented in **Appendix 5.1: Technical Note 5.** Peatslide Hazard Rating Scores (PHRS) are intended as a means of comparing different sites and as a tool for prioritising mitigation works, and although the PHRS system itself does not attach any particular significance to the total score for each site, as a general rule sites with an average rating of less than 200 are assigned a low priority. On this basis, all of the PHRS scores assessed for the proposed wind turbine locations in the 2016 Layout fall within the low priority range with regard to peatslide risk. There is no evidence of collapsed peat pipes within the vicinity of the turbine locations that are retained within the revised scheme.

Each element of proposed access track was also assessed individually for peatslide susceptibility, using PHRS scores of nearby grid positions and turbine locations, and assigned a Risk Level from 1 to 7 (1 being negligible and 7 being very high). The tracks to T1 and T3 were categorised as Risk Level 1: Negligible which requires no engineering response, and the tracks to T2, T4, T8 and T9 were categorised as Risk Level 2: Very Low which can be managed by normal slope maintenance procedures.

The recommendations from the 2010 ES Geological Assessment and Peat Hazard and Risk Assessment, along with the subsequent assessments and peatslide technical notes from the 2014 FEI and 2016 FEI have been taken into consideration in the development of this Outline CEMP.

2.5.3 Summary of Ecological Assessments

As well as an Ecological Assessment, a Site Reinstatement and Decommissioning Plan, a Habitat Management and Enhancement Plan (HMEP), a Vegetation and Habitat Survey and an Avian Assessment have been developed for the proposed development at Craignagapple.

A detailed ecological description of the site was provided in Chapter 9: Habitats and Protected Species of the Craignagapple Wind Farm ES submitted in 2010. The Ecological Assessment, as presented within the 2010 ES, concludes that while habitats and flora of conservation interest are present within this site, it is considered that the impacts by the proposed development will be of low significance in the medium to long term due to the sensitive layout of the turbines and associated infrastructure and the implementation of appropriate mitigation measures. It is noted that positive ecological impacts can be expected over time by the implementation of a habitat management plan for the site.

Following a revised development layout further ecological assessments were undertaken in 2013 and 2014 to gather more information on the site in relation to ecological habitat quadrats and ensure all subsequent design changes were assessed by the project ecology team at that time. A revised HMEP was produced by Biosphere Environmental Services, and this was provided in **Appendix 4** of the 2014 FEI.

Following a response from Northern Ireland Environment Agency Natural Environment Division (NIEA-NED), a Vegetation and Habitat Survey (**Appendix 6.1** of the 2016 FEI) was undertaken by Woodrow Sustainable Solutions on behalf of the Developer, and an updated HMEP (**Appendix 6.2** of the 2016 FEI) was developed to ensure that there is no net impact on the key ecological features which have been described in the 2010 ES, 2014 FEI, 2016 FEI and Vegetation and Habitat Survey. To achieve this objective the HMEP will ensure that important habitats are avoided, that sufficient mitigation measures are implemented where necessary and enhancement opportunities are undertaken where feasible and appropriate (see **Appendix E**).

A separate Avian Assessment was undertaken, by experienced ornithologist Dr. Ken Perry, for the proposed development and presented as Chapter 10 Ornithology in the 2010 ES. The Avian Assessment details the existing avian populations at Craignagapple, outlines the likely impacts and puts forward relevant mitigation measures. In the report, Dr. Perry concludes that, provided that the principal mitigation measures are implemented and applied to the proposed erection and operation phases of this project, there will only be limited disturbance to the bird communities and that there will be no long term or permanent negative impacts. Further breeding bird surveys have been undertaken since the 2010 ES by Dr. Tyrone Nelson, and these are presented within the 2014 FEI and in **Appendix 7.1** of the 2016 FEI Reports. A pre-construction avian survey will be carried out for this development.

The proposed Site Reinstatement and Decommissioning Plan is attached to this report within **Appendix A**, and it outlines the Developer's commitments to minimising damage to habitats resulting from the construction and operation of the proposed Craignagapple Wind Farm. The purpose of the plan is to maximise the potential for natural re-vegetation of the site, to prevent issues that could arise from site run off, or local contamination in areas where re-vegetation had not yet adequately matured.

The recommendations from these reports have been taken into consideration in the development of this Outline CEMP, and it is important that the appointed Contractor implements each measure identified with respect to the proposed development.

2.5.4 Summary of Archaeological and Architectural Assessment

As part of the 2010 ES, archaeological firm Gahan and Long Ltd prepared an Archaeological, Architectural and Cultural Heritage Assessment, for the proposed development. The assessment presents all known existing archaeological sites of relevance, provides a summary of potential impacts associated with the development of the proposed wind farm and also provides relative mitigation measures. Gahan and Long undertook a review of the revised 2014 project layout in relation to archaeological and cultural heritage interests and this is provided in Appendix 11 of the 2014 FEI.

Protection of known on-site archaeological and/or architectural features was one of the key design constraints considered during the turbine layout design process. No known archaeological or architectural features have been identified within the application area.

In order to reduce the risk of potential impact on unknown archaeological and/or architectural features, on-site construction activities will be monitored by a suitably qualified archaeologist.

The recommendations of this report have been taken into consideration in the development of this Outline CEMP.

It is important that the appointed Contractor implements each measure identified with respect to the proposed development.

3 CONSTRUCTION WORKS

3.1 Description of the works

The construction works that form this proposed development include the following:

- Six wind turbines, each measuring a maximum 111 metres from the ground level to the highest tip of the blade, erected on hardstands.
- Installation of settlement ponds and required drainage management features.
- The turbines will be connected to the proposed on site substation via underground cables positioned alongside the access tracks.
- Upgrade of existing internal roads (0.34km of the 0.63km of existing tracks being utilised) and construction of new internal site (2.31km) tracks providing vehicular access to each turbine.
- Materials for the construction of the access tracks will be imported from nearby quarries.
- Site drainage (to include roadside drains) will be installed adjacent to the access tracks and hardstands, in order to manage surface water entering streams and to prevent soil erosion and water pollution.
- Crane pads will be constructed beside each turbine so that the machinery needed to construct turbine structures will have use of a stable foundation.
- A temporary construction compound area will be used to off load and store construction materials during the period when the Wind Farm is being constructed.
- Sub-station, suppliers compound and control room.

Figure 1.2: Site Layout Plan shows the layout of the proposed development site.

3.1.1 Micro-Siting and Construction Corridor

A 25m deviation avoiding the environmental constraints for each turbine location has been allowed for, to enable the micro-siting of turbines where necessary. This will allow the Developer to account for possible variations in ground conditions across the site, which will only become apparent once trial pits and boreholes are dug as part of the detailed site investigation.

Any repositioning will not encroach into environmentally constrained areas and the micro-siting proposal has excluded any previously identified sensitive peat habitats. Any 25m micro-sitting will be reviewed by and require prior approval by the site ecologist and by site geotechnical engineer, taking into consideration any previously identified sensitive peat habitats. A 20m wide construction corridor has been allowed for either side of the proposed access track.

Figure 3.1: Micro-siting Boundary shows the environmentally constrained areas within the 25m micro-siting boundary for the proposed layout.

3.1.2 Turbine Bases and Hardstanding

A hardstanding area of approximately 720m^2 will be required at each turbine location, which will include the turbine foundation (314m^2) as well as the crane pad.

Peat will be removed from the foundation and the crane hard standing area will be re-graded in the locality of the turbine, generally forming sightline bunds to obscure the base from the surrounding areas.

The foundations would be approximately 20m x 20m and located at a depth of approximately 3m below the reduced level.

The turbine foundations will be constructed so that the top of the foundation is at the existing ground level, with an acceptable tolerance of +/- 1m. As the turbine foundation will be approximately 2.5 - 3m deep the formation level will be approximately 2.5 - 3m below existing ground level.

There are two options for design and construction of turbine foundations as follows:

Option 1 – Turbine Foundation constructed directly on in-situ ground:

The Contractor shall demonstrate that the soil/rock properties at the formation level are in compliance with the turbine foundation design limiting criteria for a ground bearing base.

Option 2 –Turbine Foundation constructed on engineering fill:

If it cannot be demonstrated that Option 1 is achievable, the Contractor shall establish and demonstrate a suitable bearing stratum at a lower level, design and construct engineering fill to the formation level of the foundation, and demonstrate that the fill properties at the formation level are in compliance with the turbine foundation design limiting criteria for a ground bearing base.

The construction sequence for the turbine bases will generally follow the sequence as defined in Table 3.1 below.

Table 3.1 Turbine Base Construction Method Statement.

1	Set out the site tracks with the use of GPS (RTK) equipment.	The Contractor shall ensure buffer zones are taped off with assistance from the ECoW and toolbox talks used to inform site staff of the importance of the buffer zones.
2	Archaeology.	The site will be accessible to the appointed archaeologist at all times during working hours and to the archaeologist nominated by the Department. The nominated archaeologist will monitor all invasive works as per the approved Program of Archaeological Works.
3	Set out and install drainage treatment and flow attenuation features.	Required to minimise the transportation of suspended solids generated during the construction stage. Temporary and permanent ponds and outflow buffers will not be constructed in sensitive habitats or buffer zones. Liaison with the ECoW at the detailed design stage will assist in the identification of suitable locations.
4	Remove and locally store the top layer of vegetated material over the excavation area.	This material will be stored for re-use to cover and promote natural re-vegetation of the amorphous peat and /or inorganic spoils that will have to be deposited at the nearest suitable location to the excavation, monitored by the ECoW.
5	Excavate remaining material to 1m depth and segregate organic material from mineral material.	
6	Excavate to formation level. Complete plate bearing tests.	Any excavated inorganic material will be re-used as structural ballast to minimise the required volumes of spoil and imported stone.
7	Turbine bases will have a binding layer of lean-mix concrete poured at formation level.	
8	A reinforcement steel cage for the foundation will be assembled after insertion of the turbine foundation insert arrangement (required for fixing steel tower) and formwork will be fixed to surround the cage.	
9	Reinforcement steel for the top section of the foundation is fixed along with the required number of cable ducts.	Reinforcing steel shall be checked for design compliance and signed off upon acceptance.
10	Erect the formwork to contain the concrete pour.	Formwork will be re-used and removed offsite when foundation construction is complete.

11.	The foundation anchorage system will be checked both for level and line prior to the concrete being installed in the base. These checks will be passed to the appointed Turbine Contractor for their approval.	

The surface vegetation and topsoil layer would be removed and stored in the designated soil storage area whilst excavation of the foundation progressed. This stored material would be used during reinstatement of the foundation area following construction.

On completion of the foundation, the excavation would be backfilled with previously excavated material and compacted. If ground conditions necessitate, a piled foundation will be provided. The piles will consist of precast concrete piles and will be driven from a piling platform at ground level by a competent piling contractor.

Once erected the wind turbines would operate automatically, requiring visits on a periodic but infrequent basis only. These visits, primarily for turbine servicing, would typically be made using four wheel drive vehicles.

3.1.3 Site Tracks

The internal site layout has been designed taking into consideration the existing Owenreagh access track and existing agricultural tracks within the application area. It is beneficial to use existing site tracks where possible minimising the development of new site tracks. Where required existing tracks will be extended to the turbine bases with new internal access tracks.

Internal access tracks must be capable of supporting the loads associated with a wind farm development. It is proposed that 2.31km of new access tracks will be built and 0.34km of the 0.63km of existing track will be upgraded for the development. The specific characteristics of access tracks detailed below have been recommended by a turbine manufacturer based on the vehicles envisaged as follows:

- Max load per axle approximately 16t.
- Max overall weight approximately 100t.
- Max soil pressure of crawler/mobile crane approximately $25t/m^2$.

The access tracks on site will have a running width of a minimum of 4.5m excluding shoulders or verges which will add approximately 1m to each side of the track. This will result in a total track width of approximately 6.5m, although the tracks will be wider on bends, junctions and crane hardstanding areas to suit the parameters of turbine delivery vehicles. Existing on-site tracks are approximately 3m in width and it is proposed to widen these existing tracks by constructing an additional 1m strip on both sides of the carriageway, and turning heads will be included in the track design where necessary to allow vehicles to manoeuvre.

The tracks will be constructed of well graded gravel (max. size 60mm, layer thickness 0.4m) on compacted sand (approximately 0.3m). In order to prevent material punching in, a geo-textile layer may be needed to avoid later access problems with heavy loads.

Crossfall from the road axis to the banking must be 2-3% to for drainage purposes. However the wind turbine manufacturer will be consulted before construction of the access tracks as depending on specific site conditions, the parameters stated above may change.

Proposed access tracks will follow the natural contours of the site. The road construction will be of ground bearing or excavated road types in order to suit the peat regime and ground conditions along the route.

Road construction will be by the "reversal" method, whereby mineral soil is raised from local borrow pits, which are then back-filled with organic material removed from the road site. The mineral soil is then shaped into a cambered road formation, approximately 5m wide.

All hardstanding and turning areas will be required to be in the vicinity of each turbine location. Hardstanding must allow two cranes to work in the vicinity of a turbine. Once construction is complete, the edges of the crane pads will be graded off where they are more than 200mm above ground (on the lower side of the slope) and covered with topsoil or peat.

There is one OSNI mapped watercourse crossing associated with the proposed access tracks, which is a tributary of the Legnahone Burn; the structure crossing will be a single span structure; this will ensure that in-stream works are avoided. The exact type and dimensions of the structure will be confirmed at detailed design stage in line with relevant CIRIA and Loughs Agency guidance. Where new or existing roads cross existing drains or drainage channels (including channels to divert clean / dirty water around infrastructure) these will be piped directly under the track through appropriately sized precast concrete drainage pipes. All watercourse crossings installed shall be to the satisfaction of Rivers Agency and the Loughs Agency. The exact type and dimensions of each structure shall be provided at detailed design stage in line with relevant CIRIA and Loughs Agency guidance.
A peat slide investigation has been carried out which has established that there is a low risk of instability in the area relating to the construction of the currently proposed structures locations, subject to best practice construction techniques being employed in association with the proposed mitigation measures. The investigations already undertaken have also established that it should be possible to construct all of the proposed structures in their currently planned positions without recourse to specialist foundations, etc. Prior to construction a full geotechnical investigation at proposed turbines locations and access roads will be carried out in order to carry out the detailed design of the relevant foundations. Any recommendations arising from further investigations will be incorporated into the Detailed CEMP at that time and submitted to the Planning Authority for consultation in advance of any construction works commencing on site.

The Contractor will provide more detailed information on construction methodologies once appointed. This will include method statements for all work activities, risk assessments, etc. These method statements will be incorporated into a revised Detailed CEMP and submitted to the Planning Authority for approval, prior to construction.

3.1.4 Drainage Infrastructure

A fundamental principle in the design of the drainage infrastructure is that clean water flowing in the upstream catchment, including overland flow and flow in existing streams, is not contaminated by silt from the works area. For that reason all clean water runoff will be separated from construction site runoff that may be contaminated by sediment. All uphill 'clean' surface runoff will be collected by surface water interceptor drains before it can come in to contact with road surfaces or hardstands and will then be diverted into clean water diversion drains and discharged on the downhill side of work areas thereby preventing contamination with construction related runoff water.

It is recommended that roadside swales will drain the surface water from the new tracks. The slopes on the site are quite steep i.e. greater than 2% where the site tracks are located perpendicular to the contours. Where the site roads are parallel to the contours or the slopes are less than 2%, grassed swales are recommended to drain the surface water. At slopes greater than 2%, check dams will be required in the swales to slow down the velocities of flows and prevent erosion occurring. The swales shall be constructed in accordance with CIRIA C698, Site Handbook for the Construction of SUDS. All roadside drainage will gravitate towards settlement ponds.

Interceptor channels will be provided for overland flow, flowing towards the site roads. Some of these drainage channels exist already and these will be accommodated in road crossings to maintain the continuity of existing overland flows. Diversions of these existing channels may be required in order to accommodate the new swales in the roadside drainage, for the purpose of keeping the overland flow drainage separate from the new track drainage.
Where new interceptor channels are required these will drain into cross-drains under the roads at regular intervals of approximately 50m. The cross-drains in turn will drain into the existing forestry drains and the existing bog drains downslope where possible. Where existing drains are not available the cross-drains will outfall to shallow sediment basins. These sediment basins will be filled with

drainage stone to depths of not more than 300mm with drainage trenches forming radial spurs from the sediment basins to allow diffuse overflow of the overland run-off into adjacent lands downslope in order to maintain the natural drainage of the area.

All access tracks and hardstands shall be constructed with a suitable crossfall in the downhill direction to divert runoff into silt water interceptor drains (swales). Track cut-off barriers shall be located every 30m along the access track to collect runoff and diverted into silt water interceptor drains. Track cut-off barriers shall be placed at 30-45° to achieve self-cleansing velocities.

Surface and silt water interceptor drains are to be located as close to the edge of the track as possible, to minimise disturbance of peat, sensitive habitats and water dependent ecosystems. Water from these drains will be discharged to areas remote from areas of known peat slide risk.

Settlement ponds will be provided for all proposed new access track, hardstanding and turbine foundation surfaces. These will be positioned and sized in order to maintain outlet flows at rates equivalent to pre development flows and will also maintain the quality of the runoff water during construction and operation phases.

Under track drainage will be provided on the track to the north of T4 in order to ensure hydraulic continuity to the M6_U4E habitat. This will consist of a group of precast concrete drainage pipes laid parallel, the size and number of which will be chosen at detailed design stage.

There is one major natural watercourse crossing required of an OS mapped watercourse, which is a tributary of Legnahone Burn, in order to provide an access track to turbines T8 and T9. A further three crossings over drainage channels will be required making a total of four crossings. Watercourse crossings will be piped directly under the track through appropriately sized precast concrete drainage pipes. All watercourse crossings installed shall be to the satisfaction of Rivers Agency and the Loughs Agency. The exact type and dimensions of each structure shall be provided at detailed design stage in line with relevant CIRIA and Loughs Agency guidance

3.1.5 Electrical Cabling

In order to reduce the visual impact of the development, all on site electrical cable runs will be located underground. In so far as is practical, buried cable runs will be located alongside the turbine access routes to minimise the degree of ecological impact on site.

3.2 Method Statements

Method statements are used to translate the project requirements into planned systems of work instructions to the site staff and operatives. They are prepared for activities identified in, or inferred by, the specification and risk assessments and are issued to all personnel responsible for and involved with the activity concerned.

They define the proposed method of working for an element or section of work taking into account the particular requirements of the project including site conditions, safety hazards, the contract drawings, specification or code of practice. They define the proposed use of plant, labour and materials, any hold points or permits and may be supplemented by drawings, sketches and produce data as necessary.

The principal aims of a method statement include:

- the correct resources are available prior to start;
- tasks are thought out in advance; and
- safe working methods are defined, and workers involved are aware of the hazards and risks associated with the task.

Prior to the commencement of any activities deemed to involve a significant hazard/risk or specifically identified at pre-commencement meetings, the Contractor will develop a written method statement. These method statements will:

- cover key activities identified through the programme, and be job/task-specific;
- identify responsible personnel;

- identify the required control measures and arrangements; and
- be in accordance with the relevant safety standards, and include coverage of the specific risks outlined in the Preliminary Health & Safety Plan.

Details of these method statements should be used in safety awareness talks prior to the work commencing. Environmental and security issues will also be considered where appropriate.

During the course of construction, amendments and alterations could be required to a method statement for the following reasons (and records of same will be maintained on file, i.e. in the Method Statement Register):

i) during construction, the Contractor could have improved the methods employed to carry out the task;
ii) a new approach, differing significantly from the original proposal could be used; and
iii) revised information is received from the Employer.

Contractor method statements will adopt a standard format that will be used for all statements produced.

A register of method statements generated throughout the project will be maintained on file and stored centrally in the Quality Management office.

Detailed method statements will be prepared by the Contractor appointed to the works, prior to the commencement of the Wind Farm construction.

3.3 Construction Phase Plan

In accordance with The Construction (Design and Management) Regulations (Northern Ireland) (2016), Contractors are required to plan, manage and monitor construction work under their control.

A Construction Phase Plan will be developed by the Contractor and maintained as a live document during construction and commissioning of the proposed development.

The Construction Phase Plan will include the following information:

- A general description of the project and programme details.
- Details of the project team.
- Management structure and responsibilities.
- Health & Safety goals for the project, arrangements for monitoring and review, site rules and extent and location of records and plans relating to Health & Safety.
- Arrangements for controlling significant site risks including delivery and removal of materials, dealing with services, work near high voltage cables, working near traffic, adjacent land use etc.
- Timescales for the project and the basis on which the time frame was established.
- Format, data collection and storage in relation to the Health and Safety File.
- Significant design and construction hazards.

3.4 Construction Programme

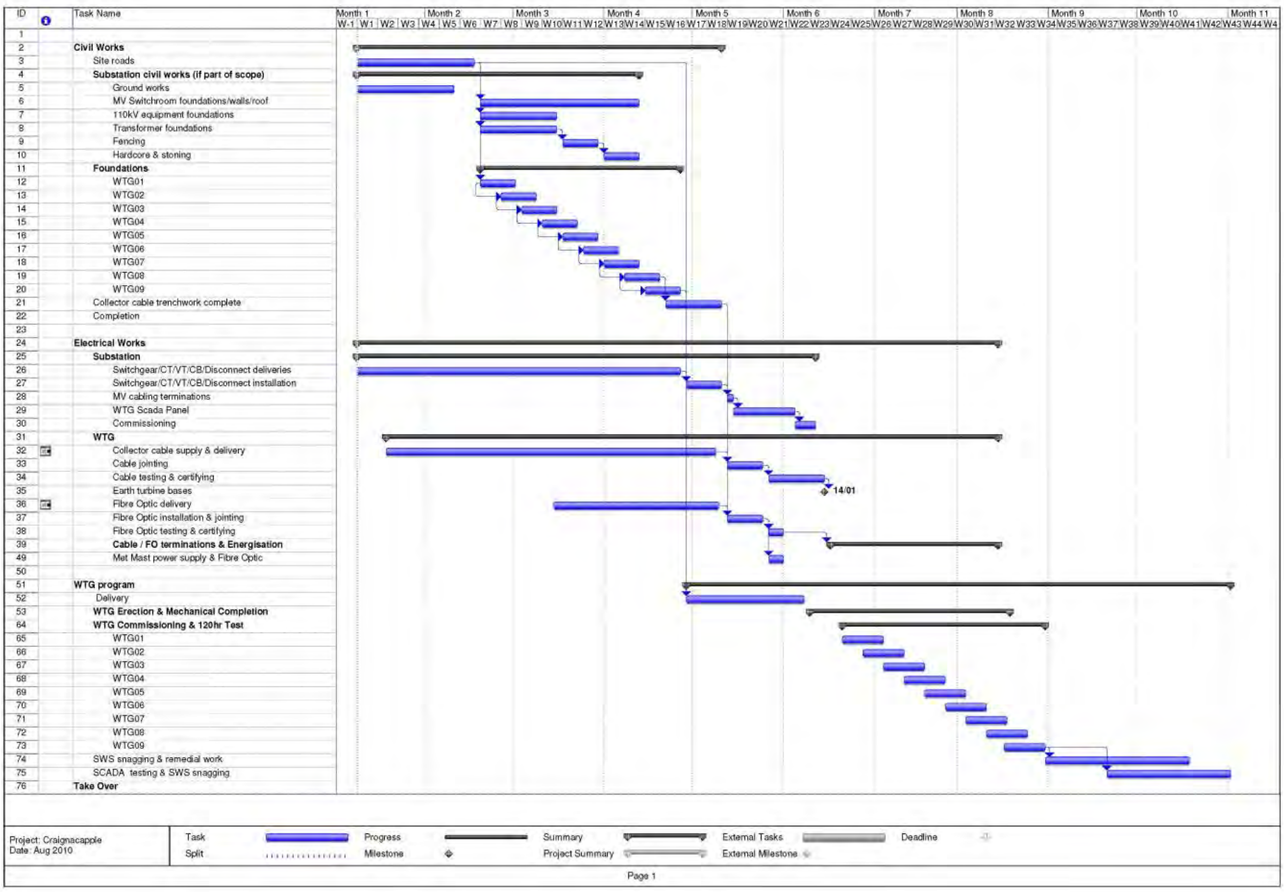
It is estimated that the construction of the Wind Farm will take approximately 8 to 10 months to complete. The Contractor appointed to the construction of the project will be solely responsible for preparing a detailed construction programme, taking account of any relevant planning conditions, seasonal requirements and health and safety considerations.

The Contractor will provide the detailed construction programme on appointment. An outline construction programme is provided in **Figure 3.2: Preliminary Construction Programme** below. This is indicative only at this preliminary stage.

At this preliminary stage, it is envisaged that construction of the proposed development will take place broadly in line with the sequence set out below. This will be amended as necessary on appointment of the Contractor, in line with their preferred construction sequence:

- Site entrance widening.
- Clear and hardcore area for temporary site offices and suppliers compound.
- Construct bunded area for diesel tanks.
- Construct new site roads and hardstanding. Use local stone for road construction in so far as is possible. Where rock is encountered, break out using breaker on hydraulic excavator.
- Upgrade existing roads where required.
- Construct drainage ditches etc. integral to road construction operations.
- Excavate crane hardstands.
- Excavate for turbine bases. If necessary, dewater excavations. Store excavated materials locally for backfilling and re-use.
- Construct turbine bases.
- Substation Building and Control room excavation and build.
- Excavate trenches for site cables, lay cables and backfill. Provide ducts at road crossings.
- Partially backfill foundations where necessary for crane operations.
- Erect towers, nacelles and blades.
- Complete earthing of towers and complete backfilling to foundations.
- Complete electrical installation, SCADA system etc.
- NIE grid connection.
- Commission and test plant.
- Complete site works, tidy up site etc.
- Carry out habitat management as per the HMEP (Appendix E).
- Demobilise offices etc.
- Provide any gates, landscaping, signs etc., which may be required.

Figure 3.2: Preliminary Construction Programme



3.5 Construction Working Hours

The hours of construction activity shall generally be restricted to between 07:00 hours to 19:00 hours Monday to Saturday inclusive. Work on Sundays or public holidays will only take place in exceptional circumstances or in an emergency, and unsociable hours will be avoided whenever possible.

It should be noted that in some circumstances it may be necessary to work outside normal working hours, including:

- Commencement of turbine base concrete pours earlier due to time constraints incurred by the concrete curing process.
- Delivery of oversized loads (mostly turbine elements) may need to take place outside of normal working times to suit the specific requirements of the roads authority and Police Service Northern Ireland (PSNI).
- Additional emergency works may also be required outside of normal working hours.

Where possible, in the event that out-of-hours construction work is required, it will be agreed through notification and consultation with the local residents, and relevant authorities in advance.

3.6 Traffic Management

3.6.1 Access to the Site

The proposed haulage route for the delivery of turbines to the site is as set out below and proposes the haulage route utilised for the delivery of turbines to Owenreagh Windfarm.

The proposed haulage route however is subject to change and will be the subject of a separate planning application. It is currently envisaged that the components will be shipped to and off-loaded at Londonderry Port in Lissahawley, Maydown, Co. Londonderry, however, this may change depending on specific shipping arrangements for the turbine manufacturer.

it is currently envisaged, the proposed haulage route from the A5 would be:

- in the village of Ballymagorry the haul route will take the eastern spur from the A5 onto the Woodend Road;

- the haul will then turn east on the B49 - Berryhill Road. The haul route will continue along the B49 for a distance of approximately 1.8km before making a southward turn onto the unclassified Art Road;

- at the first intersection on the Art Road, after approximately 600m, the route again turns eastward onto Sentry Road for a distance of approximately 250m before merging onto the Moorlough Road;

- the route will then follow the Moorlough Road for a distance of approximately 1.4km before branching south onto the Glenmornan Road; and

- the route will follow the single lane Glenmornan Road for an approximate distance of 4.3km until the first site entrance or 5.5km to the fourth site entrance.

Following entry to the site the turbine components will reach their destination via upgraded existing farm track and the operational wind farm access track as well as new tracks to access the turbine locations.

It is envisaged that some parts of the access route leading to the site may require remedial works to facilitate the articulated trucks transporting the turbine sections and blades. The Developer, subject to planning permission, will consult and agree with the Roads Service and the Planning Authority to establish the necessary remedial works and final access road.

3.6.2 Access to the Turbine Locations

Turbine T1

Access to turbine T1 will be via an existing site entrance point located to the north-west of the development site at grid reference E242363, N397261. There is approximately 625m of existing internal road at this access point servicing Owenreagh Wind Farm. A spur road will be constructed to link turbine T1 with this existing track. There are no water crossings along this internal existing track.

Photo 1 Existing internal track (existing track to T1)

Turbine T2
The proposed access to T2 is located at grid reference E242657, N397221 and employs an existing track for 90m. The existing track will require upgrading and widening and an additional 150m of new track will be constructed up to T2. There are no water crossings along this internal existing track.

Turbine T3
It is proposed to access this turbine by constructing an internal spur road off the existing agricultural access track located in the middle of the southern section of the development site (existing site access: grid reference E243174, N397035). This existing track was probably used for agricultural purposes and peat extraction and it will require upgrading. There is approximately 1,095m of existing agricultural / bog track at this access point. Additional internal tracks will be constructed (130m) to link Turbine 3 with this existing track. This existing track will require widening and upgrading.

Photo 2 Existing farm bog track requiring upgrading

Photo 3 Existing site access requiring upgrading (to, T3)

Turbines T4, T8 and T9
It is proposed to create a new access to T4, T8 and T9 from the Glenmornan Road and tie into the existing access track after 400m. Approximately 1835m of new access track will be constructed. The new access will be located at grid reference E243498, N396832 and will cross a tributary of the Legnahone Burn as detailed in Table 3.2. The structure crossing will be a single span structure; this will ensure that in-stream works are avoided. The exact type and dimensions of the structure will be confirmed at detailed design stage in line with relevant CIRIA and Loughs Agency guidance.
A number of small drainage channels within peat will require crossings. These are also indicated on the surface water management plan provided in Appendix B. Drainage channels will be sufficiently sized to avoid overloading, blocking or washout, and will be protected and well bedded to avoid settlement.

Table 3.2 Schedule of water crossings

Watercourse	Location	Grid Reference	Description
Unnamed tributary of Legnahone Burn	Access track to turbines T8 and T9	643318, 596328	New Crossing

3.6.3 Traffic Management Plan

As part of the 2014 Craignagapple FEI a revised Traffic Impact Assessment was prepared by WDR & RT Taggart which considered the potential impacts associated with the transportation, traffic and access arrangements during the construction, operational and decommissioning phases of the development. The Traffic Impact Assessment was updated in 2016 to account for the reduced turbine layout and is presented in Chapter 11 of the 2016 FEI.

A fully detailed Traffic Management Plan (TMP) based on the updated Traffic Impact Assessment 2016 will be prepared by the Contractor prior to the commencement of construction. The aim of a TMP is to put in place procedures to effectively manage traffic on site and in the immediate vicinity.

Typically the TMP will:

- identify sensitive areas (e.g. schools and homes);
- be aware of road restrictions either through road works, narrow roads and bridges with height and/or weight restrictions;
- have details of other developments whose activities could impact on the project;
- identify the locality of suitable parking facilities for private cars and plant;
- ensure there are designated vehicular routes on site with speed restrictions;
- describe safe access and egress from site;
- identify permissions gained or required for any required road closures, diversions etc. from the relevant bodies;

- facilitate adequate liaison with PSNI and relevant local authorities;
- schedule site deliveries outside of times of peak traffic volume;
- identify and facilitate erection of the required signage, positioning of flagmen, etc; and
- determine procedures for the safe transportation of oversized loads – turbine components and craneage to site.

As part of general traffic management and plant/vehicle use, the following measures will also be implemented on site and form part of the TMP:

- use a wheel wash for vehicles leaving the site to prevent mud being spread on surrounding roads;
- ensure all plant and vehicles are in good working order; and
- ensure emergency access is provided at all times.

4 ENVIRONMENTAL REQUIREMENTS

4.1 Introduction

The 2010 ES and subsequent FEI Reports in 2014 and 2016 have identified mitigation measures that need to be put in place to minimise/eliminate potential for environmental impacts from the project.

There are a number of environmental mitigation measures which are to be implemented during the construction stage, as recommended in the 2010 ES, 2014 FEI, 2016 FEI and any future planning conditions issued by the planning authority.

The application of this Outline CEMP will include the implementation of all construction related mitigation measures outlined within the ES and any future Planning Conditions.

4.2 Environmental Policy

Once appointed, the Contractor's environmental policy will be incorporated into future CEMP revisions and the following paragraph describes what is typically expected of such a policy:

- The environmental policy for the project should be realistic and site specific.
- It will state a commitment to continual improvement of environmental performance. This will be achieved through the realisation of the environmental objectives and targets that are based on the identified environmental impacts associated with site activities.
- It will be used as a benchmark for environmental performance.
- The environmental policy will be approved by the Contractor's senior management, signed by the project manager and communicated to all employees associated with the job.
- A register of environmental aspects will be implemented and relevant targets established to identify evidence of any impacts on the environment arising from the proposed development.
- The policy is a controlled document and will be reviewed and revised as necessary.
- A copy of the policy will be located on the site staff notice board.
- A copy of the environmental policy will be included in this section of the Detailed CEMP.
- All employees, suppliers and contractors whose work activities cause/could cause impacts on the environment will be made aware of the environmental policy and its contents.

4.3 Register of Environmental Aspects

The Contractor is responsible for preparing and maintaining a Register of Environmental Aspects pertaining to the site, which will identify the environmental aspects associated with activities on site and determine which aspects have, or can have, a significant impact on the environment. It will contain all environmental compliance and mitigation measures for the construction phase, as well as any additional control measures to be put in place and will also identify the party responsible for their implementation.

4.4 Environmental Monitoring

An outline Environmental Monitoring Schedule is provided in **Appendix D**. This will be updated by the appointed Contractor prior to construction commencing on site.

The Contractor will appoint an on-site Environmental Auditor to monitor the construction activities on a day to day basis. In addition, the Employer will appoint an Environmental Auditor to monitor the construction activities on a regular basis throughout the construction period.

Environmental Auditors will report on environmental issues to the Contractor and Developer and ensure wherever possible, that any environmental issues arising are dealt within the shortest possible timeframe.

The environmental monitoring will take cognisance of all mitigation measures outlined in the ES, 2014 FEI, 2016 FEI and any relevant planning conditions imposed by the Planning Authority.

The environmental monitoring plan for construction will provide for the checking of equipment, materials storage, and materials transfer areas, and drainage structures and their attenuation ability, on a regular basis.

4.5 Environmental Management Procedures

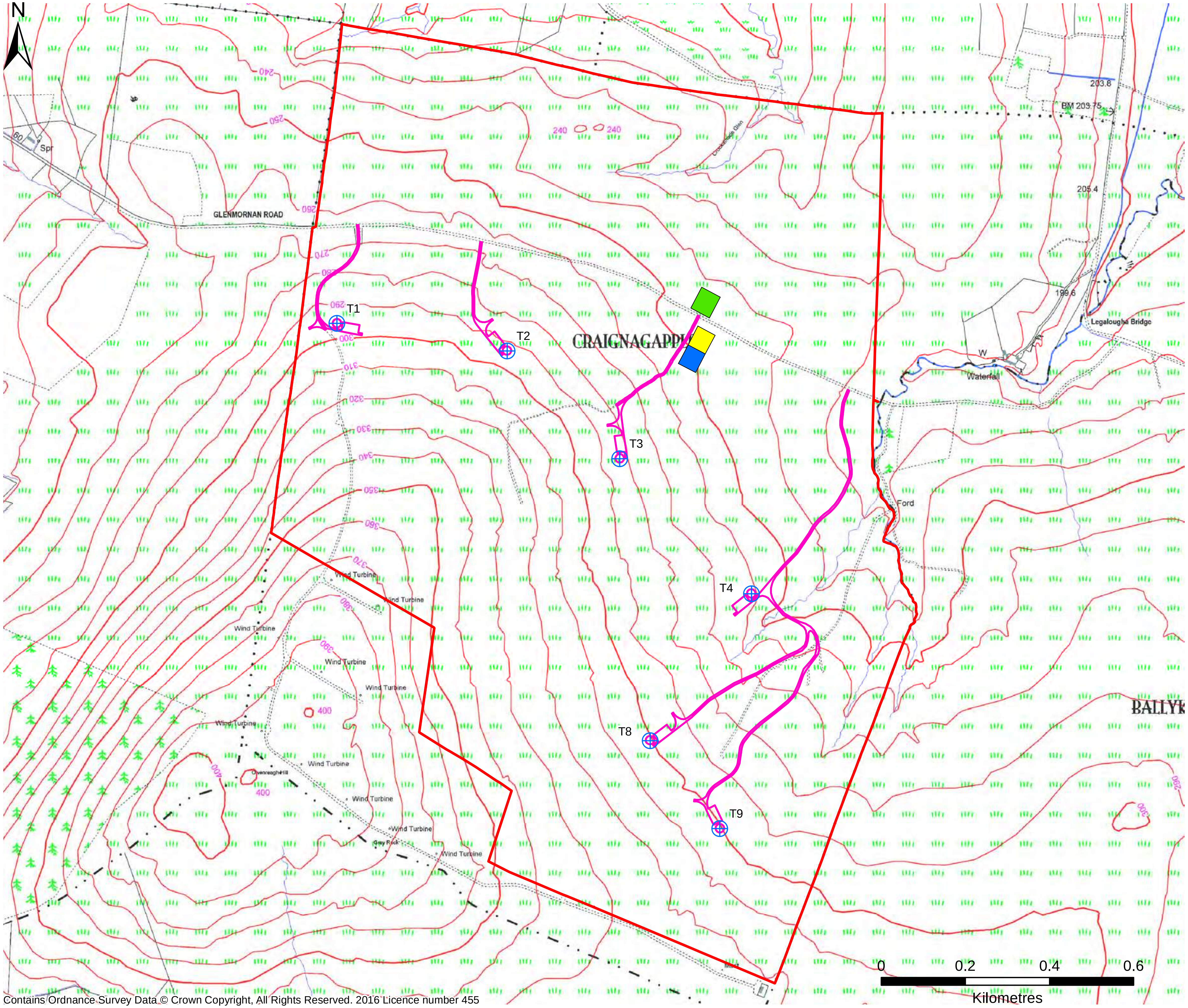
Project specific environmental management procedures will be developed by the Contractor, and employed by the Contractor and their Sub-contractors while working on the project, for each of the environmental aspects.

A list of typical environmental procedures is included below for illustrative purposes.

Outline of Potential Environmental Procedures:

Procedure	Area
ENV-01	Awareness & Training
ENV-02	Emergency Response Plan
ENV-03	Record Keeping, Auditing and Monitoring
ENV-04	Erosion Control
ENV-05	Environmental Complaints Procedure
ENV-06	Protection of Flora and Fauna
ENV-07	Protection of Water Quality
ENV-08	Protection of Archaeological Heritage
ENV-09	Protection of Landscape
ENV-010	Traffic Management Plan
ENV-011	Management of Excavated Material
ENV-012	Noise Management Plan
ENV-013	Air Quality Management Plan
ENV-014	Waste Management Plan
ENV-015	Turbine Bases
ENV-016	Cable trenches and electrical compound
ENV-017	Site Reinstatement
ENV-018	Site Health and Safety Management Plan

The Contractor, when appointed, will be responsible for formulating these procedures, and may wish to amend these procedures when appointed. These procedures will form part of the Detailed CEMP, and will be continually updated where necessary. These procedures can only be amended by improvement with regards to environmental protection and must take cognise of all mitigation measures recommended by the ES and additional technical reports carried out as part of the planning stage.



Key:

- Site Boundary
- Turbine Locations
- 2016 Infrastructure Layout
- Substation
- Supplier's Compound
- Temporary Construction Compound

Turbine	Grid Co-ordinates
T1	H 42314, 97028
T2	H 42718, 96963
T3	H 42986, 96707
T4	H 43299, 96386
T8	H 43058, 96037
T9	H 43224, 95828

REVISION: E
20161017_KU011501_2016_SiteLayout_revE

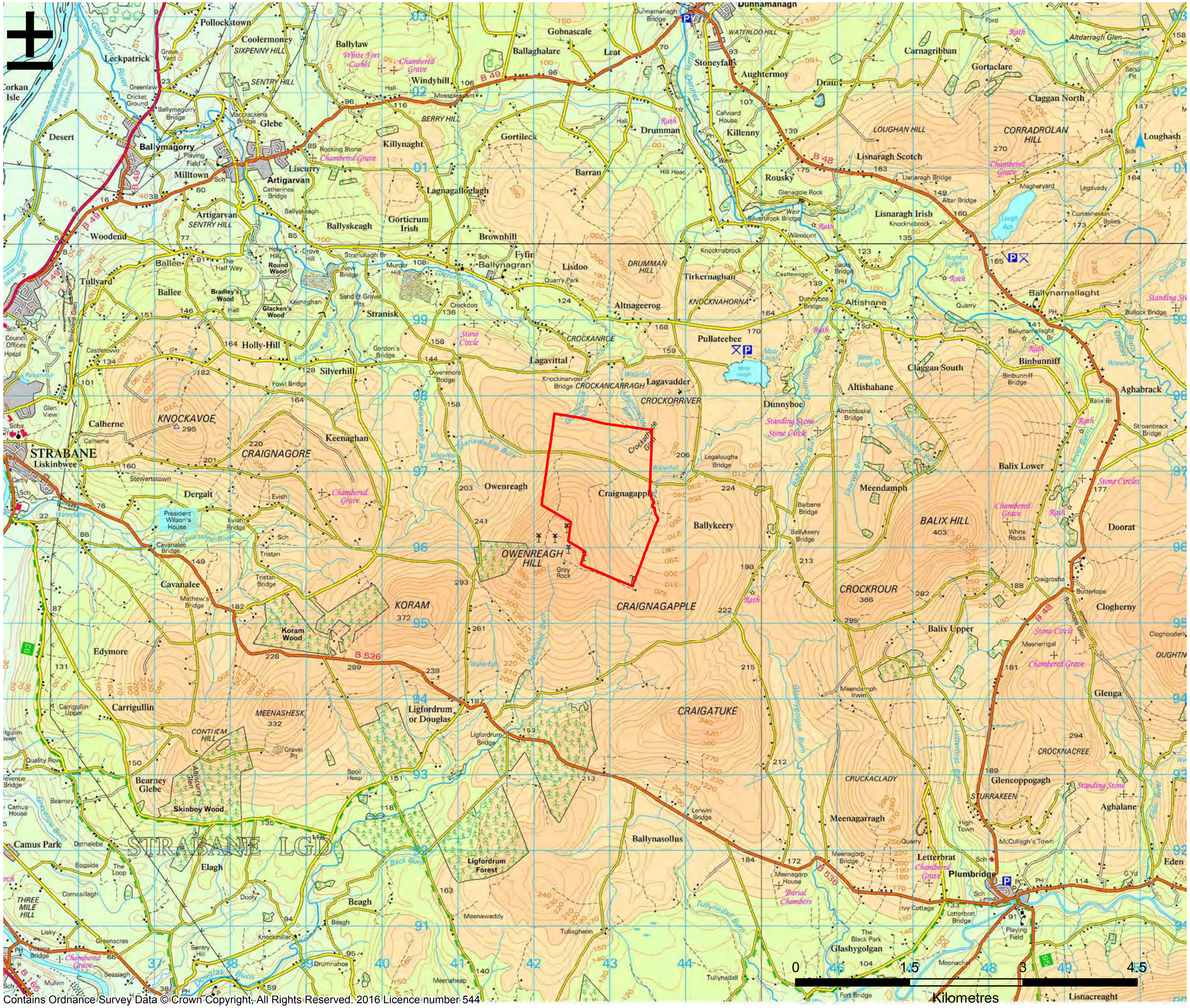
Brookfield

CRAIGNAGAPPLE
WIND FARM

Figure 1.2 :
2016 Layout

SCALE	1:9,000 @ A3	*PROJECT CODE*	KU011501
CONTENT	LE	*DRAWN*	CD
CHECKED	LE	*DATE*	11/11/2016

JACOBS



Key:

Site Boundary

REVISION: B
20161017_KU011501_SiteLocation_revB

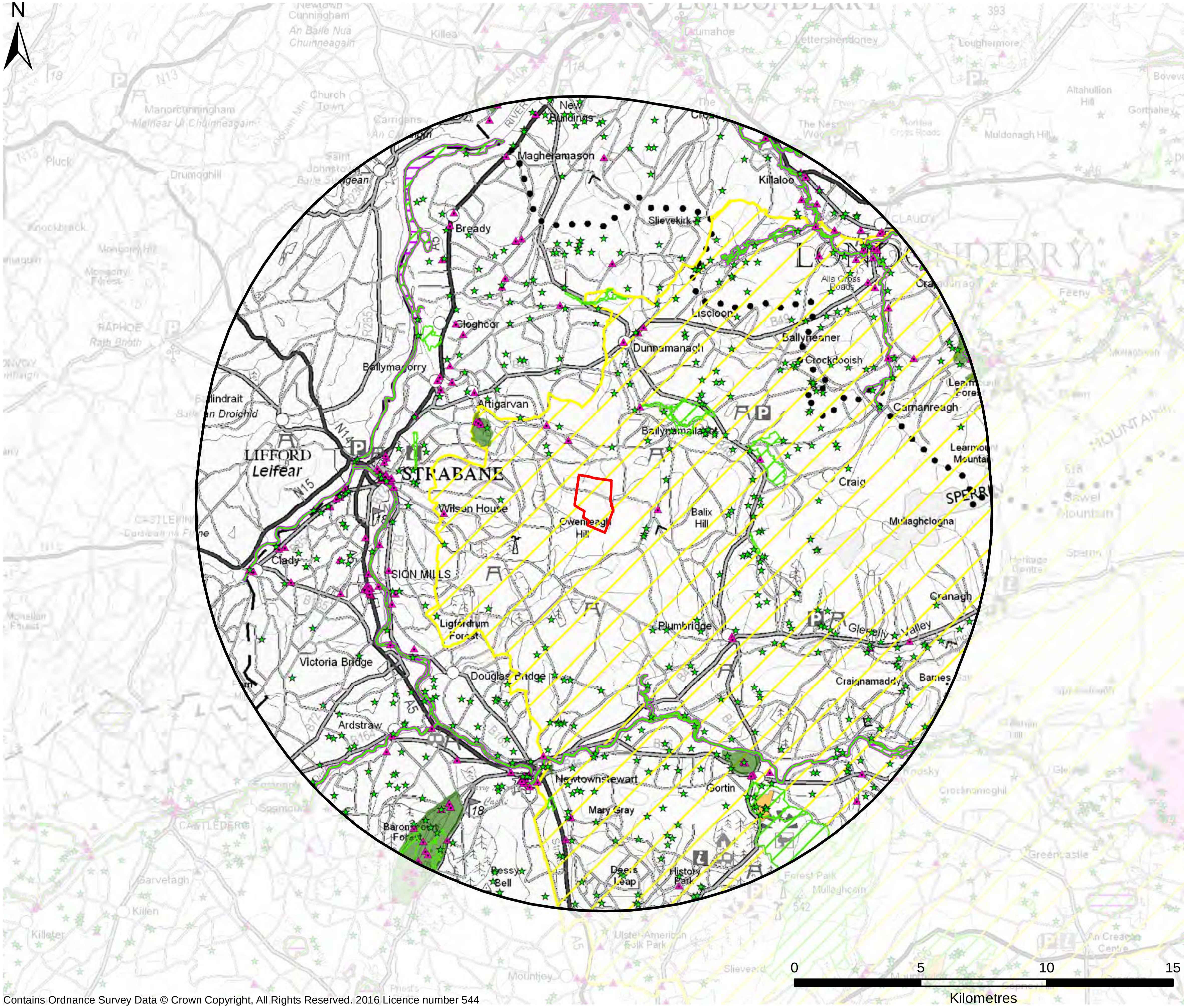
Brookfield

CRAIGNAGAPPLE
WIND FARM

Figure 2.1: Site Location

SCALE 1:50,000 @ A3	PROJECT CODE KU011501
CONTENT LE	DRAWN CD
CHECKED LE	DATE 11/11/2016

JACOBS



Key:

- Site Boundary
- 15 km buffer from Site Boundary
- Sites and Monuments Record
- Listed Buildings Points
- Areas of Special Scientific Interest (ASSI)
- Special Areas of Conservation (SAC)
- Historic Parks and Gardens
- Area of Significant Archeological Interest
- Area of Outstanding Natural Beauty (AONB)
- National Nature Reserves and Nature Reserves (NNR and NR)

REVISION: *B*

20161111_KU011501_DesignatedSites_revB

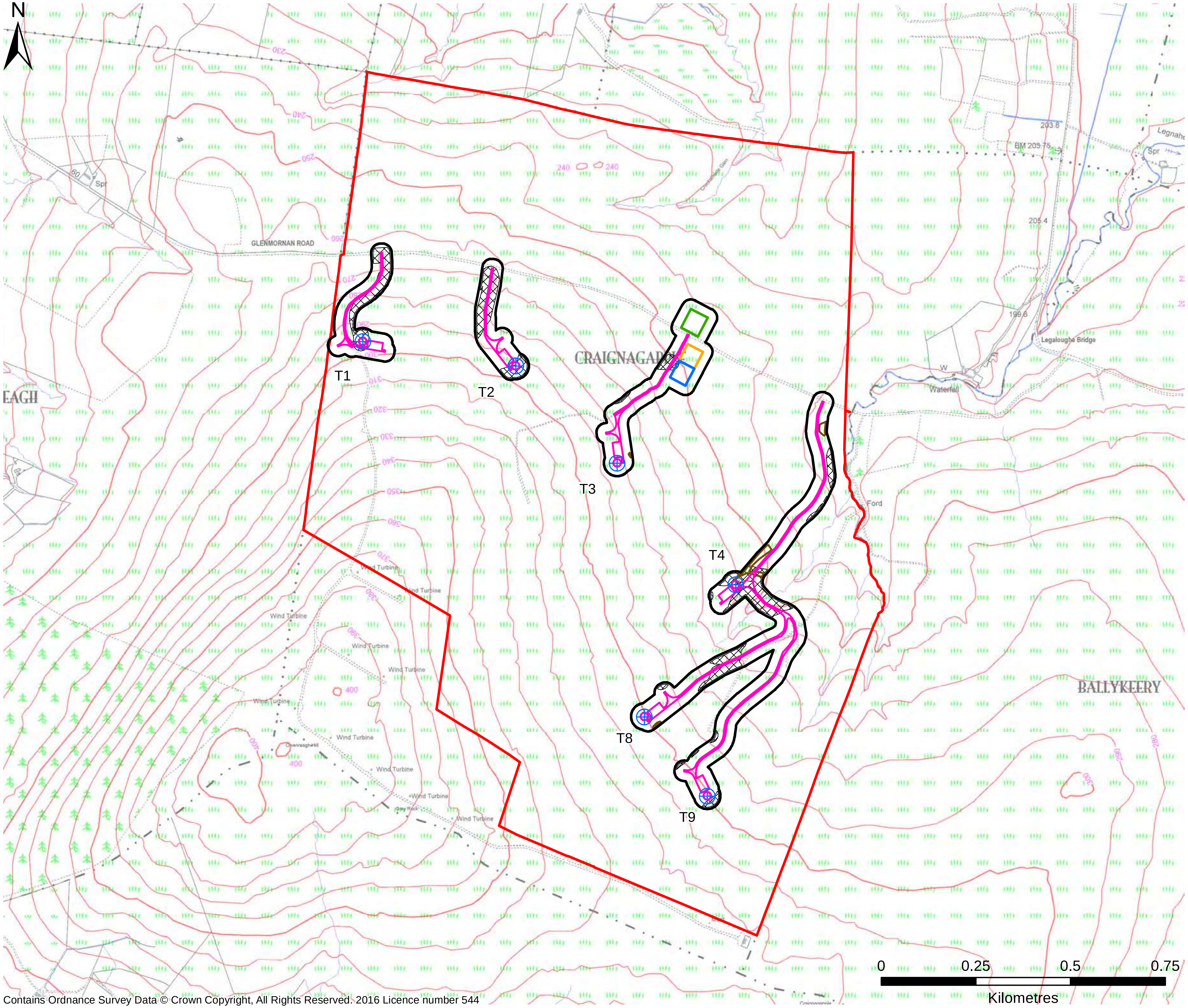
Brookfield

CRAIGNAGAPPLE WIND FARM

Figure 2.2: Designated Sites within15km of the Proposed Development

SCALE	PROJECT CODE
1:150,000 @ A3	KU011501
CONTENT	DRAWN
LE	CD
CHECKED	DATE
LE	11/11/2016

JACOBS



Key:
- Site Boundary
- 25m Micro-siting Boundary
- Turbine Locations
- 2016 Infrastructure Layout
- Substation
- Supplier's Compound
- Temporary Construction Compound
- Fenced Habitats
- No Side Casting -Sensitive Habitat/ Watercourse/Drainage

REVISION: E
20161111_KU011501_Micrositing_revE

Brookfield

CRAIGNAGAPPLE
WIND FARM

Figure 3.1 :
Micro-Siting Boundary

SCALE	PROJECT CODE
1:10,000 @ A3	KU011501
CONTENT	DRAWN
LE	CD
CHECKED	DATE
LE	11/11/2016

JACOBS

Appendix A

Craignagapple Wind Farm Outline Site Reinstatement and Decommissioning Plan

Craignagapple Wind Farm FEI

Brookfield Renewable

Outline Site Reinstatement and Decommissioning Plan 2016

Final

14 November 2016

KU011501

Document history and status

Revision	Date	Description	By	Review	Approved
1	24.10.16	Draft for client review	Lynne Eastham	Steve Elkins	Joanne Moran
2	09.11.16	Client comments incorporated	Lynne Eastham		
3	13.11.16	Final review comments incorporated	Lynne Eastham	Steve Elkins	Joanne Moran
FINAL	14.11.16	FINAL	Lynne Eastham	Joanne Moran	Joanne Moran

TABLE OF CONTENTS

LIST OF FIGURES

1 Introduction and Background

1.1 Introduction

In 2010 Brookfield Renewable applied to Northern Ireland Planning Service for planning permission to erect a nine turbine wind energy development located in the townlands at Craignagapple, north-east of Owenreagh Hill, 7 km south-east of Strabane (NI Planning Reference J/2010/0481/F). An Environmental Statement (2010 ES) was prepared in respect of this wind energy development, providing full details of the proposed development and assessing its potential environmental impacts.

A Further Environmental Information (FEI) Report was prepared and submitted to the Planning Authority in 2014 in relation to consultee responses received after submission of the 2010 ES (2014 FEI). The proposed wind farm layout was reduced to six turbines in response to consultee feedback received after submission of the 2014 FEI and a further FEI Report was submitted in 2016 which proposed a number of mitigation measures to be put in place to minimise the environmental impacts of the reduced scheme.

The wind farm development involves the installation of six wind turbines and associated infrastructure. The construction period for the proposed development is expected to last approximately 9 to 10 months. It is envisaged that Craignagapple Wind Farm will be operational for a period of 25 years.

1.2 Purpose of Plan

The purpose of the Outline Site Reinstatement and Decommissioning Plan (SRDP) is to identify the principles of the methodology that will be used to restore the development site to a naturalised state after construction, such that the landscape and habitat is not adversely impacted on, and to ensure that the site and reinstatement procedures carried out on site are in accordance with best practice guidelines for environmental protection. The Outline SRDP further puts a programme in place to remove project components and restore disturbed areas within the project area on full or partial decommissioning of the wind farm.

By setting out the site reinstatement methodology this plan seeks to minimise damage incurred on habitats resulting from the construction and operation of the proposed Craignagapple Wind Farm and to ensure ecological and habitat repair of any damage which may be incurred as a result of the construction of the proposed development.

Site reinstatement at Craignagapple Wind Farm at the decommissioning stage will involve returning the site to a naturalised appearance, reinstating the ground surface as close as possible to its former condition. Reinstatement methodologies are chosen to be environmentally sensitive, minimising adverse environmental damage and with the overall objective to improve and safeguard the aesthetic appeal of the landscape.

This Outline SRDP is based on a six turbine layout and addresses lands within the application area. The plan sets out the management aims and objectives for the site at Craignagapple at decommissioning.

Pre-Planning Environmental Impact Assessment (EIA) scoping was carried out in conjunction with the Northern Ireland Planning Service (Planning Reference J/2010/0031) from February 2010 to July 2010. In response to this consultation the Northern Ireland Environmental Agency in their letter dated 22nd March 2010 (NIEA reference: 17277-1) requested the following measures:

- *"Proposals illustrating restoration of the site on decommissioning after the lifetime of the wind farm should be detailed."*

This Outline SRDP puts forward proposals for site decommissioning after the lifetime of the wind farm, and will be finalised with input from all relevant project specialists, i.e. the site ecologist, site ornithologist, site hydrologist and site geologist etc., and in consultation with all relevant stakeholders including, but not limited to, landowners, Northern Ireland

Environment Agency (NIEA), the District Council Planning Authority, Royal Society Protection Birds (RSPB), Department of Agriculture, Environment and Rural Affairs, Countryside Management Branch and project landowner.

This Outline SRDP should be read in conjunction with the following documents:

- ES for Craignagapple Wind Farm (2010 ES);
- Further Environmental Information 2014 (2014 FEI);
- Further Environmental Information 2016 (2016 FEI);
- Craignagapple Wind Farm Outline Construction and Environmental Management Plan (CEMP) 2016;
- Habitat Management and Enhancement Plan (HMEP) 2016 provided in 2016 FEI Appendix 6.2;
- Outline Peat Management Plan (PMP) 2016 provided in 2016 FEI Appendix 5.2;
- Surface Water Management Plan and Drainage Management Plan (2016) provided in 2016 FEI Appendix 5.4 and 5.5;
- Peat Hazard and Risk Assessment (2010), updated Peatslide Risk Assessment Technical Note 4 provided in the 2014 FEI Appendix 14.2, and updated Peatslide Risk Assessment Technical Note 5 provided in the 2016 FEI Appendix 5.1; and
- Tender documents which will be prepared prior to construction of Craignagapple Wind Farm, including any associated site investigation and geotechnical reports, etc.

This document seeks to put forward a proposal which will be to the satisfaction of the Derry City and Strabane District Council and the Northern Ireland Environmental Agency (NIEA). The final requirements of this plan will be incorporated into the Detailed CEMP and the Principal Contractor's Construction Phase Plan for the site.

1.3 Relevant Policy

The following policy was taken into consideration as part of the Decommissioning Plan: Department of Environment, Planning and Environmental Policy Group Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' August 2009.

- Section 1.3.86: Decommissioning and Reinstatement, The decommissioning of a wind energy development once electricity ceases to be generated will need to be assessed. Plans for decommissioning should be outlined at the planning application stage. Issues to be addressed include restorative measures, the removal of above ground structures and equipment, landscaping and/or reseeding roads. On occasion it may be appropriate to allow tracks to remain, e.g., as part of a walking route after decommissioning.
- Section 1.3.87: A decommissioning plan may be covered in conditions and/or a legal agreement accompanying planning permission and will be triggered by the expiry of the consent or in the event of the project ceasing to operate for a specified period. Developers should demonstrate that funding to implement decommissioning will be available when required.
- Section 1.3.88: It is likely that the duration of the planning permission will be linked to the expected operational life of the turbines. However during this period, proposals may be forthcoming to extend the life of the project by re-equipping or to replace the original turbines with new ones. While there are obvious advantages in utilising established sites, such cases will have to be determined on their individual merit and in the light of the then prevailing policy and other relevant considerations.

2 Project Description

2.1 Site Description

The site is located in an area known as Craignagapple on north eastern section of Owenreagh Hill on the western limit of the Sperrin Mountain range, centred at Irish Grid Reference IH 2429, 3965 (Figure 2.1). It is approximately 20km south of Londonderry and approximately 7km east of Strabane in Co. Tyrone within the Derry City and Strabane District Council area. The site covers an area of approximately 240 hectares with the application lands owned by local landowner.

The proposed location of the wind farm development site is on the northern and northern eastern slopes of Owenreagh Hill at an altitude of between 260m and 330m AOD. The prominent surrounding hills include Koram (372m) and Craigatuke (350m).

The summit of Owenreagh Hill has a wild exposed character, with large areas of shallow blanket bog and heath moorland. The lower slopes have a rolling, smooth profile but the slope increases steeply upon approach to the summit. The fields on the lower slopes of Owenreagh Hill are in hay, silage and pasture use.

The surrounding land use is agriculture and forestry. The site is mainly used for sheep farming with some peat extraction.

The site is dominated by blanket bog habitat, which is generally in a modified condition. Typically the blanket bog vegetation is dominated by ling heather (*Calluna vulgaris*) and hare's tail bog cotton (*Eriophorum vaginatum*) with *Sphagnum capillifolium* the main moss species present. The deepest peat is on the more level ground close to the summit of the hill (in the vicinity of existing wind farm) where depths of 2m or more are reached. Here the most intact examples of modified bog are found. Significant areas of the site have been subject to hand-cutting of peat in the past and this is particularly evident close to the road in the north of the site. An extensive area in the eastern sector of the site has been subject to recent 'sausage machine' cutting of peat and here there is a high cover of bare peat locally. The site is grazed by sheep, though this does not appear to be intensive.

An extensive area of relatively intact bog adjoins the site to the east, while further intact bog occurs on the summit of Owenreagh Hill to the south of the existing wind farm. In the wider area, mainly to the south-west, coniferous afforestation occurs on former bog.

Overall, the site can be described as occurring within a typical upland landscape, with acid, oligotrophic bog as the dominant habitat. However, the majority of the bog has been subject to peat extraction, with the other main land use being sheep grazing.

2.2 Habitats

The purpose of the Outline SRDP is to minimise damage incurred on habitats resulting from the construction and operation of the proposed Craignagapple Wind Farm and to ensure ecological and habitat repair of any damage which may be incurred as a result of the construction of the proposed development.

The intention is that the site will be left in a position to maximise the potential for natural re-vegetation and ensure that no issues would arise from site run off, or local contamination in areas where re-vegetation had not yet adequately commenced. It is envisaged that natural re-vegetation would be the most appropriate in the context of the site, and that this progression would be assessed post construction.

It is anticipated that construction areas would be characterised initially by opportunistic botanical species on the disturbed substrates. This would provide soil stability until the more specialist plants adapted to the regimes of the surrounding habitat and slowly re-colonise through succession.

Within the southern section of the application site an area of less intensively modified blanket bog was identified (33ha). No development is proposed within this area.

One small area of relatively intact blanket bog occurs along the eastern boundary and this is part of an extensive area of intact bog on deep peat that continues eastwards. As the bog here conforms to the Habitats Directive Annex I priority habitat 'Blanket Bog', it has high conservation value (though there are some shallow surface drains across the bog), no development works are proposed within either of these areas.

Whilst the blanket bog on site is mostly modified (dry), there is considerable variation in the quality of this. Two areas of modified bog are identified where disturbance (by way of turbary and drains) is relatively low and these are rated as of moderate or moderate to high ecological importance. The largest of these is on fairly deep peat (1.5->2 m) on the high ground in the southern part of the site (247ha). No development works are proposed within either of these areas

Figure 4 of the **2016 FEI HMEP** indicates habitats types within the application area. Overall, the site can be described as that typical of upland, acid, oligotrophic bog, which has been subject to grazing and peat extraction.

A summary of the habitat cover within the application area is summarised in

Table 4.1:. Additionally, the proposed development footprint is broken down into the various habitat categories, as a percentage of the overall total development land take area. It should be noted that no development is proposed within areas of intact blanket bog.

Table 4.1: Habitat Cover within Application Area

Habitat Type	Total Area (ha)	Total Development Area (ha)	% Development Area
Dry Modified Bog E1.8	213.20	3.90	1.60
Marshy Grassland B5	8.15	0.16	0.06
Acid Grassland B1	2.28	0.33	0.13
Dry Heath/Acid Grassland Mosaic D5/D1	11.14	0.30	0.12
Acid/Neutral Flush E2.1	1.51	0.01	0.00
Blanket Bog E1.6.1	1.51	0.00	0.00
Conifer Plantation A1.2.2	0.23	0.00	0.00
Improved Grassland B1	0.58	0.00	0.00
Total	**238.60**	**4.70**	**1.91**

2.3 Sites of Nature Conservation Importance in Vicinity

The site is not within or adjoining any area designated for nature conservation in Northern Ireland. However, the following designated sites occur within 10km of the study area:

- River Foyle and Tributaries Special Area of Conservation (EC site code: UK0030320), and Area of Special Scientific Interest (ASSI008): a large riverine site with estuarine, freshwater and marginal wetland habitats. Supports important species such as otter and Atlantic salmon. The River Foyle and Tributaries SAC lies approximately 14km downstream from the proposed Craignagapple Wind Farm via the River Glenmornan.

- Silverbrook Wood Area of Special Scientific Interest (ASSI011): an area of upland oak woodland, located approximately 10 km to the NE of Craignagapple.

A NIEA search (Ref: CB 17277) noted the following ecological information for the area:

- Craignagapple Blanket Bog dataset: location is immediately SE of proposed wind farm (H435952), with data collected in 1992.
- Craigatuke Blanket Bog dataset: location is c.2 km S of proposed wind farm (H432935), with data collected in 1992.

In addition, the Cedar database has botanical records for Craignagapple and Owenreagh Hill.

There are no protected flora species known from the site, which are listed on The Wildlife (NI) Order or listed as rare or threatened in the Irish Red Data Book (Curtis & McGough, 1988).

2.4 Hydrology

The catchment of the Sperrin Hills is generally characterised by fast-flowing moorland streams which are fairly straight and open in character, sometimes eroding deep channels between steep ridges of glacial moraine. Deep gullies, some with broken, eroded edges, create strong dendritic patterns, carving and moulding the steep slopes into striking forms.

The site lies within two hydrological catchments:

1) Glenmornan to the north west; and;

2) Dunny Boe to the east and north east.

The northern section of the site falls within the Glenmornan catchment which includes the north western and northern slopes of Owenreagh Hill. Tributaries within the site boundary and the north of the site include Glen Trashna close to the northern limit of the site and the Lagavadder Burn. Other tributaries within this catchment include the Glenwanda Burn and the Allnamoota Burn to the west and the Curryenagh Burn to the south west of the site. The Glenmornan catchment ultimately becomes the Burn Dennet and Lower Foyle catchment.

The Glenmornan Catchment can be divided into two sub-catchment areas for the proposed wind farm development:

- The western subcatchment – including Curryenagh, Allnamoota and Glenwanda burn.
- The northern subcatchment – including Glen Trashna and Lagavadder Burn.

A small rounded ridge of the Owenreagh Hill separates the two sub-catchments.

The south eastern section of the site falls within the Dunny Boe catchment. The Dunny Boe catchment originates from the eastern slopes of Owenreagh Hill. Tributaries within the site boundary include Legnahone Burn in the eastern section of the site. Runoff from the site is directed into the Legnahone Burn. Further tributaries include the Ballkerry Burn located to the east of the site flowing north. The Dunny Boe catchment ultimately flows to become the Burn Dennet and Lower Foyle catchment.

2.5 Land Take

The actual permanent land take associated with this project is limited to the area of the turbine bases themselves, the crane hardstandings, the access tracks leading to them, and the substation which accounts for 3.19 hectares collectively of the total area (approximately 240 hectares) within the planning application boundary. The total land take associated with this project is summarised in Table 2.1.

Table 2.1: Land Take Craignagapple Wind Farm Application

Component / Infrastructure	Land Take (hectares)
New Access Tracks	1.29
Upgrade Existing Tracks	0.31
Turning Heads	0.17
Sub-station	0.23
Construction Compound (temporary)	0.23
Turbine Hardstanding (720m² per turbine)	0.43
Turbine Foundations (314m² per turbine)	0.19
Turbine Suppliers Compound (temporary)	0.28
Oversail	0.06
	3.19

2.6 Description of the Works

The construction works that form this proposed development include the following:

- Six wind turbines, each measuring a maximum 111 metres from the ground level to the highest tip of the blade, erected on hardstands.
- Installation of settlement ponds and required drainage management features.
- The turbines will be connected to the proposed on site substation via underground cables positioned alongside the access tracks.
- Upgrade of 0.34km of the existing internal roads (0.63km) and construction of new internal site (2.31km) tracks providing vehicular access to each turbine.
- Materials for the construction of the access tracks will be imported from nearby quarries.
- Site drainage (to include roadside drains) will be installed adjacent to the access tracks and hardstands, in order to manage surface water entering streams and to prevent soil erosion and water pollution.
- Crane pads will be constructed beside each turbine so that the machinery needed to construct turbine structures will have use of a stable foundation.
- A temporary construction compound area will be used to off load and store construction materials during the period when the Wind Farm is being constructed.
- Sub-station, suppliers compound and control room.

Figure 2.1: Site Location overleaf shows the location of the proposed development site and **Figure 2.2: 2016 Site Layout** shows the layout of the proposed development.

3 Site Reinstatement Methodology

3.1 General Site Remediation

The proposed development will result in some loss of existing vegetation, and as such, the primary objective of measures outlined in this report is to facilitate regeneration of existing vegetation on site and thus maintain the natural integrity of the site as much as possible.

As much as possible the areas around the turbine bases and other disturbed areas will be actively encouraged to re-vegetate naturally. Replacement of harvested vegetated turves to bare areas during and post construction will encourage re-vegetation and avoid erosion in the vicinity of proposed turbines, hardstands, access roads, drainage structures and all other associated infrastructure. This is considered in keeping with the existing vegetation of the site and favours the proliferation of native species in the area to maintain the natural integrity of the site, with further details and actions given in Section 6.3 of the HMEP.

The site reinstatement measures will be implemented during and post construction. The site will be visited by an ecologist/environmental engineer at regular intervals during construction to monitor on site works and post construction to determine the progress of re-vegetation and if necessary to look at introducing planting with native species.

A reassessment of the site will be carried out at regular intervals during year 1 by an environmental scientist/ ecologist to assess the sites progression over the previous year and take photographic evidence of the site vegetation status, drainage management and general site appearance at year 1, as detailed in Section 6.7 of the HMEP.

The main aims of this habitat reinstatement, prepared in accordance with Hulme's Best Practice Guidelines for protection of bog habitats[1] are to:

- Minimise damage incurred on sensitive habitats resulting from the construction and operation of the proposed Craignagapple Wind Farm.
- Repair ecological and habitat damage which may be incurred as a result of the construction or operation of the proposed wind farm development.
- Provide some measure of commitment to the way portions of the site are managed once the wind farm is operational.

3.2 Temporary Storage of Excavated Material

It is proposed that all onsite stockpiles of soil, rock and other excavated material shall be removed and utilised in the site reinstatement programme to refill any excavated areas which would then be mounded and capped with sod prior to completion of works e.g. during reinstatement of the temporary construction compound.

Following excavation, peat may be required to be temporarily stored before reuse as it may not always be possible to take the material directly to the restoration areas. Temporary areas that could be utilised during construction have been identified in Figure 1 of the Outline PMP contained in Appendix 5.2 of the 2016 FEI. The temporary areas identified are habitats of lower ecological and hydrological sensitivity and/or degraded habitats of lower ecological significance, located outside of zones of potential peat slide risk, within proximity to the construction works to avoid tracking over other habitats and to improve currently degraded areas.

Materials excavated during the construction shall in the first instance, be stored on site in an environmentally safe manner that will not result in the pollution of waters or the smothering of ecologically sensitive habitats.

Overall volumes of stockpiling should be minimised and height and surface areas kept to a minimum The appropriate temporary storage areas for excavated peat will be as close to the excavation as practicable and will not be located on areas of deep peat (peat >1.0m).

Excavated material will not be stored adjacent to turbine bases, on or adjacent to slopes (>15° gradient), or within 50 m of water courses or riparian zones. This will be subject to evaluation and approval by an experienced geotechnical engineer.

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[1] Hulme, P.D. (2000) Best Practice Recommendations for Wind farm Development included by An Bord Pleanála in the permission for the Mooneenatieve / Corrie Mountain Wind Energy Project, Counties Leitrim and Roscommon.

Stockpile storage areas will be subject to evaluation and approval by an experienced geotechnical engineer and the site Environmental Clerks of Works (ECoW). No permanent spoil or stockpiles will be left on site post construction.

The peat stability assessment and Peatslide Hazard Risk Assessment (2010 ES), in addition to the subsequent Technical Notes 3, 4 and 5, will be reviewed in order to assess suitable temporary storage areas. These locations will be chosen based on gradient, geotechnical data and ground stability assessment and habitat type. A further assessment at pre-construction stage will be carried out to confirm suitable storage locations.

The site Project Manager will be responsible to ensure that the removal and storage of excavated material is carried out in accordance with the requirements of this plan, the Outline PMP and the Outline CEMP.

The site ECoW appointed by the Developer will inspect the temporary storage area and the re-colonisation of vegetative material from an ecological perspective at regular intervals. The following procedures will be adhered to as regards the excavation and storage of soils:

- Excavated mineral and peat soils shall be stored separately; this will prevent mixing of materials and facilitate reuse afterwards.
- Areas indicated as ‘no side casting’ and fenced off areas as indicated on Figure 6 and 7 of the HMEP and also identified on the constraints and proposed mitigation map prepared for discussion with the NIEA-NED (Appendix 2.2 of the 2016 FEI) will be avoided.
- All materials will be pile at low angles (< 10 - 15°) to ensure their stability and secured using silt fencing where necessary. This will help to mitigate erosion and unnecessary additions of suspended solids to the drainage system.
- If necessary, mineral soils will be covered while stored to minimise run-off. Sediment management systems, such as silt fencing, will be provided around the storage area where necessary. Surface water management systems will also be utilised in storage areas where necessary.
- Peat storage areas will be covered where applicable. The vegetative peat layers will be stored separately. Where suitable vegetative layers are available, it is preferable that the upper acrotelm (living peat) or vegetative layer of peat is harvested and stored for reuse on-site.
- The vegetative peat layers will be watered as required during storage. The harvested acrotelm will be maintained in a moist state during construction in preparation for re-use at locations where the underlying catotelm or non-vegetative layer has been exposed.
- Harvested sods of peat acrotelm will be reinstated as soon as possible after excavation, to avoid potential damage in the form of soil dehydration. Swift reinstatement will promote successful revegetation of bare soil.
- Harvested sods of peat will be reused in the restoration of bare/exposed surfaces around turbines, exposed peat cuttings and on peat berms adjacent to access tracks. **Peat or excavated soils will not be spread on ecologically sensitive habitats** (Section 6.1 of the HMEP highlights actions to be taken to protect sensitive habitats) **and/or water dependent ecosystems** (as identified in **Chapter 5: Geology, Hydrology and Hydrogeology** of the FEI). All peat re-use measures will also be carried out in consultation with both a suitably qualified ecologist and with a suitably qualified geotechnical engineer.
- It is expected that some areas of bare/exposed surface may remain following the completion of construction works. Bare surfaces on slopes greater than 2° will be stabilised or re-vegetated as soon as possible to minimise the risk of erosion which may result from sustained rainfall.
- Natural re-vegetation is the preferred method of recovery. However, where required (for example, where adequate quantities of vegetated peat are not available or natural re-vegetation processes are insufficient), bare material and/or reinstated peat can be secured using vegetation blankets such as Greenfix Embankment Mat, Geojute or similar approved product. An appropriately preseeded CoirMesh may also be suitable, if required.
- Other remaining bare areas will be assessed with respect to the need to re-seed them following works, as detailed in Section 6.3 of the HMEP.
- All reinstatement works will make use of onsite materials in as far as possible to ensure the natural integrity of the site is maintained and will not be threatened by contamination from offsite materials or the introduction of non-native species.

3.3 Access Track Reinstatement

The proposed access track will be constructed following excavation and removal of peat down to the level of the underlying soil or rock. The access track will then be backfilled up to the original ground level. An ECoW and site ecologist will be on site to monitor and oversee removal and storage of topsoil and/or vegetative peat layers. Access tracks will remain unsurfaced.

Peat excavated during the course of the access track construction works shall be reused on-site in the form of roadside peat berms in areas of minimal peat cover and as peat backfill at other locations on site (e.g. areas of exposed peat cuttings, peat reinstatement around turbine bases etc.). Peat berms will be restricted to access tracks of gradient not exceeding 2°. Berms shall not be located on tracks adjacent to slopes. Harvested vegetative peat layers will be placed on the berms where required. This will provide resistance against rainfall events, and will minimise sediment and nutrient release until natural re-vegetation is established. As part of the ecologists/ECoW's assessment, the re-vegetation of peat berms will be monitored.

3.4 Cable Trench Reinstatement

To reduce the visual impact of the development, underground cables will link the turbines. Cable runs, including communications cables, will be located alongside site tracks at a depth of approximately 0.75m. The cable trench will be dug to a width of approximately 0.5m. Clay bunds will be constructed within the cable trench at intervals where necessary to prevent longitudinal drainage.

The excavated material will be laid alongside the trench for use in reinstatement following the laying of cables; vegetated surface layers will be stored separately. Once cable laying work has been completed the excavated material will be backfilled and compacted to a suitable standard. The refilled trenches will then be capped with harvested surface layers which will be encouraged to re-vegetate naturally. An onsite ecologist/environmental engineer will monitor the onsite removal and reinstatement of trenches and will survey the progress of plant re-colonisation.

3.5 Infill and Reinstatement Works

Brookfield proposes to remediate the site to maintain the natural character of the site as much as possible, therefore;

- All stockpiles of soil, rock and other excavated material shall be utilised in the site reinstatement programme to refill any excavated areas which would then be mounded and capped with sod prior to completion of works.
- Excavated materials shall be stored on site in an environmentally safe manner that will not result in the pollution of waters or the smothering of ecologically sensitive habitats. No blasting will take place.
- An environmental engineer or ECoW will monitor removal and storage of topsoil material and vegetation re-colonisation will be monitored and managed if necessary.
- In an effort to reduce the storage time of excavated material, a sequential ('rolling') extraction-restoration programme will be employed where feasible i.e. where topsoil and overburden from one pit can be used for the restoration of the previous pit etc.
- Due to the size of the site it is likely that works will take place at more than one area of the site concurrently and will not necessarily be in sequence. However, where feasible this sequential extraction-restoration programme will be followed. Again this work shall be monitored by the environmental engineer.
- Where possible the haulage cycle of road fill from the pits to the roads will coincide with the return of the topsoil and overburden for pit backfill in an effort to reduce overall haulage distances travelled.
- It is proposed that the stored soil overburden be replaced and graded to reflect the surrounding landscape. This will be capped with the surface layer of sod to encourage rapid re-establishment of indigenous vegetation. In all cases disturbed ground will be allowed to naturally re-vegetate initially and this progression will be assessed post construction. It is anticipated that the areas will be characterised initially by opportunistic species on the disturbed substrates. These pioneer species will provide soil stability until the more specialist plants adapted to the regimes of the surrounding habitat slowly re-colonise through succession.

- This restoration programme is considered in keeping with the existing vegetation of the site and favours the establishment of native species already present to maintain genetic stock of the local area – coordination of this will be via the site engineer/ECoW and the site Project Manager.

Photo 1 Good example of restored area filled with peat and sub soils

Photo 2 Showing restoration process

3.6 Monitoring Proposal

The site reinstatement measures implemented during and post construction will be reassessed as detailed in section 6.7 of the HMEP. This includes assessment of the site's progression over the previous year and photographic evidence of the site vegetation status, drainage management and general site appearance.

The purpose of this monitoring will be to ensure that the site is left in a position to maximise the potential for natural re-vegetation and that no issues will arise from site run off in areas where re-vegetation has not yet adequately commenced. Areas will be assessed with regard to re-vegetation and plant progression/plant stabilisation.

As part of ongoing management, the structure of the vegetation will be assessed over the lifetime of the wind farm and regular reporting provided to Northern Ireland Environment Agency (NIEA) as detailed in section 6.7 of the HMEP and Appendix D of the CEMP.

3.7 Site Reinstatement and Drainage

The current drainage regime at the site is based on the network of agricultural drains and natural streams. During the construction and reinstatement phase, drains from areas of hard standing and roads will be directed to these, following appropriate treatment and environmental safeguards. Silt traps will be constructed at locations that will intercept run-off to streams. A buffer zone will remain between the silt trap and the watercourse with natural vegetation left intact to assist in silt interception.

All silt traps shall be located, constructed, operated and maintained in such a manner to retain sediment and prevent silting of aquatic zones. New drains will be constructed along contours rather than run directly down slope. Appropriate best management practices will be implemented during development and reinstatement to prevent or minimise any potential impacts. Best management practices will also be used during any future maintenance activities. These best management practices will control erosion runoff from the site and prevent any pollutants entering drainage water through proper handling and disposal of any chemical components.

As part of the Environmental Impact Assessment a hydrological assessment was carried out and a SWMP was prepared for the Craignagapple Wind Farm. The SWMP was reviewed in relation to the 2016 Layout and the Drainage Management Plan (DMP) was updated in order to provide a fully informed drainage design to ensure protection of surface waters during construction and operational of the proposed development.

This Outline SRDP, along with the SWMP included in Appendix 5.4 and the DMP in Appendix 5.5 of the 2016 FEI, sets out the site management plan for drainage including specific mechanisms to be used, including sediment traps, check dams and silt fencing where appropriate. Recommendations are also included for monitoring and maintenance programmes to ensure the effectiveness of site drainage measures.

3.8 Settlement Pond Reinstatement

Settlement ponds are required on site to settle out any suspended solids from the soil which will be disturbed during the construction period of the wind farm and to reduce the concentration of nutrients in the surface water due to any tree felling as a result of the construction of the wind farm. Settling ponds have been sized in accordance with criteria set down in CIRIA B14 Design of Flood Storage Reservoirs, (section 6.4.2., for the efficient removal of suspended solids and other nutrients).

The settlement ponds will discharge into drainage swales connecting into the track drainage system, which outfalls to the attenuation ponds. All settlement ponds will be put in place prior to any excavation for turbines or construction of site tracks. Any interceptor drains and silt traps will also be put in place ahead of the proposed access tracks and turbine base construction such that any constructed hardstanding must have a functioning drainage system in place.

Settlement ponds will be in-filled, reinstated and managed as per reinstatement Section 4.7. Any permanent settlement ponds will be designed and created for maximum wildlife benefit in consultation with the ECoW.

3.9 Reinstatement of Temporary Construction Compound

Following the construction period, the temporary construction compound will be removed and underlying ground will be allowed to re-vegetate. The topsoil that was removed during the creation of the construction compound will be re-used for landscaping.

4 Site Reinstatement at Decommissioning Stage

4.1 Wind Turbine Decommissioning

Properly maintained wind turbines will have a life expectancy of approximately 20 to 25 years. At the end of the working life of the turbines a commercial and landscape/environmental appraisal of the project site will be carried out. The commercial appraisal will assess whether or not the turbines will be replaced, in their entirety, by new turbines or if the site should be terminated in relation to electrical generation. The developer will consult with the Planning Authority, Derry City and Strabane District Council regarding these and other issues at the decommissioning stage.

The main components of the wind turbines (the tower, the nacelle and blades) are modular items that allow for ease of construction and disassembly. The wind turbine decommissioning process will largely be a reversal of the installation process, and will be subject to the same constraints.

The turbines will be dismantled using standard best management practices. The components will be removed from the site and transported to appropriate facilities for reconditioning, salvage, recycling or disposal.

4.2 Wind Turbine Foundation Decommissioning

Each wind turbine will require a reinforced concrete (RC) foundation comprising of a base slab bearing onto rock or other competent substrata with a central upstand to support the tower. Foundation pads are designed as either buoyant or non-buoyant depending on local ground water and drainage conditions at each turbine location.

Once the ground has been excavated to a suitable bearing stratum and any rock fill material and concrete blinding placed, the steel reinforcing cage will be assembled together with any cast-ins (cable ducts, holding down bolt arrangements etc). A timber shutter will then be erected to the required dimensions and the concrete will be poured into place. A similar procedure is adopted for the RC upstand.

The proposed turbine foundation bases will be approximately 20m x 20m x 3m deep. Exact specifications may change depending on the results of site investigation works at each turbine location.

In order to keep the number of ground disturbances to a minimum, it is proposed that turbine foundations will not be removed from the ground. Brookfield believes more extensive landscape disturbance and adverse environmental damage may result from full turbine foundation removal rather than leaving them in-situ. Instead of removal, turbine foundations will be buried under a cover of appropriate substrate (likely to be surface peat) from site and capped with turves or re-seeded using locally collected seed. Peat will be taken from a long term peat storage area identified within the Outline PMP and created during construction. A Contractor's report will be required following initial wind farm construction stating the location of the long term storage area and the depth to which material can be taken from it without compromising the restoration of the storage area itself. The ground surface at each of the turbine locations and the long term peat storage area will be reinstated as close as possible to its former condition including the reinstatement of topsoil and the restoration of vegetation consistent and compatible with surrounding vegetation. Areas will be re-vegetated as soon as possible to avoid silt run off and facilitate re-vegetation of the site as part of the site landscaping scheme to maintain the naturalized appearance of the site; returning the site to as close as is practicable to its original state.

This proposal is in keeping with recommendations of the Department of Environment, Heritage and Local Government's (DoEHLG) 'Wind Energy Planning Guidelines 2006'.

Extract from Section 6.15 'Landscape Impact of Wind Energy Development Operation and Decommissioning':

"*Foundation pads can be covered with local soil and left for natural re-vegetation, although they should be re-sodded in highly exposed locations*."

On-site assessment of the progression of the vegetative re-colonisation of disturbed ground will be carried out by the ecologist/environmental engineer in consultation with the site Project Manager. On-site materials will be used for the reinstatement to prevent the growth of introduced or non-native species, ensuring that reinstatement will be in keeping with the adjacent undeveloped surrounding environs. Where necessary, re-sodding, reseeding and/or replanting will also be carried out as indicated by the site ecologist/engineer who will work with the on-site Project Manager in this regard.

4.3 Access Tracks

Access tracks are required to allow plant and machinery to access the turbine locations and also to allow service vehicles to traverse the site during the operation. 0.63km of existing access tracks will be used, including 0.34km to be upgraded, which involves re-grading, digging and unclogging/repairing of existing drains, widening parts of existing roads especially at bends, cambering etc. 2.31km of new access tracks will also be constructed from the existing roads to the proposed turbine locations. At the locations of new roads the peat/soil will be excavated until a competent bearing stratum is reached. Suitable materials, including rock for the construction of the access tracks, will be sourced from on-site excavations where possible although it is likely that materials will also need to be imported.

In general, on-site access tracks can provide a high level of accessibility to land which may have previously been difficult to access. Based on the advantage of increased accessibility, retention of access tracks post turbine decommissioning is commonly preferred by landowners involved in wind farm developments.

The DoEHLG recognize this methodology as a suitable alternative to road removal in the 'Wind Energy Planning Guidelines 2006', Section 6.15:

Extract from Section 6.15 'Landscape Impact of Wind Energy Development Operation and Decommissioning':

"*Decommissioning should involve the removal of all of the above ground elements of the wind energy development and making good of the site, with the possible exception of roads and tracks where some further use can be found for them and this is approved by the planning authority*."

4.4 Turbine Hardstand Reinstatement

A hardstanding area of approximately 720m^2 will be required at each turbine location, which will include the turbine foundation (314m^2) as well as the crane pad.

At the conclusion of the decommissioning activities, the hardstanding areas will be reinstated using the on-site overburden and topsoil, which would have been stripped and mounded along the access track during the construction phase, onto the hardstanding surfaces. This will encourage the natural regeneration of plants in keeping with the surrounding flora. It is anticipated that the areas will be characterised initially by opportunistic species on the disturbed substrates. These pioneer species will provide soil stability until the more specialist plants adapted to the regimes of the surrounding habitat slowly re-colonise through succession.

This is considered in keeping with the existing vegetation of the site and favours native species already present to maintain genetic diversity. On-site materials will be used for the reinstatement where possible to prevent the growth of introduced or non-native species and to ensure the hardstands will be restored as close as possible to its former state and in keeping with the surrounding environs. Consideration will also be given to the creation of waterbodies appropriate for aquatic species in a blanket bog setting.

The progress of plant re-colonisation will be assessed by the site environmental engineer/ecologist. Where necessary, reseeding and/or replanting will also be carried out as indicated by the site ecologist/ engineer who will work with the on-site Project Manager in this regard.

4.5 Cable Trench Reinstatement

Turbines will be electrically connected by buried electrical cable which conducts the electricity generated by the wind turbines back to the substation from where it will then be delivered to the national grid system.

Cable runs will typically be buried at a minimum depth of approximately 0.7m and contain no materials known to be harmful to the environment. Due to the depth at which the cables will be buried, it is not necessary to excavate and remove them in the event of decommissioning. Furthermore, it is likely that cable removal would cause unnecessary ground disturbance.

4.6 Substation Reinstatement

The proposed Craignagapple Wind Farm also includes the development of an on-site substation which will house a 110kV tails station. A control building will also be constructed.

It is proposed not to remove the substation and associated infrastructure as it makes up part of the transmission network provided, and partly owned, by NIE and it may facilitate other developments in the area. This will be agreed with the Planning Authority, Derry City and Strabane District Council and other relevant stakeholders at the time of decommissioning.

5 Conclusions

The purpose of this Outline SRDP is to identify the methodology that will be used to reinstate the site post construction and to remove project components and restore disturbed areas within the project area on full or partial decommissioning of the wind farm.

The Outline SRDP puts a programme in place to restore the development site to a naturalised state after construction, such that the landscape and habitat is not adversely impacted on, and to ensure that the site and reinstatement procedures carried out on site are in accordance with best practice guidelines for environmental protection.

This Outline SRDP is based on a six turbine layout, and after decommissioning, the wind turbines (the tower, the nacelle and blades) will be dismantled using standard best management practices. The components will be removed from the site and transported to appropriate facilities for reconditioning, salvage, recycling or disposal.

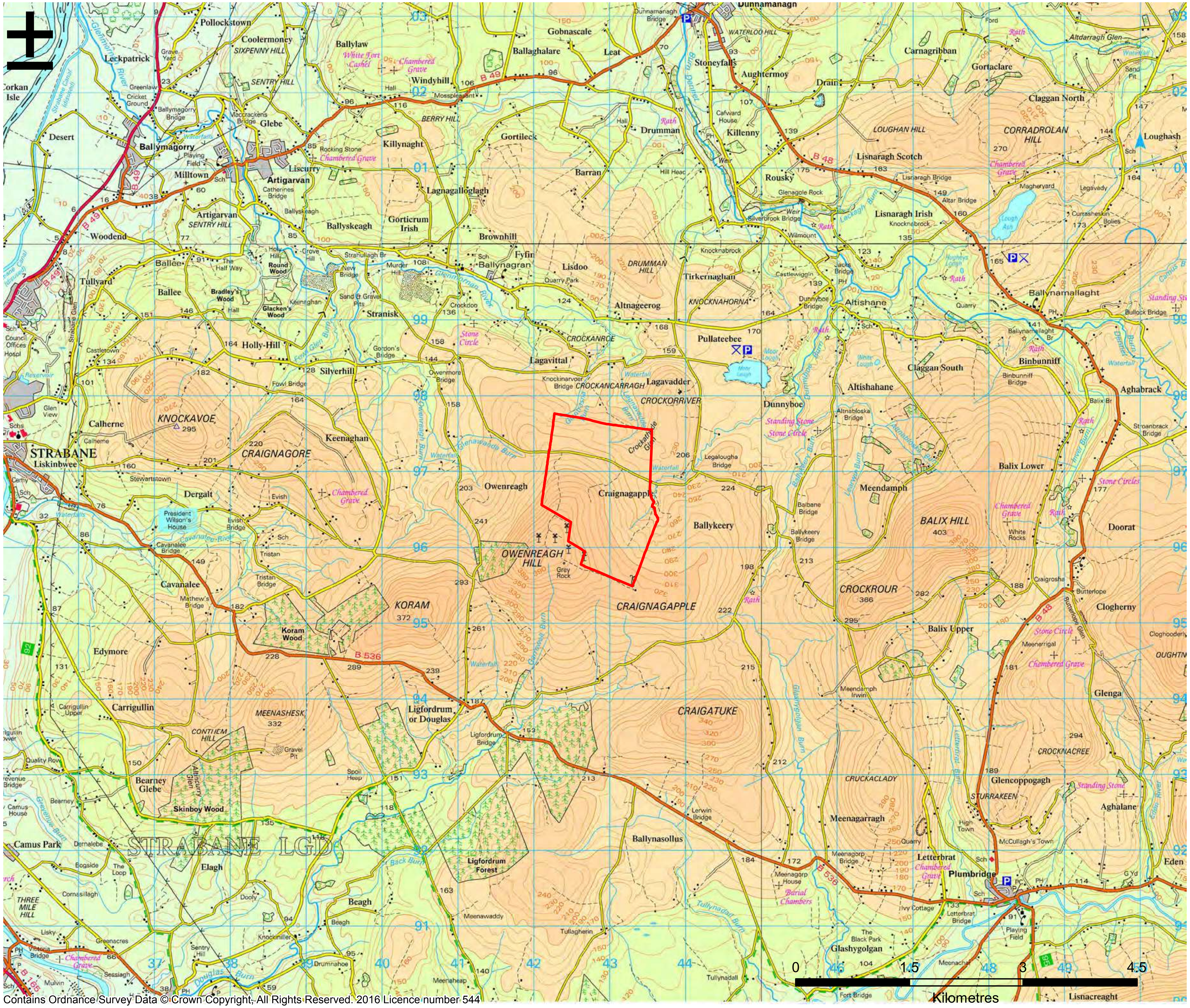
Site reinstatement works will make use of on-site materials where possible to ensure that the natural integrity of the site is maintained and will not be threatened by contamination from off-site materials or the introduction of non-native species.

Replacement of vegetated sod peat to areas of bare peat post construction will encourage re-vegetation and avoid erosion in the vicinity of proposed turbines and ancillary site works. It is important to note that the proposed reinstatement and planting regime is one with a long-term goal to ensure that re colonization of disturbed ground will be in keeping with the existing on site vegetation.

Therefore natural regeneration of on-site flora will be encouraged where appropriate, if this is deemed unsuccessful further action will be taken in the form of reseeding with local species in keeping with the natural character of the surrounding environs. The requirements of the reinstatement plan will inform the CEMP prepared for this development project.

In order to keep the number of ground disturbances to a minimum, it is proposed that turbine foundations will not be removed from the ground, and the hardstanding areas will be reinstated using the on-site overburden and topsoil, which will encourage the natural regeneration of plants in keeping with the surrounding flora. Buried electrical cables will also be left in place to avoid unnecessary ground disturbance, and the on-site substation and associated infrastructure may be able to facilitate other developments in the area. This will be agreed with the Planning Authority and other relevant stakeholders at the time of decommissioning. In general, on-site access tracks will also be retained post turbine decommissioning as they can provide a high level of accessibility to land which may have previously been difficult to access.

Site reinstatement at Craignagapple Wind Farm at the decommissioning stage will involve returning the site to a naturalised appearance, reinstating the ground surface as close as possible to its former condition. Reinstatement methodologies are chosen to be environmentally sensitive, minimising adverse environmental damage and with the overall objective to improve and safeguard the aesthetic appeal of the landscape.



Key:

Site Boundary

REVISION: B

20161017_KU011501_SiteLocation_revB

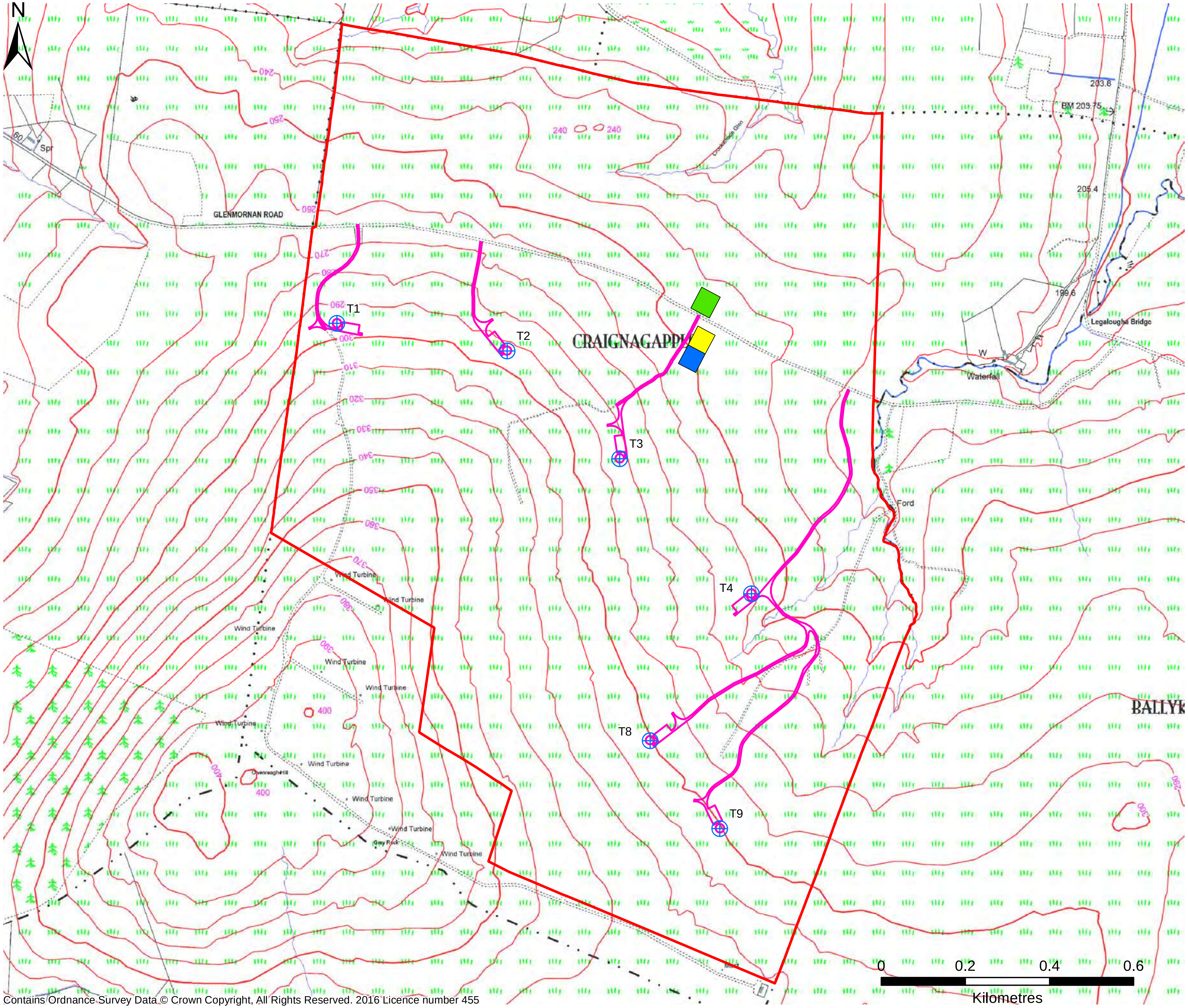
Brookfield

CRAIGNAGAPPLE
WIND FARM

Figure 2.1: Site Location

SCALE	PROJECT CODE
1:50,000 @ A3	KU011501
CONTENT	DRAWN
LE	CD
CHECKED	DATE
LE	11/11/2016

JACOBS



Key:

- Site Boundary
- Turbine Locations
- 2016 Infrastructure Layout
- Substation
- Supplier's Compound
- Temporary Construction Compound

Turbine	Grid Co-ordinates
T1	H 42314, 97028
T2	H 42718, 96963
T3	H 42986, 96707
T4	H 43299, 96386
T8	H 43058, 96037
T9	H 43224, 95828

REVISION: E
20161017_KU011501_2016_SiteLayout_revE

Brookfield

CRAIGNAGAPPLE
WIND FARM

Figure 2.2:
2016 Layout

SCALE 1:9,000 @ A3	*PROJECT CODE* KU011501
CONTENT LE	*DRAWN* CD
CHECKED LE	*DATE* 11/11/2016

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Appendix B

Surface Water Management Plan and Drainage Management Plan

(Please refer to Appendix 5.4 and 5.5 of 2016 FEI)

Appendix C

Peat Hazard & Risk Assessment

(Please refer to Appendix 12 of 2014 FEI and Appendix 5.1 of 2016 FEI)

Appendix D

Environmental Monitoring Schedule

Action	Timing	Monitoring and reporting	Measurement of success / remedial action	Responsibility
Objective 1 - To protect important habitat areas (particularly Active Blanket Bog, Acid/Neutral Flush and the other habitats included in the NI Priority Habitat - Blanket Bog (Dry Modified Bog and Dry Heath,) from impacts.				
A1 No works including infilling, dumping or storage of excavated or incoming materials will occur within the areas identified as active blanket bog and Acid/neutral flush habitats as shown on the Phase 1 Habitat Map (Figure 4 of the HMEP). All-important habitat areas that lie adjacent to the working corridor (including Active blanket bog and Acid/Neutral flush) will be fenced off prior to works commencing. Figure 7 of the HMEP illustrates those areas which will be fenced off.	During construction	Within year 1 HMEP report	Fences in place prior to construction commencing.	Contractor
A2 A walkover of the Application Site will be undertaken prior to construction with the Ecological Clerk of Works (ECoW) and appointed Contractor in attendance to mark areas agreed for activities such as side-casting and spoil storage within the Construction Environmental Management Plan (CEMP). Areas where placement of material will be limited to specific material types (such as peat / turves only) will also be confirmed at this stage.	Pre- construction	Within year 1 HMEP report	Walkover undertaken and plan in place prior to construction commencing.	Contractor / ECoW
A3 The existing water regimes within the Application Site boundary have been outlined in the original ES Chapter 6 and further information has been provided following changes to the proposed development in the 2016 FEI - Geology, Hydrogeology and Hydrology Assessment (Jacobs, 2016). These water regimes and their associated flush habitats will be maintained by ensuring continued water supply. This will be accomplished by the facilitation of drainage beneath the access track and measures to avoid drainage following the contour of the new track, as described within the above report.	During construction	Within year 1 HMEP report	Work agreed in advance and overseen by ECoW	Contractor / ECoW
A4 An Ecological Clerk of Works will be employed for the duration of construction as detailed in section 6.7 of the HMEP.	During construction	Within year 1 HMEP report	ECoW employed for duration of project.	Brookfield Renewable

Action	Timing	Monitoring and reporting	Measurement of success / remedial action	Responsibility
Objective 2 - To ensure the continued protection of water quality and flow in watercourses during and after windfarm construction				
B1 Surface water and drainage management will be undertaken fully in line with the 2016 FEI - Geology, Hydrogeology and Hydrology Assessment Report (Jacobs, 2016). Specific sediment and drainage control measures to be applied in key construction areas / activities namely watercourse crossings, Access tracks, Excavation areas, Cable Trenches are detailed in the 2016 FEI - Geology, Hydrogeology and Hydrology Assessment Report (Jacobs, 2016).	During construction	Within year 1 HMEP report.	Areas identified and method statements agreed prior to construction commencing.	Contractor
B2 A walkover of the Application Site will be undertaken by the appointed Contractor and hydrologist / ECoW (as appropriate) to identify and agree the location of flow paths / flushes particularly those near T3, T4, T8 and the locations of the proposed temporary compound and substation. This information will be used to identify where specific measures, as outlined in the 2016 FEI - Geology, Hydrogeology and Hydrology Assessment Report (Jacobs, 2016) are required.	During construction	Within year 1 HMEP report.	Areas identified and method statements agreed prior to construction commencing.	Contractor / ECoW
B3 Active re-vegetation will be undertaken in all areas affected by construction within 50m of a watercourse (as shown on Figure 6 and 7 of the HMEP).	Pre-construction	Within year 1 HMEP report	Plan in place prior to construction commencing.	Contractor
B4 Methods to manage peat, and its potential impact on watercourses, are outlined in the Outline PMP (Fluid, 2016). A number of methodologies for the excavation, temporary storage and re-use of peat will minimise any potential contamination of surface water-runoff by peat.	During and Post-construction	Construction year (year 1) and years 2 and 3	Areas requiring re-vegetation identified. Re-vegetation undertaken and reported on in reports.	Contractor
B5 Monitoring of vegetation establishment will be undertaken as detailed in Section 6.7 of the HMEP.	During and post-construction	HMEP reports in years 1, 3, 5, 10, 15, 20 and 25.	Comparison of areas with control quadrats. Remedial action dependent on issue.	ECoW
B6 A water sampling and monitoring programme will be written in consultation with NIEA, including a strategic set of water sampling locations, the suite of parameters to be analysed and the methodology. Likely locations for monitoring include Legnahone Burn, Dunnyboe Burn, Lagavadder Burn, down-gradient of water crossings and other key infrastructure and up-gradient of Private Water Supplies. Baseline	Pre-construction	Pre-construction compliance documents	Protocol agreed	Brookfield Renewable

Action	Timing	Monitoring and reporting	Measurement of success / remedial action	Responsibility
monitoring will then be undertaken, as agreed with NIEA, in order to develop an approximation of conditions prior to the wind farm development.				
B7 During construction water sampling and analysis will continue from the baseline locations at specified intervals. Sampling locations will include some control points outside the influence of the construction. This will provide assurance that mitigation measures are effective and sensitive receptors are not subject to detrimental impacts. Should any impacts be observed through the monitoring, immediate actions as defined in the water monitoring plan will be implemented. This is likely to include identification and removal of the source of the impact, notification of the appropriate personnel / authorities and remediation and amendment to mitigation if appropriate.	During construction	Within year 1 HMEP report	Sampling undertaken and reported on. Remedial action undertaken and documented in year 1 HMEP report.	Contractor
Objective 3 - To ensure the quick recovery of areas affected by the works through a combination of impact minimisation during works and targeted post-construction remedial action.				
C1 No vegetation stripping or placement of spoil will be undertaken outside the working corridor.	During construction	Within year 1 HMEP report	No works undertaken outside corridor. Reported on in year 1 report.	Contractor
C2 Turves arising from access track, hardstand and turbine construction areas will be lifted and set aside for active re-vegetation. Where feasible, retained turves will be a minimum depth of 300mm and used in the immediate locality to take account of habitat variation within the construction corridor. Turves, peat and subsoil will be stored separately and not mixed during re-instatement works. Turves will be retained in an area protected from machinery access and will be watered during dry weather if required.	During construction	Within year 1 HMEP report	Works undertaken as described and overseen by ECoW. Reported on in year 1 report.	Contractor
C3 Side casting and spoil storage will be undertaken in line with the general guidance provided in the Outline PMP (Fluid, 2016) and the 2016 FEI - Geology, Hydrogeology and Hydrology Assessment Report (Jacobs, 2016).	During construction	Within year 1 HMEP report	Works undertaken as described if deemed feasible and overseen by ECoW. Reported on in year 1 report.	Contractor

Action	Timing	Monitoring and reporting	Measurement of success / remedial action	Responsibility
C4 Areas requiring active re-seeding will be identified as works progress and seeding will be undertaken in the first Spring after the main ground work operations (e.g. after cabling) have been completed (likely Spring 2016). Priority areas for active re-seeding are all works falling within the Dry modified bog and associated habitats such as the Dry Heath/Acid Grassland Mosaic which all fall under the NI Priority Habitat Blanket Bog.	During construction	Within year 1 HMEP report	Re-seeding areas identified	Contractor / ECoW
C5 Seed will be collected for active re-seeding from the site in the Autumn of the construction year and spread in the Spring of the following year in areas identified in C4. Seed will be collected from distinct habitat types as required by the audit above (Action C5) and stored separately for later use in areas matching the habitat type. Where restored habitat conditions are likely to be significantly different from the original (for example on banks of significant fill areas adjacent to hardstands and tracks), the most suitable locally collected seed for the conditions will be used (e.g. heather species for free draining banks).	During construction and Post-construction	Within year 1 and year 3 HMEP reports	Seed collected and areas re-seeded as required. Remedial action to include further seeding if required.	Contractor / External Contracted Party (seed collection and re-seeding
C6 The success of re-vegetation measures will be monitored as detailed in Section 6.7 of the HMEP and remedial action detailed under Action G2 will be taken as required.	Post-construction	Areas within watercourse buffer zones – Construction year (year 1) and years 2 and 3. Long term restoration areas - years 1, 3, 5, 10, 15, 20 and 25.	Monitoring undertaken Remedial action to include further seeding if required.	ECoW
The restoration of bare peat will be undertaken in line with the general guidance provided in the Outline PMP (Fluid, 2016) and the FEI Chapter 5- Geology, Hydrogeology and Hydrology Assessment Report (Jacobs, 2016).	During construction	Within year 1 HMEP report	Remedial action dependent on issue. Potential reworking of areas, re-seeding or works to ensure hydrological integrity.	Contractor / ECoW
Objective 4 – To ensure no further degradation of key habitat will take place within the Management Areas				
D1 No turf cutting will be undertaken within the Management Areas 1, 2 and 3 as shown in Figure 3 of the HMEP for the lifetime of the wind farm.	Throughout construction and operation.	HMEP reports in years 1, 3, 5, 10, 15, 20 and 25.	No further turf cutting demonstrated.	Brookfield Renewable / Landowner
D2 No Burning will be undertaken in Management Areas 1, 2 and 3 as shown in Figure 3 of the HMEP during the lifetime of the wind farm.	Throughout construction and operation.	HMEP reports in years 1, 3, 5, 10, 15, 20 and 25.	No further burning demonstrated.	Brookfield Renewable / Landowner

Action	Timing	Monitoring and reporting	Measurement of success / remedial action	Responsibility
D3 No drainage channels will be dug in Management Areas 1, 2 and 3 as shown in Figure 3 of the HMEP during the lifetime of the Wind Farm.	Throughout construction and operation	HMEP reports in years 1, 3, 5, 10, 15, 20 and 25.	No further drainage demonstrated	Brookfield Renewable / Landowner
Objective 5 - To enhance important / priority biodiversity habitats within the site to compensate for impacts due to the construction works				
E1 Grazing within the Management Areas 1, 2, and 3, as shown in Figure 3 of the HMEP will be prohibited during the period 1st November to 28/29th February and will be limited to the period 1st March to 31st October. Stocking densities for each management area will correspond to those figures outlined in Table 7 of the HMEP.	Throughout construction and operation.	HMEP reports in years 1, 3, 5, 10, 15, 20 and 25.	Stocking rate achieved.	Brookfield Renewable / Landowner
E2 A targeted approach will be taken to re-wetting areas of peatland habitat by placement of interlocking plastic piling dams or peat dams within drains in Dry Modified Bog habitat in the Management Area 3. An overview of the areas targeted for re-wetting are shown in Figure 5 of the HMEP, while a detailed illustration of the drainage channels (both open and vegetated within these areas is shown in Figure 9 of the HMEP. The approach will aim to hold back water in all feasible locations within this area, subject to hydrological assessment. However, the exact location and number of dams required will be finalised on the ground and reported on within the HMEP year 1 report. All peat dam works will be overseen by an ECoW with practical experience of peatland / wetland management.	During construction	Within year 1 HMEP report	Dams in place.	Contractor / ECoW
E3 A targeted approach will be taken to those areas identified for restoration in the Outline PMP (Fluid, 2016). All re-profiling, water level control works and stabilisation works will be overseen by an ECoW with the practical experience of peatland restoration	During construction	Within year 1 HMEP report	Works monitored and reported on	Contractor / ECoW
E4 A total of 20 2x2 metre monitoring quadrats will be set up within the areas where habitat enhancement measures and peatland restoration measures will be undertaken across Management Areas 2 and 3. A particular emphasis will be placed on those areas which will be re-wetted and restored. Information to be recorded is detailed in Section 6.7 of the HMEP.	During construction	Within year 1 HMEP report	Quadrats set up, surveys undertaken and reported on.	ECoW

Action	Timing	Monitoring and reporting	Measurement of success / remedial action	Responsibility
E5 A targeted approach will be taken to re-wetting areas with impermeable soil (marshy grassland) by the placement of interlocking plastic piling dams within drains located in Management Area 3. An overview of the areas targeted for re-wetting and the location of existing drains are shown in Figure 9 of the HMEP. The approach will aim to hold back water in all feasible locations within this area, subject to hydrological assessment. However, the exact location and number of dams required will be finalised on the ground and reported on within the HMEP year 1 report. All dam works will be overseen by an ECoW with practical experience of wetland management for breeding waders.	During construction	Within year 1 HMEP report	Dams in place.	Contractor / ECoW
E6 A minimum of 4 wader scrapes will be created in those areas identified in Management Area 3. The exact location and number of scrapes will be finalised on the ground and reported on within the HMEP year 1 report. The creation of scrapes will be overseen by an ECoW with practical experience of wetland management for breeding waders.	During construction	Within year 1 HMEP report	Scrapes in place.	Contractor / ECoW
E7 Where stilling ponds are to be left in place permanently, wildlife-friendly features will be incorporated into their design. This will include shallow shelving sides and the use of surface turves overlapped into the edges of the ponds. The ECoW will provide briefings relating to the inclusion of wildlife-friendly features into permanent stilling ponds to digger drivers and site foreman.	During construction	Within year 1 HMEP report	Briefings undertaken, wildlife friendly features included in permanent stilling ponds.	Contractor / ECoW
Objective 6 - To avoid impacts on protected species, including nesting birds				
F1 Any investigation or construction works during the bird breeding season will be preceded by nesting bird surveys during March of the construction year.	Pre / During construction.	Reported on to NIEA as per condition in year of construction as per Condition 7 and in year 1 HMEP report.	Survey undertaken and reported on.	ECoW

Action	Timing	Monitoring and reporting	Measurement of success / remedial action	Responsibility
F2 Works during the breeding season (1st April - 15th August) in any year will be monitored on a weekly basis and an appropriate buffer will be put in place around any nesting bird species. The extent of the buffer will be appropriate to the sensitivity of the species, the location and the nature of the works occurring at the time and in the locality. Buffers will be implemented in consultation with NIEA: NED. In general the following approach will be taken: o Decisions on appropriate buffer zones for widespread species, such as Meadow Pipit, will be made on the ground. In many cases a 20m buffer should be sufficient. o Where sensitive species such as Snipe are detected nesting, a 450m buffer to be applied. NIEA: NED should be notified of any detection via email. o Where curlews are detected breeding a default buffer of 800m will be applied with cessation of works and consultation with NIEA: NED to follow where topographic screening etc. may be considered. Other species of conservation concern, such as Hen harrier, Merlin or Golden Plover, will require cessation of works and immediate consultation with NIEA: NED.	During construction	Reported on to NIEA as per condition in year of construction (2 reports) as per Condition 9 and in year 1 HMEP report.	Works monitored and reported on.	ECoW
F3 Construction will be preceded by a walkover survey of the route within one month of the works commencing to identify whether any badger setts or other protected species occur within 25 metres of the construction corridor	Pre-construction and During construction	Within year 1 HMEP report	Status of protected species within site assessed and appropriate action taken	ECoW
F4 If during the works a badger sett is located within 25 metres of any works, work will cease in that area and consultation will be undertaken with NIEA.	During construction	Within year 1 HMEP report	Monitoring and relevant briefings undertaken and appropriate action taken	Contractor / ECoW
Objective 7 - To oversee and monitor the success of protection and enhancement measures and take remedial action as required				
G1 All construction works will be monitored by an Ecological Clerk of Works (ECoW) with visits at minimum weekly intervals during works.(The role of the ECoW can be found in section 6 of the HMEP).	During construction	Within year 1 HMEP report	Work overseen by ECoW and reported on in year 1 report.	ECoW

Action	Timing	Monitoring and reporting	Measurement of success / remedial action	Responsibility
G2 Re-vegetation of areas within the working corridor will be monitored where they fall within a 50m buffer zone to watercourses (as marked in Figure 7 of the HMEP) in years 1, 2 and 3. Details on the monitoring can be found in section 6.7 of the HMEP).	During construction and Post-construction	Construction year (year 1) and years 2 and 3	Monitoring undertaken and reported on.	ECoW
G3 The prohibition of turf cutting, further drainage, and burning within the Application Site will be monitored throughout the lifecycle of the project through means of walk-over survey of the Application Site (details on the monitoring can be found in section 6.7 of the HMEP).	During construction and Post-construction	Construction year (year 1) and years 2 and 3	Monitoring undertaken and reported on	ECoW
G4 The success of the measures employed within the Habitat Enhancement Area identified in Figure 8 of the HMEP will be monitored by means of vegetation quadrats as detailed in section 6.7 of the HMEP.	During construction and Post-construction	HMEP reports in years 1, 3, 5, 10, 15, 20 and 25.	Implementation of agreed measures verified. Action taken as necessary	ECoW

Appendix E

Habitat and Species Management Plan

(Please refer to Appendix 6.2 of 2016 FEI)

Appendix F

Outline Peat Management Plan

(Please refer to Appendix 5.2 of 2016 FEI)

Craignagapple Wind Farm FEI

Brookfield Renewable

Technical Note: Review of the Surface Water Management Plan 2016

3

3 November 2016

Craignagapple Wind Farm FEI

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Contents

1. Introduction

This document presents a review of the **Surface Water Management Plan** (SWMP) prepared by WDR & RT Taggarts (**Appendix A**) as part of the Further Environmental Information report submitted in 2014 (2014 FEI) in relation to the Craignagapple Wind Farm planning application (J/2010/0481/F).

As a result of concerns from a number of statutory consultees, the 2016 Layout has reduced the number of turbines with associated infrastructure from nine to six, and has also proposed a new track layout to avoid environmental constraints. A comparison of the 2014 Layout and the 2016 Layout is shown on Figure 1.4 of the 2016 FEI.

1.1 Consultation

After the submission of the 2014 FEI, a number of statutory consultees raised concerns with the 2014 Layout in relation to potential surface water impacts as outlined below:

1.1.1 Northern Ireland Environment Agency - Natural Environment Division (NIEA-NED)

A consultation response was received from NIEA-NED dated 12th October 2015 wherein a number of concerns with the proposed development in relation to the water environment were outlined. NIEA-NED were concerned about the potential hydrological impacts on the River Foyle and Tributaries SAC from the proposed construction works, and the potential effect that any peat slide would have on water quality.

NIEA-NED asked that the **Drainage Management Plan** (DMP) submitted in Appendix A of the 2014 FEI SWMP (Figure 11/242C/002B) be updated to include more detail of the proposed mitigation measures. This Technical Note reviews the findings of the 2014 SWMP. The updated DMP for the 2016 Layout is included in **Appendix 5.5** of the 2016 FEI.

The potential impacts from peat slide risk in relation to the 2016 Layout are discussed further in **Chapter 5: Geology, Hydrogeology and Hydrology** and **Appendix 5.1: Technical Note 5 PSRA** of the 2016 FEI. The potential impacts on the SAC/ASSI have been assessed in a separate Aquatic Ecology Report included in **Appendix 5.6**.

NIEA-NED further advised that a robust Habitats Regulation Assessment (HRA) must be completed for the proposed development. Consultation has taken place with Shared Environmental Services to agree the scope of the HRA and all relevant updated reports required for the HRA will be provided to Derry City and Strabane District Council.

1.1.2 Northern Ireland Environment Agency - Water Management Unit (NIEA-WMU)

NIEA-WMU provided a response on 9th January 2015, and were generally content with the information submitted as part of the 2014 FEI stating that NIEA-WMU "*recognises and welcomes the opportunity to incorporate Sustainable Drainage Systems (SuDS), for the environmental management of rainfall / surface water drainage within the development*".

In order to ensure the protection of the water environment however, NIEA-WMU requested that the following condition be included should the scheme be approved:

> "*Method of Works Statements, for works in, near or liable to affect any waterway as defined by the Water (Northern Ireland) Order 1999, must be submitted to the Department, for agreement with the NIEA Water Management Unit, at least 8 weeks prior to the commencement of works or phase of works.*"

NIEA-WMU noted the intention to culvert a watercourse on the site, and stated that the construction of new culverts should be avoided unless no practicable alternative exists.

NIEA-WMU also highlighted that if peat instability is considered to be likely then they may be concerned regarding impacts on surface waters.

1.1.3 Rivers Agency

The Rivers Agency submitted a letter to the Planning Authority dated 15th October 2015 in which they stated that they did not have a reason "*to object to the proposed development from a drainage or flood risk perspective*".

1.1.4 Loughs Agency

The Loughs Agency submitted a response dated 27th January 2015 stating that they were "*content in principle that sufficient mitigation measures have been proposed to allay concerns raised in our previous responses*". They did however request to be consulted during the preparation of the Construction Management Plan and in relation to environmental monitoring as the competent statutory fisheries authority for the area.

The Loughs Agency listed a number of conditions they would like to see put in place to ensure the proposed development does not cause pollution to the receiving watercourses, and to mitigate impacts on the River Foyle and Tributaries SAC:

- "*All storm water from the development site should not be discharged to nearby watercourses unless first passed through pollution interception and flow attenuation measures.*
- *No culverting of watercourses onsite shall take place until the culvert design is agreed by the Loughs Agency and other relevant statutory authorities (as appropriate).*
- *No in-stream construction works shall take place within watercourses without the consent of the Loughs Agency.*
- *No development operations shall take place until an environmental monitoring programme (surface water) is prepared and agreed by the Loughs Agency and other relevant statutory authorities (as appropriate)*."

2. Changes to the 2016 Layout

The 2016 Layout is presented on **Figure 1.3** of the 2016 FEI Report for Craignagapple Wind Farm, and has been reduced from nine to six turbines with associated infrastructure as follows:

- six three-bladed, horizontal axis wind turbines, each up to 111m blade tip height;
- voltage transformers and related switchgear located inside each turbine;
- turbine foundations;
- hard-standing areas for the erection of cranes at each turbine location (crane pads);
- drainage infrastructure;
- upgrade of existing access points and existing internal access tracks;
- construction of new internal access tracks;
- a wind farm sub-station compound containing a control building;
- an on-site electrical and control network of buried cables; and
- a temporary turbine supplier's compound and construction compound.

2.1 Turbines

2.1.1 Turbine Locations

The position and grid references for the proposed turbines are shown in **Table 2.1** below.

Table 2.1: 2016 Layout Turbine Grid Co-ordinates

2016 Layout	
Turbine	**Grid Co-ordinates**
T1	H 42314, 97028
T2	H 42718, 96963
T3	H 42986, 96707
T4	H 43299, 96386
T8	H 43058, 96037
T9	H 43224, 95828

A summary of the main changes to the 2014 Layout is listed below:

- Turbines T1, T2 and T3 and T9 remain unchanged since the previous 2014 FEI submission.
- Turbines T5, T6 and T7 have been removed from the 2016 Layout in response to concerns from the consultees.
- Turbines T4 and T8 have been re-positioned in the 2016 Layout in order to avoid environmental constraints. In each case the new turbine position is within the original 25m micro-siting boundary around each turbine location.

2.1.2 Turbine Foundations and Crane Hardstanding Areas

Peat will be removed from the foundation and the crane hard standing area will be re-graded in the locality of the turbine, generally forming sightline bunds to obscure the base from the surrounding areas. The foundations would be approximately 20m x 20m and located at a depth of approximately 3m below the reduced level. The steel base (CAN) for the turbine tower would be embedded in the reinforced concrete base.

On completion of the foundation, the excavation would be backfilled with previously excavated material and compacted. If ground conditions necessitate, a piled foundation will be provided. The piles will consist of precast concrete piles and will be driven from a piling platform at ground level by a competent piling contractor.

2.2 On-Site Access Tracks

The access track design has been updated for the proposed development as a result of three turbines being removed from the 2014 Layout, and in order to address some additional consultee concerns in relation to the construction works required for the tracks.

The main changes to the 2014 Layout are summarised as follows:

- In the 2014 Layout Turbines T1 and T5 were accessed from the same junction. Turbine T5 has been removed from the 2016 Layout along with the proposed access track leading to it, and Turbine T1 will now be reached by a stretch of existing track. A turning head has been added for vehicular access.

- The access track to Turbine T2 remains largely unchanged, although a turning head has been added for vehicular access.

- In the 2014 Layout Turbines T3, T4, T6 and T7 were all accessed by the same stretch of track. Turbines T6 and T7 have been removed from the 2016 Layout, and T4 will now be accessed via the track to Turbines T8 and T9 to avoid an area of peatslide risk which was a concern on the original access track. The access track to Turbine T3 is largely the same as in the 2014 Layout, athough a turning head has been added for vehicular access.

- The access track to Turbines T8 and T9 has been re-routed to avoid areas of sensitive habitat and deep peat, and Turbine T4 is also now accessed from this track. A separate turning head has been added into each of the tracks leading to both T8 and T9 to allow for vehicular access.

It is proposed that 0.63km of existing access tracks will be used to provide construction and maintenance access to the individual turbines. An additional 2.31km of new access tracks will also be constructed as part of the proposed development, making a total track length of 2.94km.

The access tracks on site will have a running width of a minimum 5m excluding shoulders or verges to each side which will individually add approximately 1m. The tracks will be wider on bends, junctions and crane hardstanding areas to suit the parameters of turbine delivery vehicles, and turning heads will be included in the track design where necessary to allow vehicles to manoeuvre.

2.3 Substation, Control Building and Construction Compound

The substation and control building compound will require an area of approximately 2,300m² (21m x 60m), and will be surrounded by standard galvanized security palisade fencing approximately 2.4m in height. This layout is subject to minor alterations following the grid connection offer which will be secured after planning has been determined. The temporary construction compound will also require an area of approximately 2,300m² (50m x 46m). This area will be re-vegetated post-construction.

3. Water Crossings and Access Track Drainage

All information detailed within the SWMP prepared by WDR & RT Taggarts as part of the 2014 FEI in relation to managing surface water hydrology impacts of the proposed Craignagapple Wind Farm (**Appendix A)** remains applicable to the 2016 Layout,

Further site visits took place by the ecology, hydrology and geo-technical teams prior to the submission of the 2016 FEI in order to inform the development of the revised DMP. Consultation took place between all relevant disciplines regarding the location of outfalls from interceptor drains and sediment basins to ensure that they are not proposed to be on sensitive habitats and to work with the natural drainage characteristics to minimise any impacts on water dependent ecosystems.

Under track drainage will be provided on the track to the north of T4 in order to ensure hydraulic continuity to the M6_U4E habitat. This will consist of a group of precast concrete drainage pipes laid parallel the size and number of which will be chosen at detailed design stage. This is represented as 'under-track drain' on the plan and legend of the DMP.

The revised DMP also ensures that no water will be discharged to areas of known peat slide risk.

Road side swales will drain the surface water from the new tracks and hardstand area.

All access tracks and hardstands shall be constructed with a suitable crossfall in the downhill direction to divert runoff into silt water interceptor drains (swales). Track cut-off barriers shall be located every 30m along the access track to collect runoff and diverted into silt water interceptor drains. Track cut-off barriers shall be placed at 30-45° to achieve self-cleansing velocities.

Surface and silt water interceptor drains are to be located as close to the edge of the track as possible, to minimise disturbance of peat, sensitive habitats and water dependent ecosystems. Water from these drains will be discharged to areas remote from areas of known peat slide risk.

Where access roads run parallel to contours regular cross drains will be placed below the road surface to convey clean water runoff clear of the roads and to prevent excessive volumes of water collecting in the drainage ditches, thus reducing loading on any particular discharge point. Cross drains will be installed as pipe culverts under the track surface.

A fundamental principle in the design of the SWMP is that clean water flowing in the upstream catchment, including overland flow and flow in existing streams, is not contaminated by silt from the works area. For that reason all clean water runoff will be separated from construction site runoff that may be contaminated by sediment. All uphill 'clean' surface runoff will be collected by surface water interceptor drains before it can come in to contact with road surfaces or hardstands and will then be diverted into clean water diversion drains and discharged on the downhill side of work areas thereby preventing contamination with construction related runoff water.

There will be a number of cut-off drain crossings which are discussed further in the revised **Chapter 5: Geology, Hydrogeology and Hydrology** of the 2016 FEI and in the 2014 SWMP included in **Appendix A**.

There is one major natural watercourse crossing required of an OS mapped watercourse, which is a tributary of Legnahone Burn, in order to provide an access track to Turbines T8 and T9 (WC3 as per **Figure 5.1: Hydrological Features** of the 2016 FEI).

NIEA-NED requested (pers. comm) during a meeting held on the 23rd August 2016 that the structure crossing the Legnahone Burn is a single span structure; this will ensure that in-stream works are avoided. The exact type and dimensions of the structure will be confirmed at detailed design stage in line with relevant CIRIA and Loughs Agency guidance.

Both the Loughs Agency and the Rivers Agency will be consulted again at the detailed design stage with regards to type of structure to be constructed. A further two crossings (WC2 and WC4) over drainage channels will be required to be constructed, making a total of three new crossings. In addition, there is an existing crossing over a drainage channel for the access track to Turbine T1 (WC1).

Watercourse crossings WC1, WC2 and WC4 (as per **Figure 5.1**) will be piped directly under the track through appropriately sized precast concrete drainage pipes. All watercourse crossings installed shall be to the satisfaction of Rivers Agency and the Loughs Agency. The exact type and dimensions of each structure shall be provided at detailed design stage in line with relevant CIRIA and Loughs Agency guidance.

Interceptor channels will be provided to collect and divert overland flow away from the site works. Some of these drainage channels exist already and these will be accommodated in road crossings to maintain the continuity of existing overland flows and to ensure that overland flows are kept separate from runoff from road and hardstands.

4. Conclusions

All information detailed within the SWMP prepared by WDR & RT Taggarts included in **Appendix A** of this Technical Note remains applicable to the 2016 Layout of the proposed development,

Management of surface water runoff from the project will include interceptor drains and sediment basins. The location of these features has been agreed between the ecology, hydrology and geo-technical teams to ensure that they are not located on sensitive habitats and to work with the natural drainage characteristics to minimise any impacts on water dependent ecosystems.

The revised DMP also ensures that no water will be discharged to areas of known peat slide risk and under track drainage has been provided on the track to the north of T4 to ensure hydraulic continuity to the M6_U4E habitat.

Surface and silt water interceptor drains are to be located as close to the track as possible to minimise disturbance of peat, sensitive habitats and water dependent ecosystems.

A fundamental principle in the design of the SWMP is to provide that clean water flowing in the upstream catchment, including overland flow and flow in existing streams, is not contaminated by silt from the works area. Interceptor channels will be provided to collect and divert overland flow away from the site works. Some of these drainage channels exist already and these will be accommodated in road crossings to maintain the continuity of existing overland flows and to ensure that overland flows are kept separate from runoff from road and hardstands.

There is one major natural watercourse crossing required of an OS mapped watercourse, which is a tributary of Legnahone Burn, providing an access track to Turbines T8 and T9. A further three crossings over drainage channels will be required. The watercourse crossings will be piped directly under the track through appropriately sized precast concrete drainage pipes.

The requirements of the SWMP and the revised DMP have been used to inform the development of the Outline Construction Environmental and Management Plan (CEMP). Water quality monitoring will be the responsibility of the Contractor and Developer during the construction stage. By the adherence of the Contractor and Developer to their assigned responsibilities as outlined in the CEMP, a high degree of confidence can be assured in the mitigation measures proposed in the SWMP and DMP.

Appendix A. Surface Water Management Plan (2014 FEI)

Surface Water Management Plan

Craignagapple Wind Farm

Planning Ref: J/2010/0481/F

Rev 01 - Sept 2014

WDR & RT **TAGGART**
Civil Engineers
Structural Engineers
Architects
Landscape Architects
Town Planning Consultants
Project Managers
CDM Co-ordinators/Health & Safety Advisors

Contents   Page

Appendices

Appendix A: Drawings

Document Control: **Revision 1 – Draft Report**

Document Prepared by: Marie Patton Date: 12th September 2014

Signed: Marie Patton

Document Checked by: Simon Wells Date: 12th September 2014

Signed: Simon Wells.

Document Approved by: Tommy Stevenson Date: 12th September 2014

Signed: T. Stevenson

1. INTRODUCTION

WDR & RT Taggart were commissioned by Brookfield Renewable Energy Group to prepare this detailed Surface Water Management Plan for the proposed Craignagapple Wind Farm, a nine turbine development directly adjoining Owenreagh Wind Farm (Planning Reference J/2010/0481/F).

This surface water management plan for the wind farm was prepared taking into consideration the preliminary drainage information already included as part of Chapter 6 - Geology, Hydrogeology and Hydrology of the Environmental Statement in 2010 (ES, 2010).

An initial site visit was undertaken on 25th March 2014 to inspect water features and identify construction constraints. Upon confirmation of the proposal layout, a second site visit was undertaken on 27th May 2014 in order to assess the potential for the proposal to impact on hydrological receptors.

The civil design engineers, WDR & RT Taggart also visited the site to determine the most appropriate track layout and identify any necessary stream crossings taking the hydrology of the site into consideration at an early stage of project design.

This surface water management plan takes into consideration design changes to address concerns raised during the statutory consultation stage and in particular NIEA-NH. A summary of the amendments made to the site layout since the 2010 submission are outlined below:

- Relocation of 7 of the 9 turbines proposed to avoid environmental constraints as per the NIEA consultation responses;
- Relocation of sub-station and construction compound;
- Relocation and reduction in length of access tracks to avoid environmental constraints as per consultation responses;
- Two new additional site access points off the Glenmornan Road.

Following an informal Further Environmental Information (FEI) submission of the above changes in March 2013, further alterations were made to the site layout to address comments made by NIEA-NH. These include:

- The access track serving Turbine 1 has been re-aligned closer to the existing track to increase the distance between it and areas sensitive modified peat.
- The track leading to Turbine 2 has been located westwards to utilise the old bog track that exists on site. Turbine 2 has been located westwards to ensure the centre of the turbine is approximately 20m from the existing ditch/drainage channel.
- The peat habitat mapping in proximity to Turbine 2 has been updated to represent the correct mapping on the ground, which illustrates that Turbine 2 is located outside areas of sensitive bog habitat.
- Turbine 4 has been moved eastward (by 80m approx) and relocated to the south side of the existing track to an area of more suitable habitat.
- The track immediately adjacent to Turbine 5 has been reduced in length and moved closer to the existing track to an area of less sensitive modified peat.
- The track leading to Turbines 8 and 9 has been amended to ensure a separation distance of 50m from onsite watercourses
- The footprint and landtake of the hardstanding areas at each turbine have been reduced to minimise impacts on habitats within the site boundary.

The purpose of this surface water management plan is to provide a fully informed drainage design to ensure protection of surface waters during construction and operational of the proposed development. The surface water management plan will consider the construction, operation and maintenance phases. The decommissioning phase requires the same precautionary measures as the construction phase and is therefore discussed separately.

Where mitigation measures are proposed, these are designed and incorporated into the drainage system.

2. DESCRIPTION OF DEVELOPMENT

2.1. Site Details

The Craignagapple Wind Farm development site is located approximately 20km south of Londonderry and 8km east of Strabane. The site is situated on the northern and north eastern slopes of Owenreagh Hill at an altitude of between 260m and 330m AOD directly adjoining the operational Owenreagh Wind Farm.

The proposed development consists of nine wind turbines with associated hardstandings, underground cabling, access roads, water crossing and an electrical substation and temporary construction compound. The drainage layout of the proposed wind farm development at Craignagapple is shown in drawing 11/242C/002 B - Drainage Management Plan in Appendix A.

The existing sub-catchments and drainage of the site can be seen in Figure 7.1 of Appendix 7 of the 2014 Craignagapple FEI document– Hydrological Features of Craignagapple Extension Wind Farm.

The summit of Owenreagh Hill has large areas of shallow blanket bog and heath moorland. The lower slopes have a rolling, smooth profile but slope steeply upon approach to the summit. The fields on the lower slopes of Owenreagh Hill are in hay, silage and pasture use.

2.2. Local Watercourse

There are three major watercourses located within the site boundary. They are the Legnahone Burn, Legnavader Burn and the Glentrasna Burn. A 50m buffer zone has been applied to each watercourse and where possible, all turbine and access roads have been located away from this buffer zone. Where construction occurs within or adjacent to buffer zones the watercourse will be fully protected along its length with a silt fence.

The surface water runoff from the site will ultimately discharge to the following catchments:

- Flows from the north of the site shall enter the Glentrasna Burn and the Legnavader Burn before entering the River Foyle via Glenmornan River.
- Flows from the east of the site shall enter the Legnahone Burn before entering the River Foyle via Dunnyboe Burn and Burn Dennet.

No drainage channels or sediment basins shall discharge directly to the watercourse. All runoff shall be discharged by overland flow to the natural drainage paths within the site.

Surface water protection measures shall form part of the Construction Management Plan for the site. A list of mitigation measures proposed during the construction phase was outlined in the 2010 ES and included in Section 4.7 - Surface Water Protection Measures of this report. These included measures to prevent runoff, erosion from vulnerable areas and consequent sediment release into the nearby watercourses which receive flow from the proposed development site.

2.3. Summary of Hydrological Assessments

A Hydrological Assessment of the site was carried out by Jacobs as part of the environmental impact assessment and a review of surface water assessment was carried out by WDR & RT Taggart. The assessment is detailed within the Environmental Statement as Chapter 6 (ES, 2010) and a revised assessment of the amended 2014 FEI project design is provided in Appendix 7 of the 2014 Craignagapple FEI Report, and is summarised as follows:

The site lies within two hydrological catchments:
1. Glenmornan to the north west; and;
2. Dunny Boe to the east and north east.

Glenmornan

The northern section of the site falls within the Glenmornan catchment which includes the north western and northern slopes of Owenreagh Hill. Tributaries within the site boundary and the north of the site include Glentrashna Burn close to the northern limit of the site and the Lagavadder Burn. Other tributaries within this catchment include the Glenwanda Burn and the Allnamoota Burn to the west and the Curryenagh Burn to the south west of the site. The Glenmornan catchment ultimately becomes the Burn Dennet and Lower Foyle catchment.

The Glenmornan Catchment can be divided into two sub-catchment areas for the proposed wind farm development:

- Western sub-catchment – including Curryenagh, Allnamoota and Glenwanda burn.
- Northern sub-catchment – including Glentrashna Burn and Lagavadder Burn.

A small rounded ridge of the Owenreagh Hill separates the two sub-catchments.

Dunny Boe

The south eastern section of the site falls within the Dunny Boe catchment. The Dunny Boe catchment originates from the eastern slopes of Owenreagh Hill. Tributaries within the site boundary include Legnahone Burn in the eastern section of the site. Runoff from the site is directed into the Legnahone Burn. Further tributaries include the Ballkerry Burn located to the east of the site flowing north. The Dunny Boe catchment ultimately flows to become the Burn Dennet and Lower Foyle catchment.

The hydrological assessment of the site has identified that sensitive hydrological receptors for the site are surface watercourses, including the Laggavadder Burn, Glentrashna Burn, Glenwanda Burn, Allnamoota Burn and the Legnahone Burn. These watercourses feed into the Glenmornan and Dunny Boe catchments.

The assessment identified areas of activity, particularly during the construction operations that have the potential to impact upon the hydrological/hydrogeological resources of the site. Particular attention was paid to the risk of affecting downstream watercourses. The magnitude and significance of potential impacts was assessed, and included sedimentation/erosion, pollution and alteration to natural drainage patterns. The assessment concludes that, all potential impacts can be mitigated and eliminated providing appropriate provisions are made in the design construction planning and methodology.

Mitigation by avoidance has been applied to the Craignagapple Wind Farm layout, that is, a 50m (minimum) buffer between on-site watercourses and any site infrastructure has been incorporated into the overall layout design where possible.

The recommendations from the Hydrological Assessment included within Chapter 6 of the 2010 ES and the revised assessment included within Appendix 7 of the 2014 Craignagapple FEI Report have been taken into consideration in the development of this surface water management plan.

3. SURFACE WATER DESIGN AND SUDS DESIGN PHILOSOPHY

3.1. Surface Water Management Plan

The Surface Water Management Plan (SWMP) has been compiled with regard to:

- Knowledge of the site's environmental conditions;
- Previous construction experience of wind farm developments in similar peat environments;
- Previous experience of environmental constraints and issues from construction of wind farms in similar environmental conditions; and
- Technical guidance and best management practice manuals.

This SWMP is designed to safeguard the water environment and is an integrated, sustainable drainage system designed and developed to:

- Reduce changes in runoff regimes;
- Control surface water runoff within and its effects outside the site;
- Protect aquatic environments;
- Appropriately design and specify the provision of settlement ponds and silt traps, and
- Prevent all sediment associated pollution entering watercourses and groundwater.

The purpose of the SWMP is to provide a fully informed drainage design for the development proposal, incorporating all required hydrological mitigation measures. The SWMP will consider the construction, operation and maintenance phases.

3.2. SUDS Design Philosophy

The general SUDS design philosophy for this project includes:

- Minimising any change to the existing hydrology of the site. Where physically possible the SUDS drainage layout shall replicate the natural drainage and hydrological characteristics of the area.
- Minimising sediment loads in the runoff, with particular attention being given to the construction phase of the project.
- Maintain runoff rates and volumes at Greenfield rates for a range of storm events.
- Avoid high flow velocities particularly at the entry point to the final settlement pond. Energy dissipation devices or multiple outflow structures will help avoid the re-suspension of sediment.
- The drainage system should manage problems of erosion and provide for reinstatement of vegetation along the access track.
- Ensure that the runoff discharged from the site is in compliance with Fisheries Act (NI) 1966 and EC Freshwater Fish Directive (78/659/EEC).
- All SUDS features to be installed prior to start of construction.

4. DRAINAGE LAYOUT AND SURFACE WATER PROTECTION MEASURES

The site drainage layout of the proposed wind farm development is presented in drawing 11/242C/002B - Drainage Management Plan in Appendix A.

The main principle of the surface water quality management plan is to minimise the volume of ‘dirty’ water requiring treatment. This is achieved by keeping ‘clean’ water clean by interception and separation, and by collecting the ‘dirty’ water and treating it by removing the suspended solids.

There are two main approaches to sediment control employed for the Craignagapple wind farm:

1. Filtering run-off in small volumes
2. Settling run-off where larger volumes are unavoidable.

In the first instance, the SWMP aims to mitigate by avoidance. Therefore a 50m (minimum) buffer is applied between on-site watercourses and any site infrastructure to remove the risk of "dirty" water entering watercourses.

4.1. Access Tracks and Hardstands

As shown in the drainage drawing for Craignagapple, road side swales will drain the surface water from the new tracks and hardstand area. All access tracks and hardstands shall be constructed with a suitable crossfall in the downhill direction to divert runoff into silt water inceptors (swales). Track cut-off barriers shall be located every 30m along the access track to collect runoff and diverted into silt water interceptor drains. Track cut-off barriers shall be placed at 30-45° to achieve self-cleansing velocities.

Where access roads run parallel to contours regular cross drains will be placed below the road surface to prevent excessive volumes of water collecting in the drainage ditches and to reduce loading on any particular discharge point. Cross drains will be installed as pipe culverts under the track surface.

A fundamental principle in the design of the SWMP is that clean water flowing in the upstream catchment, including overland flow and flow in existing streams, is not contaminated by silt from the works area. For that reason all clean water runoff will be separated from construction site runoff that may be contaminated by sediment. All uphill ‘clean’ surface runoff will be collected before it comes in contact with road surfaces or hardstands and piped and diverted into clean water diversion drains and discharged on the downhill side of work areas thereby preventing contamination with construction related runoff water.

An existing watercourse located along the site layout will be culverted below the access track as outlined in Section 4.5.

4.2. Silt Water Interceptors

Silt water interceptors shall be located on the downhill side of all construction work, or any area where the natural vegetation will be disturbed, to collect any silty or contaminated runoff. Interception trenches shall have a positive gradient of not less than 0.5% and not more than 15% to an outlet. Each drain will incorporate a series of check dams that will attenuate the flow and provide storage for the increased runoff from exceptional rainfall events.

Gravel checkdams shall be located within the interceptor trenches at a maximum of 25m centres. Checkdams shall remove silts from the runoff as well as reducing the velocity of flow in the trenches.

All runoff from silt water trenches shall pass through a sediment basin before being discharged into an area of vegetation.

Figure 4.1 - Examples of Check Dams along Roadside Drainage Channels

4.3. Sediment Basins

Runoff from the works areas will be isolated from the clean catchment runoff by means of a series of open swales that will be constructed on the downhill side of the works. These swales will be directed to settlement ponds that will be constructed throughout the site, downhill from the works areas.

The sediment basins have been designed to a modular size to cater for a single turbine hard standing area or a 1,200m^2 area of internal access road. They have been designed to have sufficient capacity to allow settlement and allow contingency for unexpected increased rainfall events.

All sediment basins shall be maximum standing water depth of 0.5m to reduce the health and safety risk to personnel and plant. Sediment basin side slopes shall have a maximum gradient of 1 in 4 to reduce erosion and safety risk.

Discharge from sediment basins shall be spread over a large area to mimic the natural runoff characteristics of the site and to minimise erosion of the natural vegetation. The sediment basin design is presented in drawing 11-242C-003 in Appendix A.

Figure 4.2 - Multi-tiered Sediment Basin with Stone Filter

4.4. Clean Water Diversion

Interceptor channels will be provided to collect and divert overland flow away from the site works. Some of these drainage channels exist already and these will be accommodated in road crossings to maintain the continuity of existing overland flows.

At all construction works areas, clean water (i.e. non-silty surface water flow that has not yet passed over any disturbed construction areas) will be kept separate from silty water or other potentially contaminated water. Cut-off ditches shall be installed in order to collect clean surface water runoff from uphill from any construction/disturbed areas. Clean runoff water shall be diverted around or below any construction/disturbed area and then discharged into an area of vegetation for dispersion or infiltration.

Silt traps, gravel, sand bags, silt fencing and anchored straw bales may be required at the discharge point in order to prevent erosion at the outlet, alleviate flow and aid flow dispersion across a wider area of vegetation to prevent potential scour and remobilisation of deposited silt.

Discharge points will be located sufficient distance from any water courses to allow adequate infiltration or settlement of suspended solids prior to any discharged surface run-off potentially entering the water course.

As shown in drawing 11/242C/002B - Drainage Management Plan in Appendix A any existing artificial drainage will be intercepted away from construction areas and site works

4.5. Watercourse Crossings

There is one major watercourse crossing required, of Legnahone Burn, in order to provide an access track to turbines T8 and T9. The site layout will as require a number of cut-off drain crossings.

Table 4.1 - Summary of Watercourse Crossings

Watercourse	Location	Grid Ref	Type of Crossing	Description
Legnahone Burn	Access Track to Turbine T8 & T9 to the east of the site	243575, 396565	Culvert	Precast concrete pipe with precast concrete headwalls

Watercourse crossings will be piped directly under the track through appropriately sized precast concrete drainage pipes. All watercourse crossings shall be to the satisfaction of Rivers Agency. The size, location and capacity calculations of each crossing shall be provided at detailed design stage.

4.6. Watercourse Diversions

No major watercourse diversions are currently foreseen for this project. Should a watercourse diversion be required, full consultation and approval shall be carried out with Rivers Agency.

4.7. Surface Water Protection Measures

Surface water protection measures shall form part of the Construction Management Plan for the site. A list of mitigation measures proposed during the construction phase was outlined in the 2010 ES. These included measures to prevent runoff, erosion from vulnerable areas and consequent sediment release into the nearby watercourses which receive flow from the proposed development site. These surface water pollution control measures described below shall be undertaken during the construction phase of the works:

- Delivery trucks, tools and equipment will be cleaned at designated washout areas located within a controlled area of the site. Wheel washing facilities will be provided at the site entrance draining to silt traps. Additional silt fencing will be kept on site in case of an emergency break out of silt laden run-off.

- No concrete wash out is allowed on site except for washing of concrete chutes that will be washed into a dedicated covered skip.

- Minimising stockpiling of materials and ensuring any stockpiles required at stored as far away as possible from watercourses.

- During the construction period, spoil heaps from the excavations for the turbine bases will be stored temporarily. If left exposed, this could lead to an increase in silt-laden run-off draining off site. However these spoil heaps will be covered and surrounded by silt fences to filter sediment from the surface water run-off from excavated material.

- Mitigation through Monitoring: A surface water / groundwater monitoring program will be implemented to monitor impacts to the water regime during the construction phase. The surface water monitoring regime will consist of a combination of physico-chemical (including hydrocarbons) and biological sampling techniques which will be used to identify water quality within the site. The water quality sampling regime will be carried out prior to and during the site's construction, during its operation and decommissioning. Baseline water quality samples will initially be obtained from all locations identified for sampling. These results, along with relevant water quality legislation will be used to monitor any deleterious effects which may occur during the construction process.

- During construction water sampling and analysis will continue from the baseline locations at specified intervals. Sampling locations will include some control points outside the influence of the construction. This will provide assurance that mitigation measures are effective and sensitive receptors are not subject to detrimental impacts. Should any impacts be observed through the monitoring, immediate actions as defined in the water monitoring plan will be implemented. This is likely to include identification and removal of the source of the impact, notification of the appropriate personnel/authorities and remediation and amendment to mitigation if appropriate.

- Construction activities will be located away from watercourses as far as possible. The contractor will ensure that trafficking on site is kept to a minimum and the routes of haul roads are kept away from watercourses as far as possible. Where haul roads pass close to watercourses, silt fencing will be used to protect the streams.

- Buffer zones, silt traps and settlement ponds as described above will be put in place in advance as construction progresses across the site.

- Roads/site tracks have been laid out to follow site contours where possible, to reduce the longitudinal slope of swales.

- Any diesel or fuel oils stored on site will be bunded to 110% of the capacity of the storage tank. Design and installation of fuel tanks to be in accordance with best practice guidelines BPGCS005, oil storage guidelines. Refuelling of plant during construction will be carried out on a designated areas, away from watercourses. Drip trays and spill kits will be kept available on site. Only emergency breakdown maintenance will be carried out on site. Appropriate containment facilities will be provided to ensure that any spills from the vehicle are contained and removed off site.

- The construction of swales for access road drainage follows the natural flow paths on site where possible. Existing overland flow channels will be maintained and cross-drains provided in the access roads to allow continuity of flow. Interceptor drains will be constructed upslope where there are no existing channels with cross-drains provided at 200m intervals where the access track runs parallel to the contour lines. The roadside swales will therefore only carry the access road run-off and so avoid carrying large volumes of water and concentrating flows.

- Where swales are laid at slopes greater than 2%, check dams will be provided as described above. This will reduce effective slope, run-off velocities and any consequent potential for erosion.

- Cross-drains of 450mm diameter (minimum) are proposed, to prevent a risk of clogging, for drainage crossings and conveying flows from existing and proposed drains across the access tracks. No culverts are proposed on this site as the route of the proposed access tracks does not cross any existing streams.

- The contractor shall ensure that erosion control and attenuation facilities, namely sediment/silt-traps, swales and ponds are regularly maintained during the construction phase. The contractor shall ensure that all personnel working on site are trained in pollution incident control response. The contractor will include a formal procedure to deal with queries and comments from the general public in his emergency response plan. During the construction period, it is envisaged that a facility to shut off the outfall from the attenuation and settlement ponds, during an emergency will be provided. This will mitigate any accidental spillage on site impacting on the watercourse and the size of the ponds (designed for a 1 in 30 year return flood event) will allow sufficient time to arrange for cleaning up the relevant pollutant in the attenuation pond. Adequate security should be provided on site to prevent spillage as a result of vandalism. A regular review of weather forecasts of heavy rainfall is required and the contractor is required to prepare a contingency plan for before and after such events.

- Any standing water in the excavations will be pumped into temporary settlement basins which will be lined and which will drain into existing or proposed drainage channels on site. The settlement basins will be constructed in advance of any excavations for the turbine bases.

- Loose track material generated during the use of access tracks will be prevented from reaching watercourses by adequate maintenance of the track. In dry weather, dust suppression methods will be employed. Roadside drains likely to carry high sediment loads will not be allowed to discharge directly into watercourses or sinkholes but will discharge into a silt trap or buffer area of adequate width. The purpose of these drainage ditches is to collect track drainage, control run-off during intense rainfall events and mitigate erosion. These ditches will have filter check dams at intervals along their length to encourage infiltration and reduce velocity of flow within the channels. The drainage design will encourage run-off to leave access tracks quickly and prevent their acting as flow pathways and will also protect the site's soils from erosion. Silt traps will be located at the end of all cross drains and cut off drains.

- Peatslide risk will be monitored and reviewed during the construction phase with slope maintenance procedures implemented onsite. Peatslide risk assessments will be undertaken and form part of the design method statements during construction.

- The contractor will carry out visual examinations of watercourses receiving flows from the proposed development during the construction phase and regular water samples will be taken.

- Cables will be installed in trenches underneath and directly adjacent to access tracks as far as possible. Trenches will be excavated during dry periods where possible in short sections and left open for minimal periods to avoid acting as a conduit for surface water flows. Clay bunds will be constructed within the cable trench at intervals.

- Portaloos will be used to provide toilet facilities for site personnel. Sanitary waste will be removed from site via a licensed waste disposal contractor.

- Wet concrete operations are not envisaged for this site within or adjacent to watercourses. However, if wet concrete operations are required a suitable risk assessment should be completed prior to works being carried out.

- Peat berms will be allowed to revegetate naturally. If natural revegetation is unsuccessful, additional measures, such as the use of pre-seeded matting will be used to expedite the vegetation cover over peat berms. The berms will be surrounded by silt fencing until the vegetation has been established.

- The area of exposed ground will be kept to a minimum by maintaining where possible existing vegetation that would otherwise be subject to erosion in the vicinity of the wind farm infrastructure. The clearing of peat will be delayed until just before construction begins rather than stripping the entire site in advance particularly during road construction. Best practice for excavation in peat is that the acrotelm (top 50cm of peat), which contains the seed bank, is stored and maintained separately from the catotelm (i.e. peat below the acrotelm layer). Wherever good quality acrotelm is identified, it will be stored for re-use in accordance with best practice. Once works are complete, the acrotelm can be used to cover exposed areas of peat. Exposed areas of the site that are slow to re-vegetate may need to be replanted with suitable vegetation. This can be by natural regeneration or by reseeding. Natural regeneration relies on colonisation of bare ground by native species from adjacent habitats. A roughened surface will be provided that can trap seeds and soil to provide initial regeneration areas.

5. POST-CONSTRUCTION RECOMMENDATIONS

5.1. Post-construction Works

All excess silt and debris to be removed from drainage trenches at end of construction phase. All surplus construction material and waste material, which generate silts, to be removed from site.

When operational, the wind farm development will have a negligible effect on surface water quality as there will be no further disturbance of soils post construction. During the operation period the swales will have vegetated and will serve to attenuate flows and remove pollutants from the run-off.

5.2. Maintenance Period

It is not envisaged that the maintenance period will involve any significant impacts on the hydrological regime of the area. Further, the maintenance of the wind farm will include for the activities associated with keeping the drainage system operating effectively. The developer will have the responsibility for maintaining the drainage system at the wind farm. The maintenance regime will include inspecting swales and cross-drains for any blockages; inspecting outfalls to watercourses; inspecting the existing channels for any obstructions; inspecting the ponds. Maintenance shall be in accordance with CIRIA C697 SuDS and Maintenance Manual.

6. CONCLUSION

The surface water hydrology impacts of the proposed Craignagapple Wind Farm development affect both the surface water runoff and the existing water quality of the receiving waters. Therefore, management of surface water runoff from the project will include settlement ponds of the increased surface water runoff and settling of suspended solids. This will be achieved by laying appropriately sized swales along the site tracks and by directing all runoff from the site through settlement ponds.

During construction, there is potential for an increase in the sediment and nutrient load to the watercourses and during the excavation of ground for roads/site-tracks, turbine foundations and hard-standing areas. The impact on hydrology and water quality during construction will be mitigated by the use of appropriately sized settlement ponds and additional mitigation measures as outlined in Section 4.

The appointed contractor shall have responsibility for ensuring that all the mitigation and maintenance measures included in the surface water management plan are put in place. The requirements of the surface water management plan have informed the Construction & Environmental Management Plan. Water quality monitoring will be the responsibility of the contractor and developer during the construction stage. The developer will appoint a suitably qualified person to check the results of such monitoring and to advise on any additional measures required if necessary.

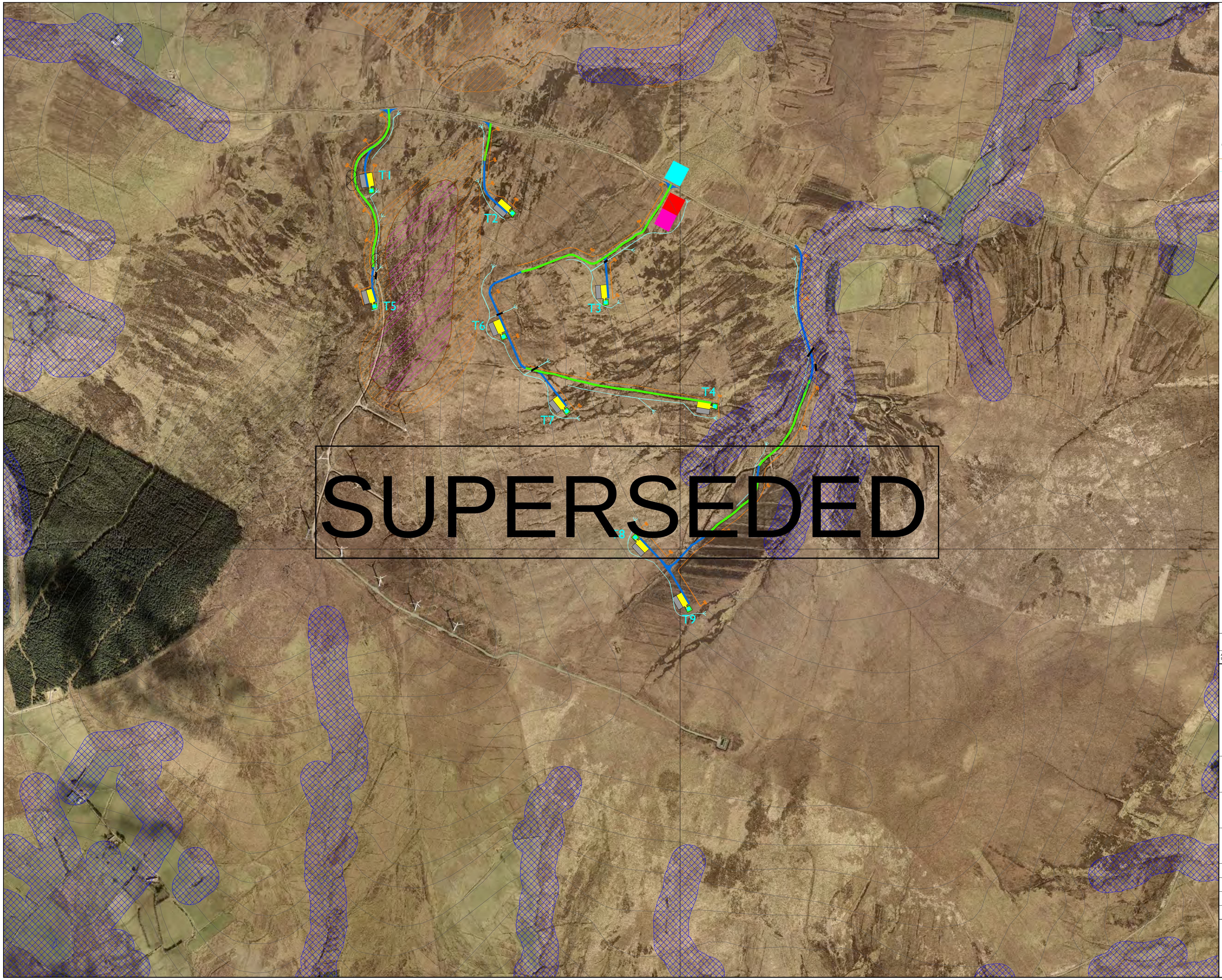
The contractor will prepare an emergency plan which will include the requirement for the shutting off of outfalls from the ponds during the construction period when very heavy rain is forecasted.

All ponds will be installed in advance of the works. All silt fencing as required will be installed in advance of the works.

If the developer and contractor assume their responsibilities as outlined above to prevent a release of silt laden run-off from the wind farm development during the construction phase then a high degree of confidence can be assured in the mitigation measures proposed in this Surface Water Management Plan.

Appendix A

Drawings



LEGEND

- EXISTING TRACK TO BE UPGRADED
- PROPOSED NEW TRACK
- T4 TURBINE
- HARDSTAND
- LEVELLED ASSEMBLY AREA
- PROPOSED TURBINE SUPPLY COMPOUND
- TEMPORARY CONSTRUCTION COMPOUND
- SUBSTATION
- CULVERT
- ACCESS TRACK AND HARD STANDING DRAIN
- SURFACE WATER INTERCEPTOR DRAIN
- WATERCOURSES 50M BUFFER
- MODERATE PEAT SLIDE RISK
- HIGH PEAT SLIDE RISK

AM. SUFFIX	AMENDMENT DETAILS	BY DATE	CHKD DATE
B	GENERAL UPDATE	MP 11/09/14	SWW 11/09/14
A	LAYOUT AMENDED COMMENTS	SWW 10/08/14	GMcK ------

WDR & RT **TAGGART**

CLIENT
SWS ENERGY

CONTRACT
CRAIGNAGAPPLE WIND FARM

DRAWING
DRAINAGE MANAGEMENT PLAN

SCALE	1:50,000 @ A1		
DRAWN	DJH/SWW	DATE	15/02/13
CHECKED	GMCK	DATE	15/02/13
DRG No.	11-242C 002 B		

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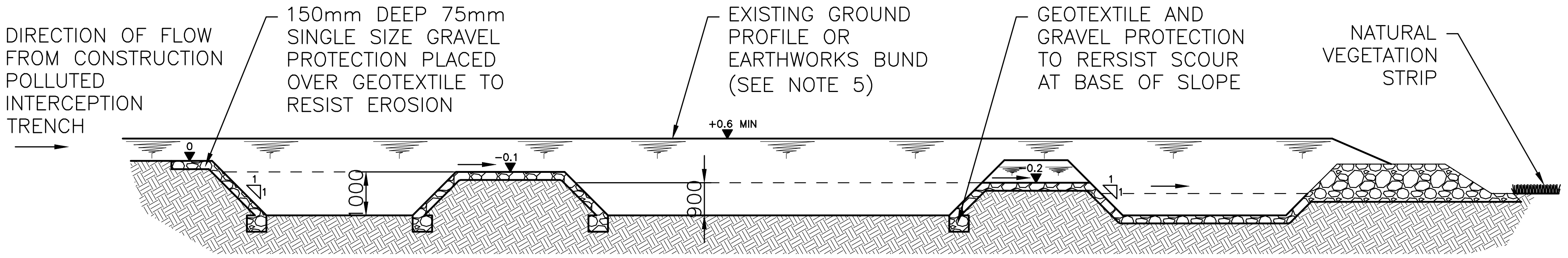
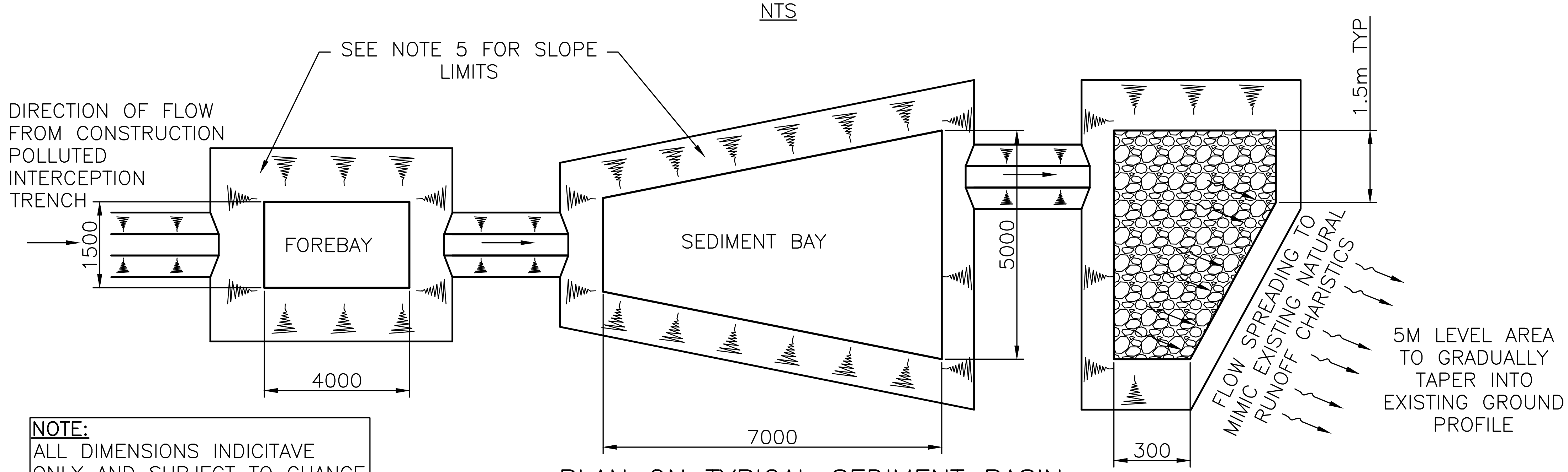
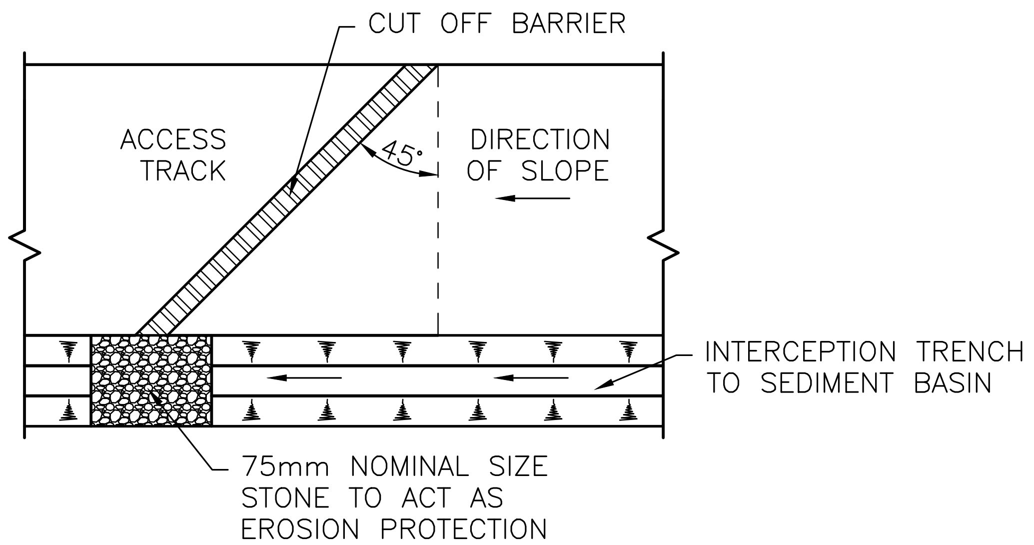


TYPICAL SECTION THROUGH ENHANCE SEDIMENT BASIN
NTS

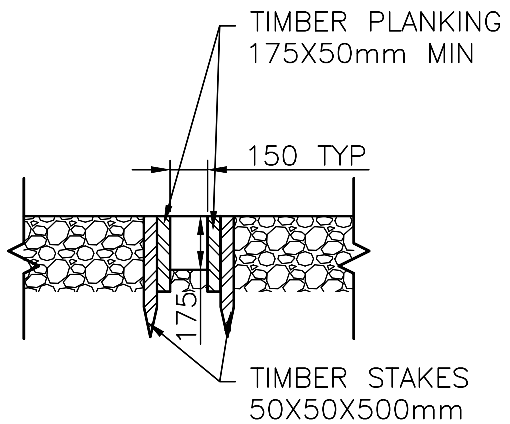


NOTE:
ALL DIMENSIONS INDICITAVE ONLY AND SUBJECT TO CHANGE FOLLOWING DETAILED DESIGN

PLAN ON TYPICAL SEDIMENT BASIN
NTS



PLAN ON TYPICAL TRACK CUT OFF BARRIER
NTS



SECTION THROUGH TYPICAL TRACK CUT OFF BARRIER
NTS

Brookfield

PROPOSED WINDFARM AT
CRAIGNAGAPPLE,
STRABANE,
NORTHERN IRELAND

NOTES:

SEDIMENT BASINS

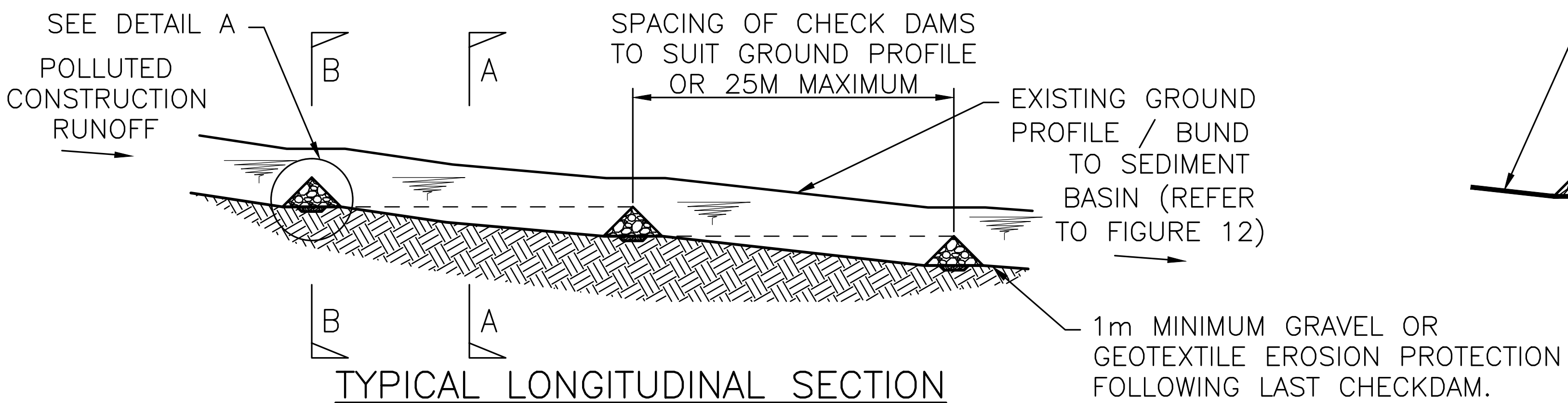
1. ALL OPEN WATER BASINS TO BE RING FENCED AND APPROPRIATE SIGNAGE USED TO REDUCE HEALTH AND SAFETY RISKS
2. ONSITE TRIALS MAY BE REQUIRED TO REFINE SEDIMENT BASIN DIMENSIONS
3. ALL BASINS TO BE CONSTRUCTED PRIOR TO COMMENCEMENT OF GENERAL EARTHWORKS
4. SEDIMENT BASIN MAY BE STABILISED WITH A LAYER OF GEOTEXTILE AND 150mm OF 25-40mm WASHED GRAVEL MARKER LAYER. BASINS MAY ALSO BE STABILISED BY GRASS SEEDING.
5. ALL SLOPES SHOULD NOT EXCEED 1 IN 4 TO REDUCE EROSION AND SAFETY RISK.
6. THE REMOVAL OF SILT TO TAKE PLACE DURING DRY CONDITIONS ONLY. CARE TO BE TAKEN WHEN REMOVING SILT SO AS NOT TO OVER DEEPEN THE BASINS.

HAUL ROUTE CUT OFF BARRIERS

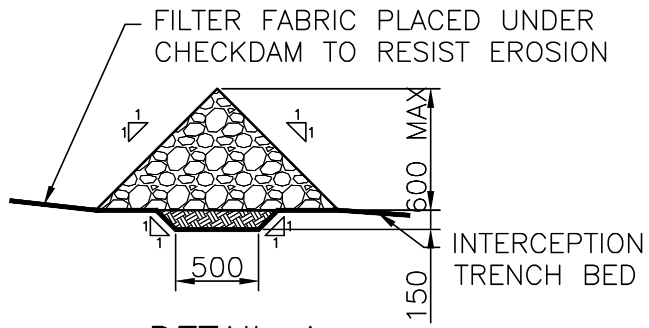
1. SPACING OF HAUL ROUTE CUT OFF BARRIERS TO BE 30m. SPACING TO BE REDUCED WHERE ACCESS TRACK SLOPE INCREASES OR WHERE GULLYING OF THE TRACK IS EVIDENT.
2. HAUL ROUTE BARRIERS PLACED AT 30-45 DEGREES ACROSS HAUL ROUTE TO ACHIEVE SELF CLEANING VELOCITIES

TITLE	SUSTAINABLE DRAINAGE SYSTEMS GENERAL DETAILS SHEET 1 OF 2		
FIGURE No.	11-242C-003		
SCALE	NTS	DRAWN	MP
DATE	AUG.14	CHECKED	SWW

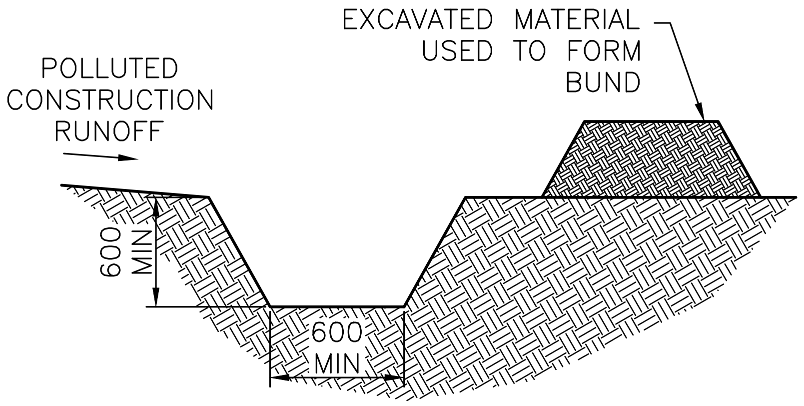
WDR & RT **TAGGART**



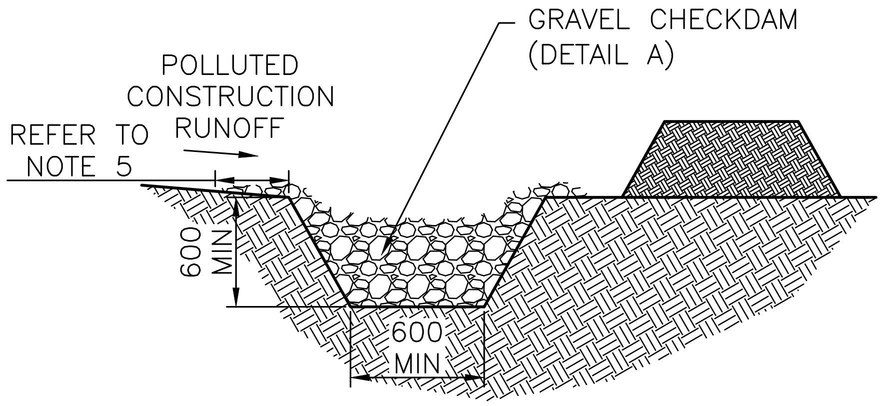
TYPICAL LONGITUDINAL SECTION
THROUGH SUDS INTERCEPTION TRENCH
NTS



DETAIL A
NTS



SECTION A–A
NTS



SECTION B–B
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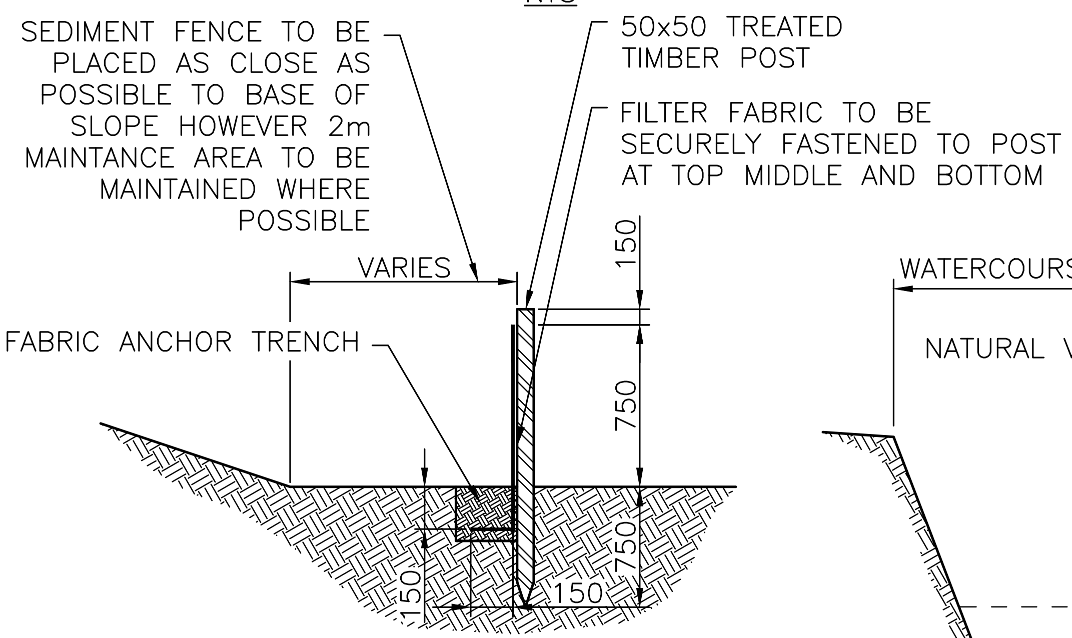
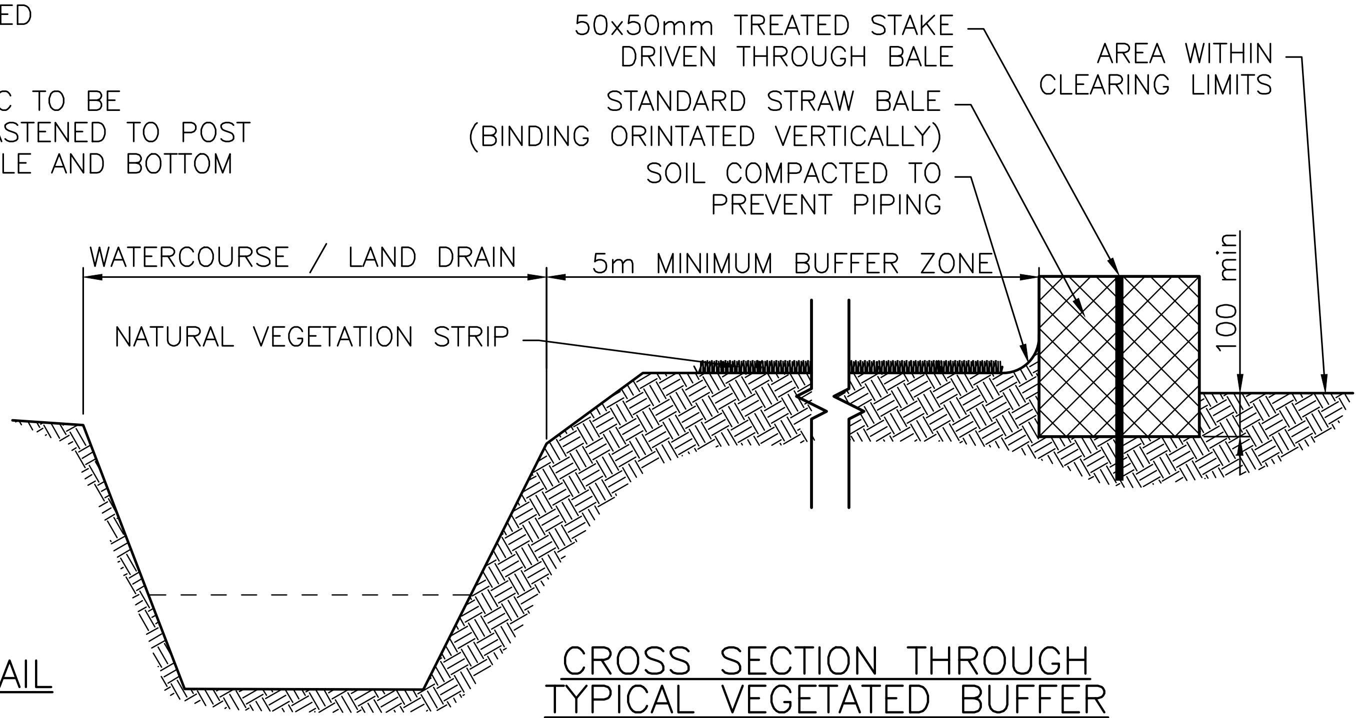


TYPICAL SEDIMENT FENCE DETAIL
NTS



CROSS SECTION THROUGH
TYPICAL VEGETATED BUFFER
NTS

Brookfield

PROPOSED WINDFARM AT
CRAIGNAGAPPLE,
STRABANE,
NORTHERN IRELAND

NOTES:

INTERCEPTION TRENCHES AND CHECKDAMS

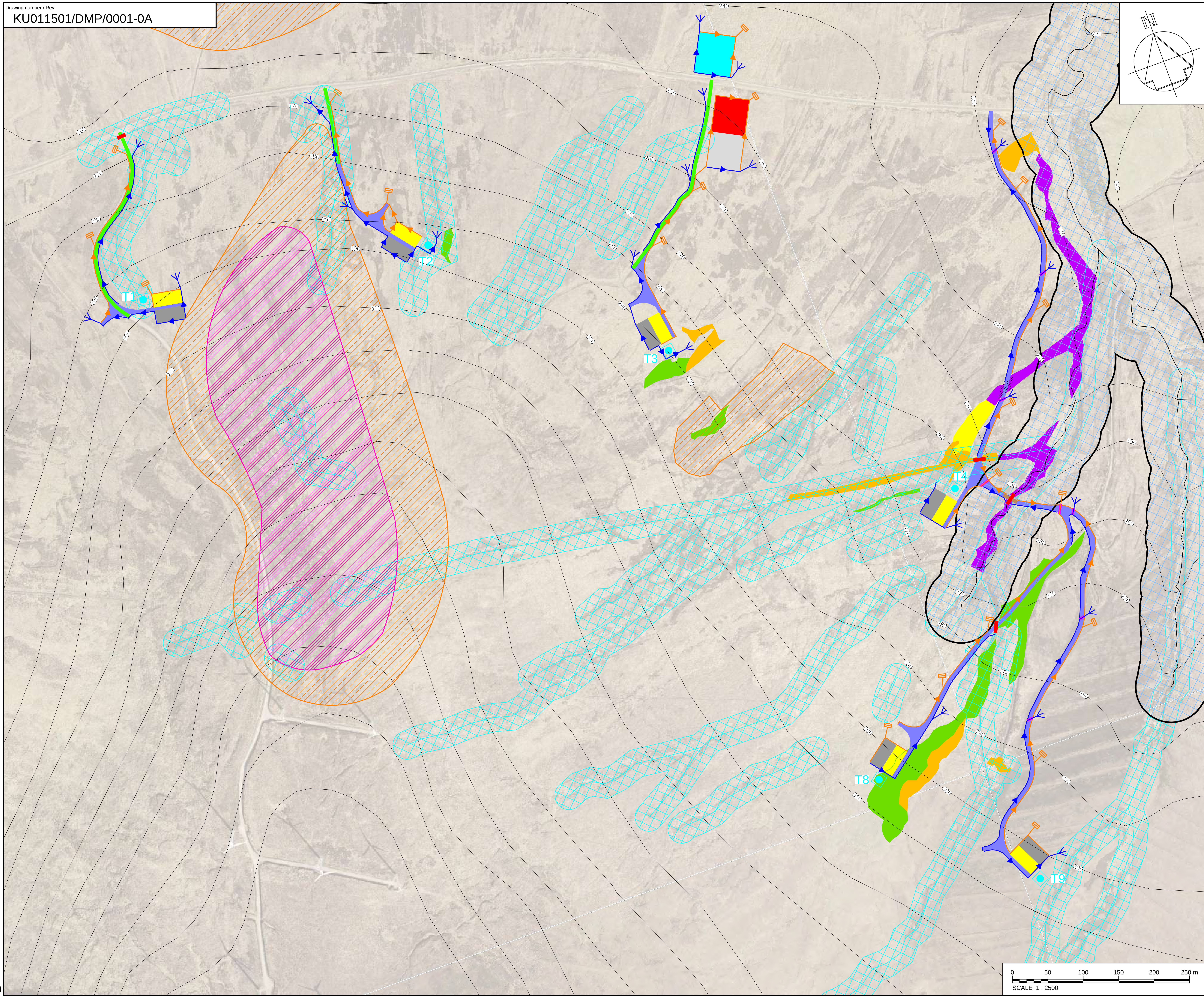
1. ALL INTERCEPTION TRENCHES TO HAVE A POSITIVE GRADIENT OF NOT LESS THAN 0.5% AND NOT MORE THAN 15% TO AN OUTLET.
2. WALLS OF THE TRENCH TO BE COMPACTED BY EARTH MOVING EQUIPMENT.
3. IF EROSION OCCURS WITHIN THE TRENCH OR THE GRADIENT EXCEEDS 5% CHECK DAMS ARE TO BE USED
4. IF EROSION IS EVIDENT WITHIN A CHECKDAM TRENCH, 25–75mm STABILISATION GRAVEL MAY BE USED TO STABILISE AFFECTED AREAS.
5. GRAVEL EROSION PROTECTION TO EXTEND 500mm BEYOND BANKS AT CHECKDAMS TO PREVENT CUTTING AROUND DAM.

STRAW BALE SEDIMENT BARRIER

1. STRAW BALE SEDIMENT BARRIERS ONLY TO BE USED WHERE PROPRIETARY SYSTEMS ARE UNFEASIBLE.
2. STRAW BALE SEDIMENT BARRIERS ONLY TO BE USED TO INTERCEPT RUNOFF FROM SMALL AREAS OF DISTURBED SOIL.
3. BALES TO BE REPLACED AS NECESSARY OR AFTER A MAXIMUM OF 3 MONTHS.
4. BALES TO BE REMOVED WHEN USEFULNESS HAS BEEN SERVED.

TITLE	SUSTAINABLE DRAINAGE SYSTEMS GENERAL DETAILS SHEET 2 OF 2		
FIGURE No.	11-242C-004		
SCALE	NTS	DRAWN	MP
DATE	AUG.14	CHECKED	SWW

WDR & RT TAGGART



LEGEND

- EXISTING TRACK TO BE UPGRADED
- PROPOSED NEW TRACK
- CLEAR SPAN STRUCTURE
- TURBINE
- HARDSTAND
- LEVELLED ASSEMBLY AREA
- PROPOSED TURBINE SUPPLY COMPOUND
- TEMPORARY CONSTRUCTION COMPOUND
- SUBSTATION
- M23B
- M6_M19
- M6_U4E
- M6C
- WATERCOURSE CROSSING/CULVERT
- UNDER-TRACK DRAIN
- TRACK/HARDSTANDING SILT WATER INTERCEPTOR
- SURFACE WATER INTERCEPTOR DRAIN
- SEDIMENT BASIN/SILT PONDS
- BUFFERED OUTFALL FROM INTERCEPTOR DRAIN
- CROSS DRAIN
- WATERCOURSE
- WATERCOURSE 50m BUFFER
- DRAINAGE LINE
- DRAINAGE LINE 20m BUFFER
- MODERATE PEAT SLIDE RISK
- HIGH PEAT SLIDE RISK

NOTES

1. THE DRAINAGE LAYOUT ON THIS PLAN IS INDICATIVE. THE CONTRACTOR WILL NOT BE HELD TO THE EXACT LOCATIONS OF SPECIFIC DRAINAGE MITIGATION, RATHER IT IS AN INDICATION OF THE FREQUENCY AND GENERAL LOCATION OF MITIGATION.

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0A	26.10.2106	OUTLINE	DM	NT	AK	JM

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Client
BROOKFIELD

Project
CRAIGNAGAPPLE WIND FARM

Drawing title
DRAINAGE MANAGEMENT PLAN

Drawing status
OUTLINE

Scale	AS SHOWN @ A1	DO NOT SCALE
Jacobs No.	KU011501	
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Craignagapple Wind Farm

Brookfield Renewable

Aquatic Ecology Report

7 November 2016

Contents

1. Introduction

1.1 Background

Brookfield Renewable (Brookfield) is proposing to construct and operate a six turbine wind farm development at Craignagapple, Strabane, Co. Tyrone. The proposed site lies adjacent to the existing Owenreagh Wind Farm development.

Brookfield (formally Bord Gáis Energy), submitted a planning application for the Craignagapple Wind Farm to the Department of the Environment Planning Service in November 2010. This was accompanied by an Environmental Statement (2010 ES) setting out predicted environmental impacts of the proposed development. This was followed in 2014 by the submission of a Further Environmental Information Report (2014 FEI) following comments and requests for additional information received from statutory consultees. The 2014 FEI has been updated in 2016 in response to further statutory consultee requests. The findings of further survey work for the proposed development are presented in the 2016 FEI.

The 2010 ES identified a number of sensitive ecological features within the proposed site boundary, and European designated areas in the vicinity of the proposed development. These designations are presented on **Figure 3.8: Designated Sites within 15km of the Proposed Development** of the 2016 FEI.

One such site is the Habitats Directive / Natura 2000 River Foyle and Tributaries Special Area of Conservation (SAC), designated for aquatic macrophyte communities, Atlantic salmon (*Salmo salar*) and European otter (*Lutra lutra*). Previous assessments have shown no predicted impact on these species within the proposed development area, however no assessment has been undertaken on potential effects from construction and operation on the features of the designated site. The River Foyle and Tributaries SAC is hydrologically connected to the proposed development, via the Glenmoran River and Burn Dennett, both of which are designated under the SAC citation and receive surface water discharge from the proposed development.

1.2 The Proposed Scheme

The proposed Craignagapple Wind Farm is situated on the north-east facing slope of Owenreagh Hill (central grid ref H 0430965) approximately 8km to the east of Strabane, Co. Tyrone. The entire development area is on sloping ground, rising gently in a south westerly direction for the northern part of the site and lies within two hydrological catchments, with the Glenmornan catchment draining to the north west and Dunny Boe (a tributary of the Burndennett) catchment to the east and north east.

The application, comprising six turbines also includes a proposal for:

- turbine foundations;
- hardstanding ‘crane pads’ at each turbine location;
- drainage infrastructure;
- upgrade of existing access points and internal access tracks;
- construction of new access tracks, and three associated new crossings over drainage channels and watercourses;
- substation control building and compound;
- network of buried cables; and
- a temporary construction compound.

1.3 The Habitats Directive and Natura 2000 Sites

The European Union (EU) Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora was adopted in 1992, with a consolidated version published on 1 January 2007 (hereafter referred to as the Habitats Directive). The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.

1.4 Purpose of this Report

After the submission of the 2014 FEI, a consultee response was received from Northern Ireland Environment Agency - Natural Environment Division (NIEA-NED) dated 12th October 2015 wherein they outlined a concern with the potential hydrological impacts on the River Foyle and Tributaries SAC from the proposed construction works. NIEA-NED advised that further information was required to complete a robust Habitats Regulation Assessment (HRA) of the likely impacts on the SAC and the Area of Special Scientific Interest (ASSI) features.

This document presents the existing baseline for SAC designated species within the proposed development area boundary and connecting watercourses, and identifies the likely effects upon designated features associated with the River Foyle and Tributaries SAC.

The information herein is provided to support the development of a robust HRA to be completed by the relevant statutory authority, in this case Shared Environmental Services (SES) of Derry City and Strabane District Council.

2. Natura 2000 Sites

2.1 River Foyle and Tributaries SAC

The River Foyle and Tributaries SAC lies approximately 14km downstream from the proposed Craignagapple Wind Farm via the River Glenmornan, and 24km downstream via the Dunny Boe / Burn Dennett.

The SAC designation comprises the River Foyle and several tributaries including the Strude, Marne, Derg, Mourne Beg, Glendergon and Finn and is designated for the Annex I habitat 'Watercourses of plain to montane levels with the *Ranunculion fluitanitis* and Callitricho-Batrachion vegetation' and Annex II species Atlantic salmon. Otter are qualifying features of the SAC, but not a primary reason for site selection.

No part of the proposed Craignagapple Wind Farm lies within the SAC site, however watercourses flowing from the proposed development ultimately join the River Foyle and Tributaries SAC, immediately west of Ballydonaghy. This hydrological connectivity presents an opportunity for activities associated with the proposed development to affect the SAC.

The northern section of the Scheme boundary falls within the Glenmornan catchment which includes the north western and northern slopes of Owenreagh Hill. Watercourses draining the north of the site include Glentrashna Burn and the Lagavadder Burn. Other watercourses within this catchment include the Glenwanda Burn and the Allnamoota Burn to the west and the Curryenagh Burn to the south west of the site.

The south eastern section of the proposed development boundary falls within the Dunny Boe catchment which drains the eastern slopes of Owenreagh Hill. Watercourses within the proposed development boundary include Legnahone Burn in the eastern section of the site. The Dunny Boe catchment joins the Burndennett before discharging into the River Foyle.

There is the potential for activities associated with the construction of the proposed development to affect the qualifying features of the River Foyle and Tributaries SAC, particularly those features that undertake migrations beyond the boundary of the designated site.

2.2 Qualifying Interests of the SAC

2.2.1 Watercourses of plain to montane levels with the *Ranunculion fluitanitis* and Callitricho-Batrachion vegetation

This habitat type is characterised by the abundance of aquatic plant species, especially water crowfoots (*Ranunculus spp*) (JNCC, 2015a). Aquatic plants may modify water flow, promote fine sediment deposition and provide food and shelter to aquatic fauna. River flow and sedimentation are the key factors in maintaining this river type.

Watercourses of plain to montane levels with the *Ranunculion fluitanitis* and Callitricho-Batrachion vegetation are typically clean gravel systems that are predominantly free from siltation that can affect plant community development. This habitat type depends on a natural, active hydromorphology where natural processes may form depositional bars, meandering, islands and backwaters. Supporting species are vulnerable to a range of anthropogenic pressures, although changes in water level, land management (leading to sediment inputs and nutrient enrichment), channel modification and introduction of non-native species.

2.2.2 Atlantic salmon

Atlantic salmon is an anadromous species, spending its juvenile life stages in freshwater, migrating to sea at 1-6 years old and then returning to spawn in freshwater after 1-3 years at sea (JNCC, 2015b). Adult Atlantic salmon are capable of migrating considerable distances within river catchments and may be widely distributed within a river system. The distribution of salmon is limited by the presence of barriers to migration and availability of suitable habitat for different life states.

Salmon require rivers with good water quality, high in dissolved oxygen, low nutrients and suspended solids and a neutral pH. Spawning takes place in clean gravels clear of silt and sand where oxygenated water can reach buried eggs through interstial spaces. The salmonid life cycle is complex, however salmon are most vulnerable to disturbance when eggs are incubated in the gravel beds and the very young have hatched.

The main threats faced by Atlantic salmon are pollution, barriers to migration, degradation of spawning and nursery habitat, introduction of non-native stocks and exploitation.

The River Foyle catchment is “notable for the physical diversity and naturalness of the banks and channels, especially in the upper reaches” (JNCC. 2016). The River Foyle supports the largest population of salmon in Northern Ireland and it is estimated that the catchment supports up to 15% of all salmonid spawning in the country. Research has indicated that individual sub-catchments within the system support genetically distinct salmon populations.

2.2.3 Otter

The European otter is the only otter native to the UK (Mason & Macdonald, 1986). Otter diet is variable but fish generally comprise over 80% with other prey including birds, amphibians, molluscs, crustaceans and small mammals. Otters generally favour riparian habitat however they may travel several kilometres over land to reach waterbodies or to cross between river catchments (Jefferies, 1988). In the UK otters tend to be largely nocturnal where they occur in freshwater habitats (Kruuk, 1995; Environment Agency, 1999) and diurnal in coastal areas (Kruuk, 1995).

Otters occupy a home range, which is a well-defined area where they reproduce, rest and feed (Woodroffe, 2001). Habitat quality and food supply dictate the size of an otter’s home range (Kruuk, 1995). A typical home range may include a river, side streams, ponds and adjacent woodlands and wetlands. Otters mark their range by defecating (sprainting) in these areas.

Up to 30 resting sites may be found within a home range and several sites may be used in an area with a plentiful food supply. These resting sites take a variety of forms including underground dens or “holts”, located in places such as cavities in the roots of bankside trees, piles of logs, flood debris, drains, caves and holes in rock-falls. Otter holts sometimes have one entrance underwater and at least one entrance above the high water mark, but may be located well away from the water’s edge. The more secure sites used for breeding are usually safe from disturbance and frequent flooding, and may be some distance from water with females taking care not to leave any signs of their presence. Otters may also frequently use resting sites above ground in reed beds, tall herb vegetation and scrub. These above ground resting sites are often referred to as “couches” (Environment Agency, 1999).

3. Baseline Data

3.1 Introduction

This section describes the existing baseline data from watercourses draining the proposed development in relation to the River Foyle and Tributaries SAC. No assessment has been made of the SAC itself.

The distribution of qualifying species and habitats within the vicinity of the proposed development was investigated to fully understand the potential adverse effects from construction and operation activities on these species and habitats. Potential adverse effects were assessed taking into account the information received from desk studies, consultation, and professional experience. It is assumed that all qualifying species could be present within the wider catchment area unless baseline data indicates otherwise.

3.2 Data Collection

3.2.1 Desk Study

A desk study was carried out to gather information on the presence of qualifying species within the study area. Environmental data was requested from the Centre for Environmental Data and Recording (CEDaR) to support an online search for freely available data. CEDaR is a partnership between Northern Ireland Environment Agency (NIEA), National Museums Northern Ireland (NMNI) and the recording community of Northern Ireland. It is the Local Records Centre for Northern Ireland, and "*facilitates the collection, collation, management and dissemination of biodiversity and geodiversity information for Northern Ireland and its coastal waters*". The result of desk study is included below.

3.2.2 Previous Field Survey

An appraisal of the ecological habitats within the proposed development area was undertaken in 2010 to inform the 2010 ES. This survey comprised an Extended Phase 1 Survey to characterise the habitat types present and to identify ecological constraints and any key receptors (planning reference submission J/2010/0481/F).

In 2014 a survey of the proposed Craignagapple Wind Farm development area was undertaken to supplement the exiting baseline data, which was subsequently reported in the 2014 FEI.

During 2016 further targeted habitat and vegetation surveys and hydrological surveys have been undertaken of the proposed development area.

3.3 Results

A data request was returned from CEDaR that detailed no data regarding SAC qualifying habitats/species for the proposed Craignagapple Wind Farm or downstream watercourses.

Online data sources included:

- Loughs Agency
- Centre for Environmental Data and Recording (CEDaR) - Department of Environment Northern Ireland
- National Biodiversity Network (NBN Gateway)

No species specific surveys have been undertaken to inform this assessment.

3.3.1 Watercourses of plain to montane levels with the *Ranunculion fluitanitis* and Callitricho-Batrachion vegetation

The riverine habitats observed within the proposed development area boundary are sub optimal for the development of this species group and no records have been made of this habitat type within the survey area or the connected waterbodies. This habitat would not be expected from the proposed development or connected waterbodies due to underlying geology, watercourse size and flow types and is assumed absent from the proposed Craignagapple Wind Farm.

3.3.2 Atlantic salmon

The Loughs Agency has undertaken routine fisheries monitoring of the tributaries of the River Foyle, including the River Glenmornan and Burndennett (Loughs Agency, 2012, 2014). Salmon fry have been reported from the Burndennett since 2012 but not the River Glenmornan. Water quality is favourable for migratory salmonids on the Burndennett. Survey sites on the River Glenmornan are at the downstream end of the catchment, over 10km from the proposed development. The Loughs Agency (2012) state that suspended solid loads within the River Glenmornan are unsuitable for migratory salmonids, potentially reducing the optimal habitat suitability of the catchment.

Fisheries assessment undertaken for the Environmental Statement for the A5 Western Transport Corridor indicates salmon are present in both the River Glenmornan and Burndennett. Surveys were undertaken at the downstream end of each catchment but support evidence by the Loughs Agency of migratory salmonid utilisation of the Burndennett, albeit 7km downstream of the proposed development.

No evidence of salmon, or optimal habitat was recorded within the proposed development area boundary during the baseline survey work for the 2010 Craignagapple Environment Statement. Further surveys undertaken as part of the 2016 FEI indicate that the watercourses within the proposed development area boundary are less than 1.5m wide and supported low flows at the time of survey (May 2016). Whilst coarse gravel and cobble substrates were observed at a number of locations, stagnated flows appear to have led to algal biofilms and moss growth on the channel beds, which would reduce habitat suitability for spawning and feeding. The water quality across the proposed Craignagapple Wind Farm is influenced by the surrounding peat land, with water recorded as brown in colour, but clear. Overall, watercourses within the proposed development area boundary do not provide suitable habitat for adult or juvenile life stages of salmon and this species is assumed absent.

The data outlined above suggest that both the River Glenmornan and Burndennett support varying populations of salmon, with the presence of fry indicative of adult fish being able to ascend the catchments, suitable habitat being present for spawning and water quality and quantity supporting early life stages. The overall contribution that these catchments make to the conservation objectives of the adjoining River Foyle and Tributaries SAC is unknown, although they are likely to play a supporting role in the quantity and quality of the wider catchment stock.

3.3.3 European otter

No specific surveys have been undertaken for otter. The 2010 ES recognised that the watercourses across the proposed development area may provide a resource for otter, however were not thought to support the species on a permanent basis. An absence of suitable resting habitat and food resource are limiting factors in sustaining a resident population.

4. Potential Effects of the Proposed Scheme

4.1 Introduction

This section describes the likely effects associated with the proposed development during the construction and operational phases.

No SAC species have been confirmed as being present within the proposed development area boundary. Species and habitats may be present within the watercourses downstream of the proposed Craignagapple Wind Farm that form the hydrological pathway to the SAC. Species capable of moving from the SAC may reside in the non-designated watercourses outside of the SAC boundary, such as the River Glenmornan and Burndennett. Certain construction and operation activities have the potential to affect designated species and / or their habitats which are key qualifying interests of the River Foyle and tributaries SAC.

4.2 Activities Associated with the Proposed Development

Likely activities associated with the proposed development that pose a risk to the SAC qualifying features are detailed in Table 4.1.

Table 4.1 : Likely activities associated with the construction and operation phases of the proposed development

Phase	Likely Activities
Construction • Turbine foundations • Hardstanding crane pads • Drainage infrastructure • Upgrading of access tracks • Construction of access tracks and associated crossings over drainage channels/watercourses • Substation control building • Buried cables • Temporary construction compound	• Site clearance and vegetation strip • Increase in areas of hard standing • Installation of new drainage system
Operation	• Increase in areas of hard standing

It is considered that none of these activities will have a direct impact upon the SAC, due to the distance between the proposed development and SAC boundary, and given the implementation of proposed mitigation measures outlined in Chapter 5: Geology, Hydrogeology and Hydrology of the 2016 FEI. The Surface Water Management Plan has also been reviewed in relation to the reduced layout (Appendix 5.4 of the 2016 FEI), and the Drainage Management Plan has been updated and presented in Appendix 5.5,

Downstream effects on habitats and species of qualifying interest could result as a consequence of the hydrological connectivity between the site and the designation SAC downstream, in an unmitigated environment.

Potential effects related to the activities on site may include:

- mortality;
- habitat loss and / or fragmentation;
- disturbance (noise, vibration, movement and lighting);
- changes in water quality; and
- changes in hydrology.

4.2.1 Mortality

The proposed Craignagapple Wind Farm could result in mortality of salmon as a result of pollution events such as, sediment release or construction material discharging into the watercourse. Hydrological connectivity between the proposed development may carry suspended pollutants downstream beyond the proposed development area boundaries and potentially increase availability of sediment bound contaminants, reduce dissolved oxygen and block gills.

Otter may be disturbed due to lack of available prey should downstream pollution events occur. This would only apply in an unmitigated scenario.

4.2.2 Habitat Loss and / or Fragmentation

Availability of optimal habitat, and connectivity between habitats is a key factor in the presence of salmon and otter populations and the sustainability of these populations. Fragmentation of habitat may occur during construction activities due to the need to cross minor watercourses with internal access tracks, and barriers to the free movement of species caused by pollution, noise or in channel working. Severance of watercourses will be temporary, assuming appropriate mitigation is in place to avoid a permanent break in watercourse continuity.

Otter commuting routes may be disrupted by works to banks and riparian areas, fragmenting populations or forcing otters to traverse construction areas to move between up and downstream locations. Likelihood of disturbance to commuting routes is low to negligibledue to the presence of suboptimal habitat, and lack of supporting features for foraging and resting. Otter prey may be temporarily disrupted from the construction area leading to short term behavioural adaptations. Habitat fragmentation is likely to be restricted to the proposed development area and not impact upon the SAC.

4.2.3 Disturbance

Disturbance may take a number of forms including, but not limited to, noise, vibration, movement (of people and / or vehicles) and lighting. Generally disturbance has the potential to result in the abandonment of affected habitats, modify natural behaviour (leading to delays or unsuccessful migration and the use thereafter of suboptimal habitats to support key life stages) of qualifying species, which could include designated or supporting habitats. Construction vehicle movements and earthworks have a low likelihood of resulting in the disturbance of otter. Percussive noise has the potential to cause avoidance behaviour to fish, including salmon, especially if undertaken at critical times of year.

Otter may be affected by both noise and lighting, particularly if construction is undertaken overnight. Disturbance is likely to be restricted to the proposed development area and not impact upon the SAC.

4.2.4 Changes in Hydrology

Modification of natural and existing drainage systems within the upland peat areas may influence the quantity of water being discharged into receiving watercourses. Changes in the river flow, volume or velocity may influence physiochemical parameters within the watercourse, leading to changes in dissolved oxygen, suspended solids and nutrient levels. Changes in hydrology can alter geomorphological processes which can affect the natural movement of material (erosion and deposition) within catchments.

Changes to the distribution and type of substrate within a watercourse can modify fish habitat utilisation. Existing habitats may become unsuitable for fish spawning and redd construction, or as juvenile foraging habitat for example. Hydromorphological processes are important in the distribution and quality of benthic habitats, utilised by fish, invertebrates and plant life. Changes in hydrology are unlikely to influence sensitive habitats within the proposed development area boundary due to the paucity of existing habitats; however there is the potential for effects to extend downstream. Any effects from changes in hydrology are not predicted to impact upon the SAC designation, due to the distance between the proposed Craignagapple Wind Farm and SAC.

4.2.5 Changes in Water Quality

Water quality can be affected by oil or chemical spillages or through land based run-off of such materials. Water quality can also be affected by sedimentation through run-off from construction sites during in channel works and peat slippage. Changes in water quality can affect species or habitats directly and indirectly. Loading of the water column with fine sediment particles can cause direct interference with the feeding and respiratory apparatus of fish, potentially leading to mortality, reduced growth rates and / or resistance to disease in severe cases. Fine sediments can be carried significant distances and once dropped out of suspension may smother invertebrate species or fill coarse substrates used by a number of key species. The loss of well oxygenated, clean gravels to sedimentation is a significant pressure on the success of spawning salmonids. Changes in water quality have the potential to extend beyond the proposed development area boundary but are not predicted to impact upon the SAC designation, due to the distance between the proposed Craignagapple Wind Farm and SAC.

Table 4.2: Activities and potential effects from the proposed development

Activity	Phase	Potential Effect
Site clearance and vegetation strip	Construction	Loss of riparian habitat Increase erosion of riparian zone / sedimentation entering the watercourse
Increase in areas of hard standing	Construction / operation	Increase in water quantity discharged from site Increase in contaminants entering the watercourse
Installation of access tracks and associated crossings over drainage channels and watercourses	Construction	Fragmentation of habitat / loss of connectivity
Installation of drainage system	Construction	Increase in water quantity discharged from site

5. Likely Effects on SAC Receptors

5.1 Introduction

Mechanisms by which likely significant effects on the conservation objectives of the qualifying interests may occur, prior to the implementation of any mitigation, are described below and include direct mortality, disturbance, habitat loss and / or fragmentation, disturbance, changes in water quality and changes in hydrology.

Whether effects are determined as significant depends upon; scale of impact (spatial, and the effect on the coherence of the wider site), longevity of impact (temporary, permanent, reoccurring) and the sensitivity of feature (including reducing the resilience of the feature or altering its vulnerability to other impacts).

Conservation objectives for SAC qualifying interests are as follows:

"*Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;*

- ***The extent and distribution of qualifying natural habitats and habitats of qualifying species***
- ***The structure and function (including typical species) of qualifying natural habitats***
- ***The structure and function of the habitats of qualifying species***
- ***The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely***
- ***The populations of qualifying species, and,***
- ***The distribution of qualifying species within the site*"**

Otter was the only qualifying feature that was assessed as being potentially present within the proposed development area boundary.

Habitats associated with *Ranunculion fluitanitis* and *Callitricho-Batrachion* vegetation and Atlantic salmon may be present within the wider catchment, but were not observed within the proposed development area boundary. Potential effects that are not predicted to extend beyond the development of Craignagapple Wind Farm (mortality, habitat fragmentation and disturbance) are therefore not considered for these qualifying features.

5.2 Potential effects from construction on SAC receptors

5.2.1 Watercourses of plain to montane levels with the *Ranunculion fluitanitis* and Callitricho-Batrachion vegetation

No suitable habitat has been identified within the proposed development area boundary or watercourses connected to the site from the proposed Craignagapple Wind Farm.

The implementation of proposed water quality mitigation measures outlined in the 2016 FEI, and implementation of an updated Surface Water Management Plan (Appendix 5.4 of the 2016 FEI), and Drainage Management Plan (Appendix 5.5 of the 2016 FEI) will protect the status of each feature of the SAC and will eliminate impacts on these downstream qualifying interests and their habitats.

The sediment / pollution control mitigation and sustainable drainage will ensure that any effects are not considered significant to the functioning of the habitat nor risk deterioration of conservation objectives.

5.2.2 Atlantic salmon

Construction activities on salmon have the potential to disrupt upstream migration, causing fragmentation to river continuity, pollution (including sedimentation) to key habitats and individuals and direct mortality through percussive noise.

There is no evidence to suggest that the minor tributaries within the proposed Craignagapple Wind Farm support salmon, nor optimal spawning or juvenile habitats. Construction activities are predicted to have a negligible effect on salmon within the proposed development area boundary (**Table 5.1**).

The lower reaches of the Glenmornan and Burndennett have been shown to support salmon and as such there is the potential for an effect on migratory fish through sediment loss or pollution from the proposed Craignagapple Wind Farm. The use of appropriate mitigation, including sediment management plans, sustainable drainage plans and pollution prevention controls as outlined in Chapter 5 of the FEI, Appendices 5.4; Updates to the SWMP and 5.5 Updated Drainage Management Plan of the 2016 FEI will reduce any effect on salmon in the wider catchment, downstream of the proposed development to the SAC to negligible.

Whilst salmon entering the River Glenmornan and Burndennett will form a component of the wider SAC, the predicted negligible effect from the construction activities are not considered significant to the functioning of the species nor risk deterioration of conservation objectives of the SAC.

Table 5-1: Construction effects (after mitigation) on Atlantic salmon

Salmon	Activity	Scheme boundary	Connected waterbodies	SAC
Baseline		**Not recorded**	**Recorded**	**Recorded**
Mortality	Site clearance and vegetation strip	No impact	No impact	No impact
Fragmentation	Construction of access tracks and associated crossings over drainage channels and watercourses	No impact	No impact	No impact
Disturbance	Construction of access tracks and associated crossings over drainage channels and watercourses	No impact	No impact	No impact
Hydrological change	Site clearance and vegetation strip Increase in hardstanding Drainage system	No impact	No impact	No impact
Water quality change	Site clearance and vegetation strip Construction of access tracks and associated crossings over drainage channels and watercourses Increase in hardstanding Drainage system	No impact	Potential for impact	No impact

5.2.3 European otter

Construction activities have the potential to cause a disturbance to commuting corridors, both along the banks and marginal areas, and within the watercourses where otters are present.

It is expected that noise and light may result in disturbance and cause otters to actively avoid the areas; however the short temporal nature of works should prevent permanent behavioural avoidance issues. Previous survey work has indicated that otters are not permanently residing or feeding in the watercourse proposed to be affected by construction, however it is anticipated that this reach may be used as a resource. Otters occasionally utilising watercourses within and adjacent to the proposed development are unlikely to be significantly impacted due to the lack of available optimal foraging and resting habitats. Therefore the impacts of the proposed construction works on the conservation status of this species are considered to be negligible and will not influence the population status of this species as a qualifying feature of River Foyle and Tributaries SAC (**Table 5.2**).

Table 5.2: Construction effects on otter

Otter	Activity	Scheme boundary	Connected waterbodies	SAC
Baseline		**Potential**	**Not recorded**	**Recorded**
Mortality	Construction of access tracks	Negligible	No impact	No impact
Fragmentation	Construction of access tracks and associated crossings over drainage channels and watercourses	Negligible	No impact	No impact
Disturbance	Construction of access tracks and associated crossings over drainage channels and watercourses	Negligible	No impact	No impact

Given the low predicted abundance of otter in the proposed development area boundary and distance from the SAC there are no significant effects identified from construction activities.

5.3 Potential effects from operation on SAC receptors

During operation there will be an increase in hard standing from new permanent access tracks, substation compound including control room, turbine foundations and crane pads. An increase in hard standing has the potential to increase surface run off, and increased activity around the turbines increases the risk of pollution to enter the watercourses.

The use of appropriate drainage infrastructure will ensure negligible changes in water quality or quantity being discharged into the adjacent watercourses. This will result in a negligible effect from operation of the receiving watercourses and SAC habitat for qualifying species.

6. Conclusion

The River Foyle and Tributaries SAC is designated for watercourses of plain to montane levels with the *Ranunculion fluitanitis* and Callitricho-Batrachion vegetation, Atlantic salmon, and otter.

No significant effects have been predicted from construction or operational activities due to the small scale of the proposed Craignagapple Wind Farm, sub-optimal habitat for qualifying species within the proposed development area boundary and the distance from the designated site.

Construction phase effects are temporary, short term and as such assessed as being unlikely to result in effects on the conservation objectives of the SAC.

7. References

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Craignagapple Wind Farm: Review of Peatslide Risk Assessment for 2016 Layout

Introduction

In November 2014, Brookfield Renewable provided Further Environmental Information (FEI) in support of planning application J/2010/0481/F, which relates to the proposed wind farm development at Craignagapple, near Strabane, County Tyrone. In its capacity as statutory consultee to the planning application, Northern Ireland Environment Agency Natural Environment Division (NIEA-NED) provided a response to the 2014 FEI, in a letter to the Derry City and Strabane District Planning Office, dated 12th October 2015.

The NIEA-NED letter raised a number of concerns with the proposed scheme in relation to the Peatslide Risk Assessment (PSRA), which are summarised below.

- The 2009 PSRA states that only one sink hole/collapsed peat pipe was identified during the walkover survey, whereas NIEA-NED personnel had identified seven such features during site visits undertaken in July and August 2015.
- The PSRA states that the area is drained by a network of man-made channels, whereas the NIEA-NED personnel had made a clear distinction between man-made drainage channels, or grips, and a series of natural drainage gullies.
- The NIEA-NED raised concern regarding the location of Turbine T6 and associated access track, due to the potential for construction work to destabilise a significant block of peat and give rise to an increased peat slide risk.
- Turbine T7 was located within a natural drainage gulley.

The site geotechnical engineer, Mr Paul Kavanagh, undertook a further site visit, on the 8th June 2016, to verify observations made during previous surveys, and to enable a review of the PSRA detailed in Peatslide Hazard and Risk Assessment (2009) and subsequent Technical Notes No 3 (2012) and No 4 (2014). The following report should be read in conjunction with these earlier documents.

This report summarises the key observations made during the latest site visit, and presents a review of the PSRA in the light of proposed changes to the 2016 Layout.

The Influence of Groundwater Pressure on Peatslide Risk

Subterranean drainage conduits, known as peat pipes, form within the peat mass due to internal erosion. The process of pipe forming is initiated when the peat is unable to contain a critical rise in porewater pressure, such that hydraulic fracture of the peat occurs and groundwater is able to escape to the ground surface, thus relieving the spike in pressure. A small amount of solid material from the site of the fracture is transported with the outrushing groundwater, creating an open fissure within the peat mass. Over a succession of rainfall events, excess porewater pressure continues to find relief via the fissure, and more solid material is transported, such that a tube-shaped conduit erodes upstream, back into the peat mass, creating a self-supporting drainage pathway.

As a blanket bog develops, over millennia, a network of peat pipes will also develop naturally, with new tributary pipes forming as branches of the primary pipe. The principal pipes within a drainage network may grow to such diameter that the peat forming the roof of the pipe is no longer able to bridge across the void, resulting in collapse. If the debris resulting from roof collapse forms a blockage within a pipe network, groundwater pressures upstream of the blockage may build to such levels that a new spring is formed, and porewater pressures are redistributed within the peat mass, such that the continued development of the critical internal drainage network takes on a new direction.

Within the downstream reaches of a bog drainage network, pipe collapses may join together, so that an open drainage gulley is formed. Such gullies receive and convey both surface water runoff and shallow groundwater flow, emerging from peat pipes. The network of pipes and gullies enable a blanket bog to remain stable under a wide range of groundwater conditions. When a drainage network is interrupted, either due to a natural event, such as pipe collapse or landslide, or due to construction works, an increase in the risk of peat instability will result from the destabilising build-up of elevated porewater pressure within the peat mass.

An extensive network of peat pipes has established within the blanket bog on Owenreagh Hill; the downstream reaches of the network has largely collapsed, forming natural gullies. These gullies appear to be extremely effective in draining the peat mass and help to relieve porewater pressures locally. On the eastern flank of Owenreagh Hill, the natural drainage gullies fall in a general north-easterly direction, towards Legnahone Burn.

Active peat pipes are more prevalent upstream/upslope of the open gullies, and a transition zone exists, where a succession of collapses have occurred along principal peat pipes, thus forming chains of sink holes. Several such sink holes were correctly identified by NIEA-NED personnel during the site visits of 2015. Some of the most recently collapsed peat pipes were observed to measure up to 0.5m in diameter, and these will continue to serve an important function in the relief of porewater pressure, as long as the drainage pathway remains uninterrupted.

The Influence of Peat Extraction on Peat Slide Risk

The blanket bog at Craignagapple has been modified extensively by peat cutting for fuel. The number and extent of such workings is clearly visible from aerial photographs of the site, and peat working appears to have continued locally over many decades.

In order to facilitate the safe working of peat, access tracks and drains were cut through the peat during the period of working. A major drainage grip bisects the eastern flank of the hill, and is orientated east-south-east. The grip intercepts surface water flow from the catchment upslope and to the south of the drain, and diverts the flow towards Legnahone Burn.

Turbaries were formed adjacent to each other, working upslope from the foot of the hill, such that the workings resulting in the removal of support at the toe of the slope. This practise served to destabilise peat blocks located above the workings, and is considered likely to have given rise to the significant historical peatslide and flow that is evident directly to the north of current operational turbine T15. This peatslide and its margins were previously identified as areas of High and Moderate Susceptibility, respectively, in the 2009 Peatslide Hazard and Risk Assessment and subsequent Technical Notes No 3 and No 4.

Assessment of Peat Slide Risk

The risk of peat slide occurring at the proposed wind turbine generator locations has been assessed using the Peatslide Hazard Rating System (Nichol, 2006), which provides a pseudo-quantitative method of assessing the influence of the following hazards, which are widely acknowledged to contribute to an increased risk of peat slide.

1. Rainfall and climate
2. Presence of water on the slope
3. Peat/Sub-strata interface
4. Peat profile and thickness
5. Shear strength of peat
6. Surface slope gradient and regularity
7. Geomorphology and Site History
8. The extent and condition of subterranean drainage pipes
9. Peatslide history
10. Potential impact of peatslides

This assessment approach entails consideration of potential modes of failure outlined in BS 6031:2009 (Code of Practice for Earthworks) and is consistent with the general principles of BS EN 1997-1 (Eurocode 7: Geotechnical Design - General Rules).

The impact of each hazard factor is assessed against a cubic exponential scoring system, which reflects the disproportionate increase in risk associated with adverse indicators for each category. Guidance on the selection of scores for each category is provided in the technical paper entitled Peatslide Hazard Rating System for Wind Farm Development Purposes (Nichol, 2006). A common scale of scores is adopted for each category, as follows:

Low Risk – 3 points

Moderate Risk – 9 points

High Risk – 27 points

Very High Risk – 81 points

The rating system provides scope for the discretionary adjustment of scores in some instances. For any given location, the overall risk rating is defined by the sum of the scores assigned to all hazard factors.

In its response to the original planning submission, the Geological Survey of Northern Ireland (GSNI) acknowledged this approach as being systematic and compliant with industry best practice guidance, as published by the Scottish Executive (2006).

Factor 1 (rainfall and climate) is assessed by reference to regional rainfall data. The annual average rainfall of 1100mm has been estimated from historical rainfall data, held by the Meteorological Office. There is no basis to challenge this information.

Factors 2-6 are assessed by direct measurement and observation on site, and there is no reason to challenge the data collected previously for each turbine location for the purposes of this review.

Factor 10 is intended to reflect the potential consequences of a peatslide occurring. In the case of the proposed development at Craignagapple, the consequences of failure primarily relate to the potential for sediment release to surface watercourses.

The NIEA-NED queried the adequacy of assessment of key features on site, which may be indicative of an increased risk of peat slide; more specifically, the influence of former peat workings (Factor 7), the presence of collapsed peat pipes/sink holes (Factor 8) and evidence of past instability (Factor 9) within influence of the proposed works. Accordingly, this review will focus on the assignment of hazard factors scores against these categories.

The proposed 2016 Layout has been further revised following consideration of the concerns raised by NIEA-NED. The changes include the removal of wind turbine generators T5, T6 and T7 from the scheme. As a consequence, the access track proposed previously to serve turbines T3, T6, T7 and T4, is partially redundant and will terminate at turbine location T3.

Alternative access provisions are proposed to serve turbine locations T4, T8 and T9. The revised 2016 Layout is shown in **Figure 1**.

Review of Peatslide Risk Assessment Hazard Factor Scores

Geomorphology and Site History

Natural erosion features such as hags, mounds, ridges, pools and incised streams, as well as disruption of the ground surface by grazing, burning, forestry, drainage ditches, tracks, fence lines and man-made cuttings for fuel, all affect the integrity of the near surface layers of peat and the tensile strength of the root-mat, in particular. In addition, they may create localised over-steepening of slopes or unsupported blocks of peat.

The degree of hazard caused by erosion and degradation, and thus the score given in this category, should reflect how quickly erosion and degradation are taking place, the size of the blocks or units being exposed, and the amount of material being released. The scores assigned during the 2014 assessment are given in **Table 1**, below, along with the outcome of the 2016 review. Where it is proposed that scores for a particular location are revised, these are highlighted in bold text.

Table 1: Review of Hazard Factor Score Relating to Geomorphology and Site History

Wind Turbine Generator Location	Hazard Factor Score Assigned in July 2014 Assessment	Review comments
T1	11 – Old turbary area nearby. Access track adjacent	The proposed turbine is located adjacent to a former turbary. **A revised score of 27 is proposed to reflect the increased risk of instability during construction works.**
T2	9 – mid-slope of hillside	Score of 9 is considered to be appropriate.
T3	26 – old turbary nearby.	T3 is located within the bed of an old turbary. Score of circa 27 is considered to be appropriate. No change proposed.
T4	24 – reedy flush adjacent	Turbine is located adjacent to the crossing point of a natural gulley and wide drainage grip. **A revised score of 81 is proposed to reflect the significance of these major erosion features.**
T5	Turbine removed from scheme	
T6	Turbine removed from scheme	
T7	Turbine removed from scheme	
T8	4 – platform area upper hillside	Turbine is located within an area of flush. **A revised score of 27 is proposed to reflect the increased risk due to erosion.**
T9	54 – Disturbed ground, Sausage turbary area.	A large expanse of catotelmic peat has been exposed by peat extraction, and this will be more susceptible to surface erosion. The category score of 54 is considered to be appropriate.

Sub-profile Drainage

During the site visit of June 2016, numerous collapsed peat pipes/sink holes were observed within the central eastern flank of Owenreagh Hill. These principally fell within an area measuring approximately 500m in length and extending approximately 100m to either side of a wide drainage grip, orientated east-south-east, which had been cut historically. The proliferation of former turbaries, to the north of the grip, would indicate that the drain was sufficiently effective to enable the cutting of peat to continue, in relative safety, to the northern side of the grip.

The cluster of sink holes would adversely impact on the stability of the area around former proposed turbine T7 and associated access track, although these works have been removed from the proposed scheme.

Table 2, below, presents the hazard factor scores relating to sub-profile drainage from the 2014 assessment, along with those assigned following a review of the available information. Where it is proposed that scores for a particular location are revised, these are highlighted in bold text.

Table 2: Review of Hazard Factor Score Relating to Sub-profile Drainage

Wind Turbine Generator Location	Hazard Factor Score Assigned in July 2014 Assessment	Review comments
T1	5 - no surface indications	Score of 3 is considered to be appropriate. No change proposed.
T2	19 – reedy patches nearby	Turbine is located in an area of shallow peat cover, which is considered unlikely to include significant sub-profile drainage. Score of 19 is considered to be appropriate.
T3	18 – reedy flush nearby	Turbine is located within the bed of an old turbary, with thin residual peat cover. Score of 18 is considered to be appropriate.
T4	24 - reedy flush nearby	Turbine is located within an area of reedy flush. **A revised score of 27 is proposed.**
T5	Turbine removed from scheme	
T6	Turbine removed from scheme	
T7	Turbine removed from scheme	
T8	29 – reedy flush nearby	Turbine is located within an area of reedy flush. Score of 29 is considered to be appropriate.
T9	3 – no surface indications	Turbine is located within the bed of a former turbary, with residual peat cover circa 1.6m thick and close to the head of Dunnyboe Burn. **A revised score of 27 is proposed.**

There is no evidence of collapse peat pipes within the vicinity of turbine locations that are retained within the revised scheme. Turbines 4 and 9 are located within proximity to natural drainage features, however, and so an increase in risk score is proposed in regard to sub-profile drainage pipes for those locations.

Turbine T4 was located close to the confluence of a natural gulley and the historical drainage grip. The location of this turbine has been modified locally, so as not to adversely impact on the effective drainage of the bog. The repositioned Turbine 4 falls within the 50m micro-siting boundary.

Peatslide History

The pre-existence of peatslides is considered to be a good predictor of future instability. Accordingly, this category directly represents the known peatslide activity at the site. Evidence of past instability may best be obtained via walkover surveys and also by reference to aerial photographs.

A number of minor peat slides were identified during the walkover survey of June 2016. These were located on the central eastern flank of the Hill, directly upslope of former peat workings (between proposed turbine locations T3 and T4). These slides appear to have been initiated by the removal of material supporting the toe of the respective peat blocks. While the slides were noted to be dormant during the 2016 site walkover survey, it is anticipated that movement could recommence if adverse groundwater conditions were to arise through severe or prolonged rainfall; particularly if such rainfall was to follow a sustained period of dry weather, when shrinkage cracks are likely to form within the peat, providing a direct route for surface water ingress.

In addition to the noteworthy peat slide and flow, observed previously to the north of operational turbines T15/T16, a further significant peat slide was also identified on the eastern flank of Owenreagh Hill, the extent of which is indicated on **Figure 2**.

None of the wind turbine generator locations in the proposed 2016 Layout fall within influence of these historical peat slides and, accordingly, no significant adjustments are proposed to the scores assessed in regard to peat slide history. The confirmed hazard factors scores relating to peatslide history are summarised in **Table 3**, below.

Table 3: Review of Hazard Factor Score Relating to Peatslide History

Wind Turbine Generator Location	Hazard Factor Score Assigned in July 2014 Assessment	Review comments
T1	19 - major peatslide nearby	Aerial photographs show T1 to lie circa 200m downslope of the observed historical peat slide. The assigned score is considered to be pessimistic. No change proposed.
T2	3 – no evidence	Score of 3 is considered to be appropriate.
T3	4 – no evidence	Score of 3 is considered to be appropriate.
T4	4 – no evidence	Score of 3 is considered to be appropriate.
T5	Turbine removed from scheme	
T6	Turbine removed from scheme	
T7	Turbine removed from scheme	
T8	4 – no evidence	Score of 3 is considered to be appropriate.
T9	2 – no evidence	Score of 3 is considered to be appropriate.

Peatslide Hazard Rating Scores

In summary, the individual hazard factor scores and aggregated peatslide hazard rating scores are summarised in **Table 4**, below. Hazard factor scores assessed to be different from the 2014 assessment are marked in bold text.

Table 4: Peatslide Hazard Rating Scores for Proposed Turbine Locations

Hazard Category	Hazard Factor Scores					
	T1	T2	T3	T4	T8	T9
Rainfall and climate	5	5	5	5	5	5
Presence of Water on Slope	3	3	3	3	12	32
Peat/Sub-strata interface	8	8	8	8	8	8
Peat profile and thickness	6	3	3	5	4	14
Shear strength of peat	17	12	15	8	9	18
Surface slope gradient and regularity	12	15	25	10	10	15
Geomorphology and Site History	**27**	9	26	**81**	**27**	54
The extent and condition of subterranean drainage pipes	3	19	18	**27**	29	**27**
Peatslide history	19	3	**3**	**3**	**3**	3
Potential impact of peatslides	12	12	5	4	3	4
Peatslide Hazard Rating Score	**112**	89	**111**	**154**	**110**	**180**

The PHRS scores for turbine positions range from 89 to 180 and average 126.

PHRS scores are intended as a means of comparing different sites and as a tool for prioritising mitigation works. The PHRS system itself does not attach any particular significance to the total score for each site and leaves it to the project engineers to draw their own conclusions, based on an understanding of the local conditions that apply. However, as a rule of thumb, sites with an average rating of less than 200 are assigned a low priority, while those with an average rating of more than 400 are identified for urgent attention. All of the PHRS scores assessed for proposed wind turbine locations fall within the low priority range with regard to peatslide risk.

A summary of risk estimations for turbine positions, together with appropriate engineering responses, are presented in **Table 5**, below.

Table 5: Peatslide Risk Estimation – Engineering Response for Turbine Locations

Risk Class	Hazard	Engineering Response	Turbine Position
Risk Level 1	Negligible	Do nothing. Acceptable.	T2
Risk Level 2	Very Low	Monitor and review. Manage by normal slope maintenance procedures.	T1, T3 and T8

Risk Class	Hazard	Engineering Response	Turbine Position
Risk Level 3	Low	Further investigation of the peat slide hazard may be required. Manage by normal slope maintenance procedures.	T4 and T9
Risk Level 4	Low-Moderate	Peatslide stabilisation works may be required.	
Risk Level 5	Moderate	Peatslide stabilisation works may be required. Further studies required to refine judgements.	
Risk Level 6	High	Peatslide stabilisation works likely to be required. Further investigations will be required, including a comprehensive assessment of risks.	
Risk Level 7	Very High	Large scale mitigation works will be required. Urgent requirements for further investigations, including a comprehensive assessment of risks.	

Access Track Routes

The network of track routes comprises four access positions from Glenmornan Road. The routes avoid problematic areas of peatland and, as far as possible, make use of existing tracks formed during historical peat cutting activities, in order to minimise earthworks quantities.

Access track GM1 follows the existing track serving the operational turbines, before branching eastwards to the proposed turbine location. Track GM2 follows a former peat cutter's track and then branches eastwards to proposed turbine location T2. Track GM3 follows an existing track before branching eastwards to proposed location T3, which is situated in the bed of a former turbary.

Turbine locations T4, T8 and T9 are to be accessed from access point GM4. Initially, the route runs along the western fringe of the 50m buffer of Legnahone Burn for a distance of approximately 200m. The access track then veers right, towards T4. Shortly before reaching T4, the track branches to the left, crossing a tributary of Legnahone Burn perpendicularly. The branch then forks to either side of a former peat cutting track, running directly to T8 and T9. The access track route has been selected to avoid areas of deep peat as far as practicable. The track alignment has also been chosen to minimise disruption to natural drainage pathways.

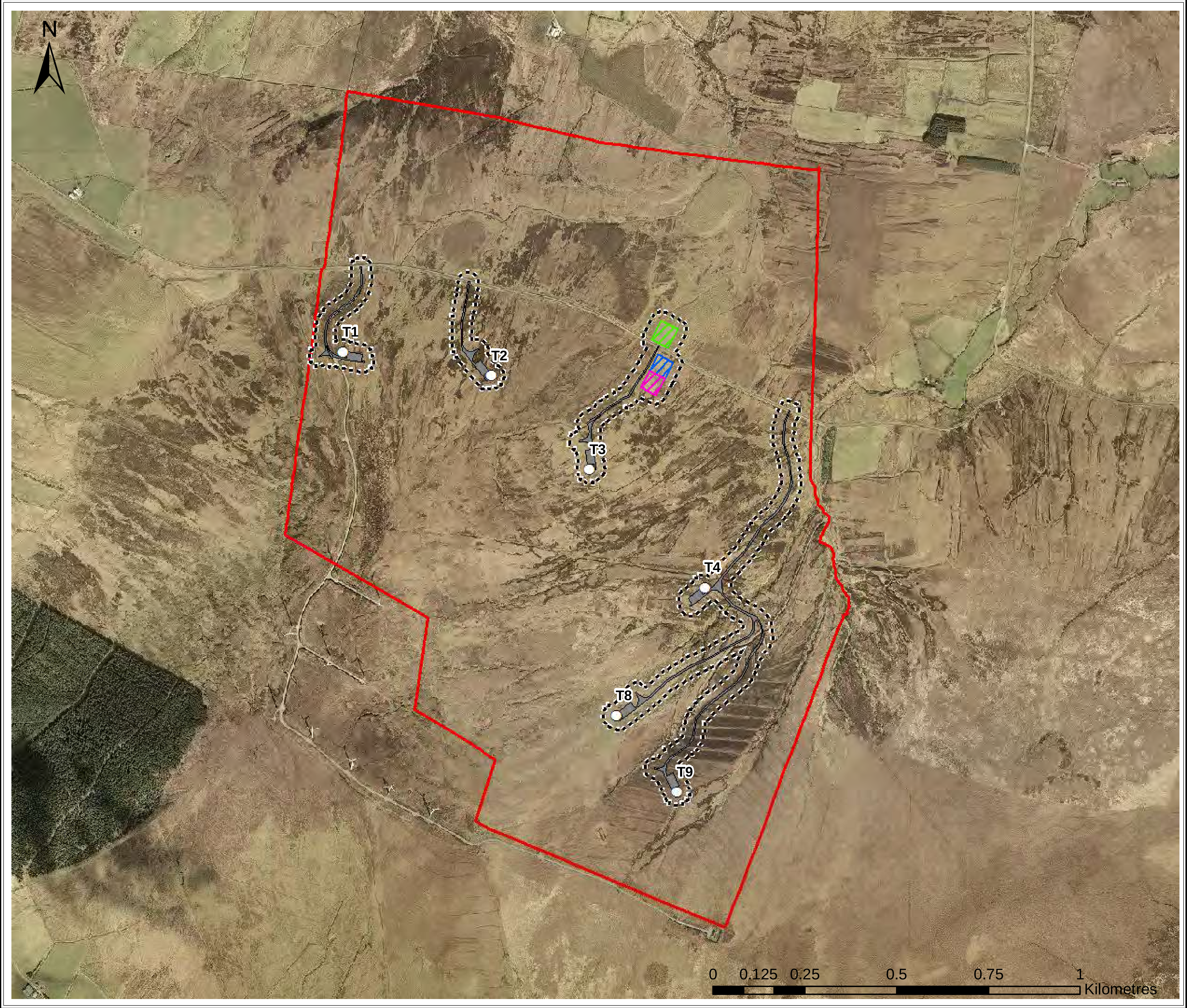
Each element of access track was assessed individually for peatslide susceptibility, using PHRS scores of nearby grid positions and turbine locations. The Risk Class represents an assessed average for each access track route. A summary of risk estimations for access track routes together with appropriate engineering responses are presented in **Table 6**, below.

Table 6: Peatslide Risk Estimation – Engineering Response for Access Track Routes

Risk Class	Hazard	Engineering Response	Access Track Route
Risk Level 1	Negligible	Do nothing. Acceptable.	GM1-T1, GM3-T3
Risk Level 2	Very Low	Monitor and review. Manage by normal	GM2-T2, GM4-

Risk Class	Hazard	Engineering Response	Access Track Route
		slope maintenance procedures.	T4/T8/T9
Risk Level 3	Low	Further investigation of the peat slide hazard may be required. Manage by normal slope maintenance procedures.	
Risk Level 4	Low-Moderate	Peatslide stabilisation works may be required.	
Risk Level 5	Moderate	Peatslide stabilisation works may be required. Further studies required to refine judgements.	
Risk Level 6	High	Peatslide stabilisation works likely to be required. Further investigations will be required, including a comprehensive assessment of risks.	
Risk Level 7	Very High	Large scale mitigation works will be required. Urgent requirements for further investigations, including a comprehensive assessment of risks.	

Figures



Key:
- Site boundary
- Turbine
- Substation
- Suppliers Compound
- Temporary Compound
- Hardstanding area
- Micro Siting Zone

Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator
Datum: TM65
Units: Meter

MXD: Figure_1_KU011500_PSRA_v1

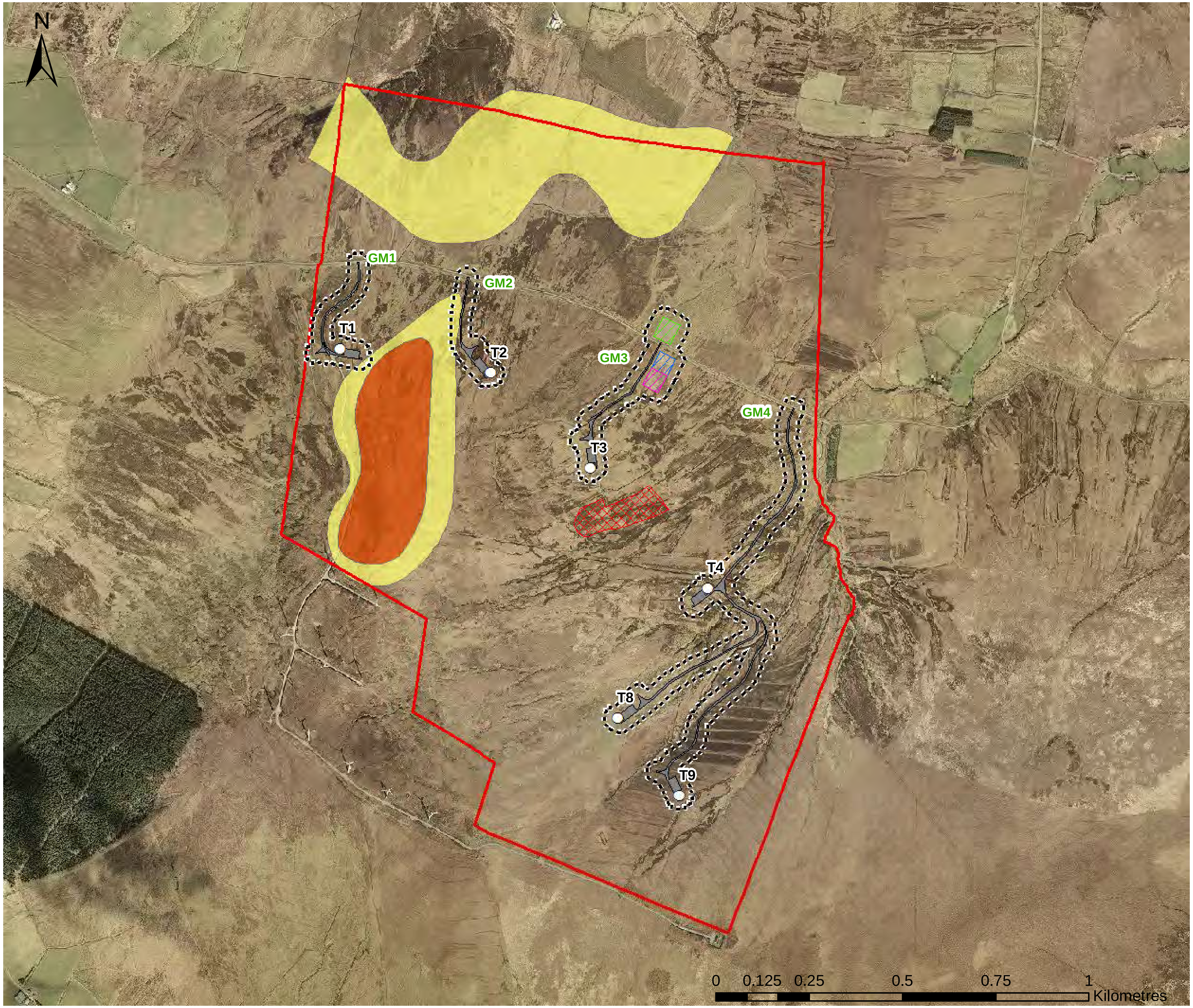
Brookfield

Craignagapple windfarm Further Environmental Information

Figure 1
2016 Layout and Micro-Siting Boundaries

SCALE 1:10,000 @ A3	*PROJECT CODE* KU011500
CONTENT AK	*DRAWN* KR
CHECKED CD	*DATE* 19/10/2016

JACOBS



Key:

- Site boundary
- Turbine
- Substation
- Suppliers Compound
- Temporary Compound
- Hardstanding area
- Micro Siting Zone
- High peat slide hazard (2014 assessment)
- Moderate peat slide hazard (2014 assessment)
- Pre-existing peat slide (2016 assessment)

Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator
Datum: TM65
Units: Meter

MXD: Figure_2_KU011500_PSRA_v1

Brookfield

Craignagapple windfarm Further Environmental Information

Figure 2
Observed Peat Slides in Relation to the Proposed 2016 Layout

SCALE 1:10,000 @ A3	*PROJECT CODE* KU011500
CONTENT AK	*DRAWN* KR
CHECKED CD	*DATE* 19/10/2016

JACOBS

A REPORT BY ENVIROS CONSULTING LIMITED: JUNE 2009

SWS NATURAL RESOURCES
CRAIGNAGAPPLE WIND FARM

PEATSLIDE HAZARD AND RISK ASSESSMENT: FACTUAL REPORT

Publication title	Peatslide Hazard and Risk Assessment: Factual Report
CAN	SW0300004
Volume number	Volume 1 of 2
Version	Final Report
Date	June 2009
File Reference	Craignagapple – Peatslide Report/Factual Report

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FIGURES

APPENDICES

1. INTRODUCTION

1.1 Background

Bord Gáis Energy (formerly SWS Energy Ltd) proposes building a wind farm on an area of peatland in the upland terrain at Craignagapple in County Tyrone, Northern Ireland (Figure 1). The wind farm project involves erecting around 9 turbines at widely spaced locations within an area of some 4 km^2 together with construction of access roads and tracks. It extends on the existing array of sixteen turbines already installed and known as the Owenreagh wind farm.

A special geo-engineering study on peat slope stability was carried out to consider the risk of peatslides occurring at the site such that suitable controls and methodologies can be employed during design and construction to mitigate these risks.

This is the factual report for the peatslide hazard and risk assessment for the Craignagapple wind farm project. It details the work carried out and the information obtained and it is accompanied by a separate interpretive report. Both documents were prepared in accordance with the format recommended in the Scottish Executive's best practice guide (Scottish Executive, 2006).

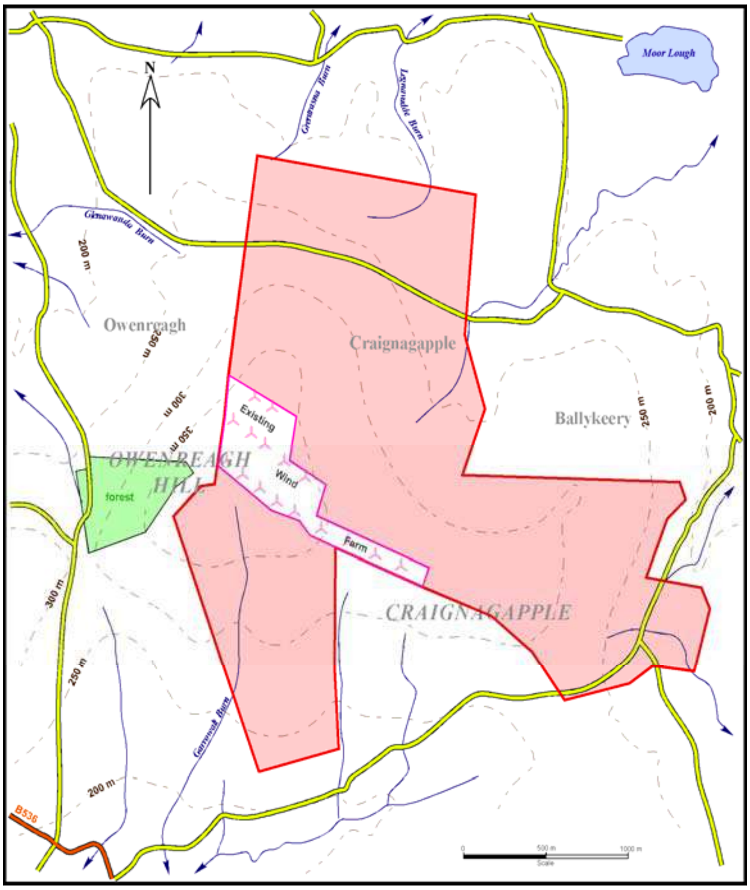
Fieldwork was carried out from 16 - 24 May 2009.

Figure 1 Craignagapple Wind Farm Site Location

1.2 Site Location

The proposed wind farm site lies within County Tyrone, Northern Ireland. It is situated in hilly ground some 8 km northwest of Plumbridge and 8 km east-southeast of Strabane. Irish Grid Reference IH 425960 applies. Figure 2 details the site location and initial study area. The site occupies relatively open upland with an area of coniferous forest to the west. Site access from the B536 highway is northwards by a series of narrow rural roads.

Figure 2 Site Plan, Craignagapple Wind Farm



1.3 Scope and Purpose of the Investigation

Enviros was commissioned to undertake a study of peatslide risks for the wind farm project at Craignagapple. A constraints based approach was used to provide design guidance for the preliminary layout. This report has been compiled with the following aims, to:-

- estimate the geotechnical risks associated with peatsliding;
- identify key areas of the wind farm potentially affected by unstable peat conditions;
- suggest strategies for mitigation of peatslide risk; and
- formulate a preliminary geotechnical risk register for the project.

2. DESIGN OF THE GROUND INVESTIGATION

2.1 Site Investigation

An estimate of the risk of peatslides was undertaken at the Craignagapple wind farm site by identifying the salient features of local bedrock, glacial drift deposits, geomorphology, topography, peat profile, peat strength, drainage and weather that may influence slope stability.

The assessment involved:

- A desk study concerning peatslides in general and the occurrence of peatslides in the region around Craignagapple in order to focus upon the development of hazard models and provide an estimation of the nature, size (magnitude) and frequency characteristics of peatsliding events deemed to have immediate background relevance to this study. The findings are incorporated in the interpretive report.

- A field survey in order to estimate the size, frequency, likelihoods and consequences of peatslide events by identifying and delineating specific hazard-prone areas or individual slopes within the proposed wind farm site at Craignagapple that are likely to be more prone to failure than others, through the following:

    - evidence of previous peatslide activity and slope instability as an indicator and guide to future ground movements by walkover inspections;

    - observations of sinkholes and investigation of sub-profile drainage by using a listening-stick;

    - measurements of peat depths by using a 5m aluminium probe rod,

    - obtaining bulk samples by excavation of trial pits

    - obtaining core samples using a gouge auger

    - obtaining deep samples using a Russian corer

    - determinations of peat shear strengths using a Pilcon hand-vane field instrument;

    - measurements of slope gradients by using a Suunto Type PM-10/360PCT Precision Inclinometer;

    - location of turbine positions and access track routes by using a Garmin eTrex Summit handheld GPS;

- The information and data obtained were incorporated in the main survey using the Peatslide Hazard Rating System (PHRS) described below.

- Laboratory testing to determine the engineering characteristics of the peat profile at Craignagapple.

2.2 Peatslide Hazard Rating System (PHRS)

Peatslide susceptibility was estimated using the Peatslide Hazard Rating System (PHRS) (Nichol, 2006). The principal features of the assessment criteria and scores are summarized in Table 1 and the methodology for the PHRS is presented in full in Appendix A.

The PHRS method was applied at positions on a 200 m grid over the site in order to provide a comparative method for ranking areas by peatslide geohazard potential. PHRS scores are intended as a means of comparing different sites and so they were used to classify risk estimations in support of the layout design process. The findings, together with specific recommendations for the Craignagapple site and a comprehensive geotechnical risk register for the project are presented in the accompanying interpretive report.

Table 1 Peatslide Hazard Rating System (PHRS)

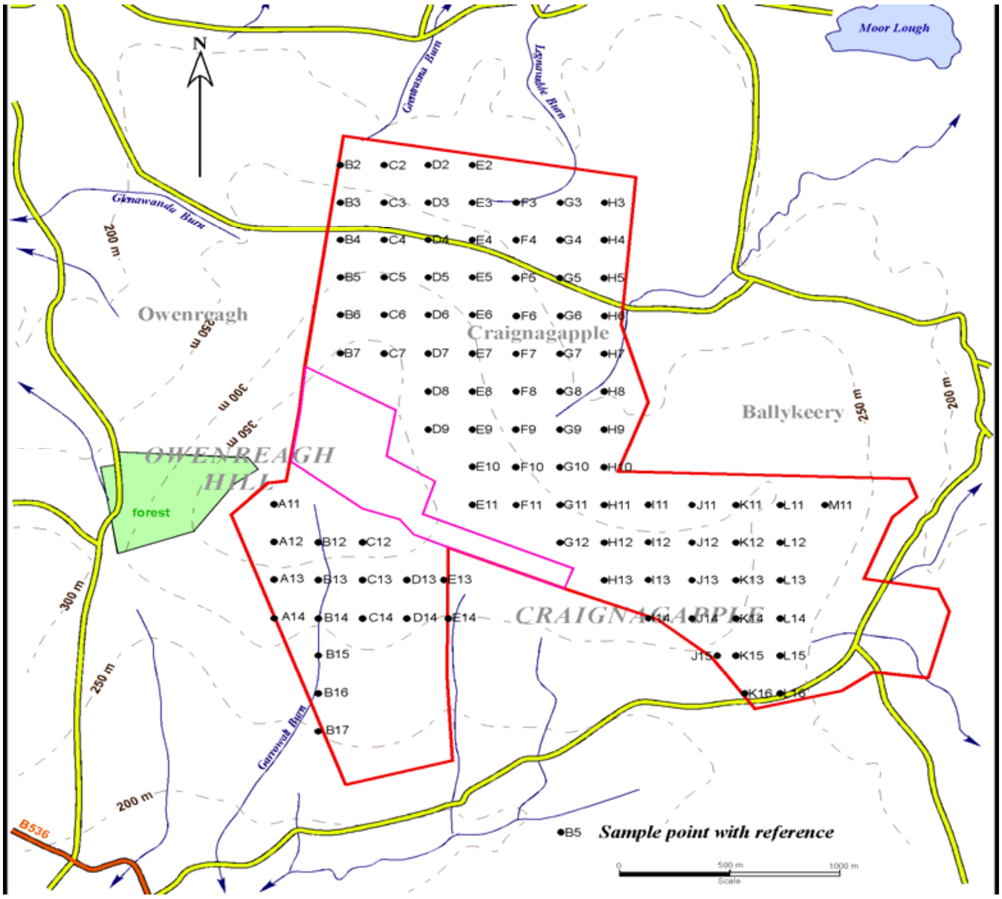
Category	Rating Criteria and Score			
	Points 3	Points 9	Points 27	Points 81
Rainfall and climate	Low to moderate precipitation	Moderate precipitation	High precipitation	High precipitation
Presence of water on slope	No water on slope	Intermittent water on slope	Continual water on slope	Continual water on slope
Rockhead or subsoil	Rough and irregular rockhead or granular subsoil of sand & gravel	Undulating rockhead or granular subsoil	Planar and regular rockhead or cohesive subsoil	Smooth, polished and regular rockhead or cohesive clay subsoil
Peat profile and depth	Single layer profile less than 1 m deep	Double layer profile less than 2 m deep	Triple layer profile greater than 2 m deep	Complex profile greater than 4 m deep
Peat strength (vane test)	40 kPa	30 kPa	20 kPa	10 kPa
Slope and slope regularity	2^o ; even	5^o ; uneven	10^o ; irregular	15^o ; very irregular
Geomorphology and site history	Few differential erosion features	Occasional erosion features	Many erosion features	Major erosion features
Sub-profile drainage	Few pipes	Occasional pipes	Many pipes	Many pipes and sinkholes
Peatslide history	Few slides	Occasional slides	Many slides	Major peatslides
Potential peatslide severity	Few consequences; small impacted area	Minor consequences; minor impacted area	Many consequences; large impacted area	Major consequences; large impacted area

3. FIELD INVESTIGATION AND TESTING

3.1 PHRS Field Study

To illustrate the variation across the wind farm site, investigations were carried out on a 200 m grid basis, each position on the grid resulting in a different PHRS rating. Grid positions and identifiers are shown in Figure 3.

Figure 3 Grid Positions and Identifiers



The findings are provided for each grid position on the field sheets in Appendix B. In addition, the PHRS scores are compiled in Table 2 and illustrated in Figure 4.

PHRS scores are intended as a means of comparing different sites. The PHRS system itself does not attach any particular significance to the total score for each site and leaves it to the project engineers to draw their own conclusions based on an understanding of the local conditions that apply. However, as a rule of thumb, sites with a rating of less than 200 are assigned a low priority while those with a rating of more than 400 are identified for urgent attention.

A PHRS score of 93 for the entire Craignagapple wind farm site was calculated as the arithmetic average. This PHRS score falls within the low range for peatslide risk. For comparison purposes, PHRS scores of 373, 482 and 434 apply in relation to the well-established peatslide localities at Morsgail, Isle of Lewis, Scotland (Bowes, 1960), and Hart Hope, North Pennines, England (Warburton et al, 2003) respectively.

Table 2 Peatslide Hazard Rating System results for Craignagapple Wind Farm

Grid position	A11		A12		A13		A14		B2		B3		B4		B5	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		2		2		2		1		3		2		2		2
Rockhead or subsoil		5		2		2		5		5		5		5		4
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	1.59	11	1.77	12	1.91	13	0.43	3	0.66	3	0.92	4	0.97	4	0.97	4
Peat strength (kPa)	15	45	38	4	23	17	12	68	13	55	24	16	29	11	24	16
Slope and slope regularity	6^0	12	10^0	28	7^0	15	7^0	15	8^0	21	3^0	6	13^0	46	6^0	12
Geomorphology and history		6		9		6		6		6		9		6		6
Sub-profile drainage		1		2		2		2		15		5		2		1
Peatslide history		3		3		3		3		2		3		3		4
Potential peatslide severity		4		4		4		5		5		5		11		3
Total		94		71		69		113		120		60		95		57

Grid position	B6		B7		B12		B13		B14		B15		B16		B17	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		3		2		6		4		4		4		2		2
Rockhead or subsoil		5		5		5		5		3		4		2		5
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	0.29	2	1.17	6	1.10	6	0.89	4	0.15	1	0.80	4	1.02	5	0.25	2
Peat strength (kPa)	38	4	14	46	17	34	17	34	32	6	29	11	30	9	13	55
Slope and slope regularity	8^0	21	4^0	8	10^0	28	6^0	12	8^0	21	9^0	25	14^0	75	6^0	12
Geomorphology and history		86		86		9		8		8		8		9		6
Sub-profile drainage		15		16		14		17		14		15		2		2
Peatslide history		86		86		13		29		21		8		3		3
Potential peatslide severity		5		5		3		3		16		16		5		15
Total		232		265		123		121		99		100		117		107

Grid position	C2		C3		C4		C5		C6		C7		C12		C13	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		3		2		6		2		8		2		4		8
Rockhead or subsoil		5		5		5		2		5		5		3		3
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	0.74	3	1.80	13	0.91	4	0.27	2	1.95	13	1.74	12	1.30	7	1.92	13
Peat strength (kPa)	36	4	14	46	45	2	12	68	27	12	18	32	12	68	28	12
Slope and slope regularity	8^0	21	5^0	10	5^0	10	9^0	25	9^0	25	4^0	6	5^0	10	5^0	10
Geomorphology and history		8		18		18		18		12		9		6		9
Sub-profile drainage		2		7		9		27		2		3		2		8
Peatslide history		3		2		2		3		17		86		4		6
Potential peatslide severity		8		5		11		5		4		4		3		3
Total		62		113		72		157		103		164		112		77

Grid position	C14		D2		D3		D4		D5		D6		D7		D8	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		2		3		4		2		2		2		4		3
Rockhead or subsoil		5		5		5		2		5		4		4		5
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	1.10	5	0.42	3	0.74	3	0.38	3	1.74	12	0.66	3	1.86	12	2.27	24
Peat strength (kPa)	25	15	15	45	27	12	16	40	36	4	14	46	43	2	20	28
Slope and slope regularity	5^0	10	7^0	15	3^0	6	1^0	2	8^0	21	7^0	15	6^0	12	5^0	10
Geomorphology and history		6		6		18		13		18		9		6		6
Sub-profile drainage		2		50		23		21		32		3		3		2
Peatslide history		2		3		19		3		3		2		2		3
Potential peatslide severity		3		4		7		11		11		4		4		4
Total		55		139		102		101		114		93		54		90

Grid position	D9		D13		D14		E2		E3		E4		E5		E6	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		5		7		2		2		3		2		2		2
Rockhead or subsoil		5		5		1		5		2		5		5		4
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	2.21	22	2.60	32	0.44	3	0.90	4	1.39	8	0.44	3	0.85	4	0.70	3
Peat strength (kPa)	24	16	37	4	11	78	11	78	24	16	36	4	32	6	44	2
Slope and slope regularity	6^0	12	3^0	6	11^0	32	5^0	10	4^0	8	4^0	8	7^0	15	11^0	32
Geomorphology and history		6		6		6		6		6		5		6		9
Sub-profile drainage		2		2		2		4		7		3		9		3
Peatslide history		3		3		3		2		2		2		2		2
Potential peatslide severity		4		4		5		5		6		4		11		5
Total		80		74		137		121		63		41		65		67

Grid position	E7		E8		E9		E10		E11		E13		E14		F3	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		2		4		2		2		9		8		11		4
Rockhead or subsoil		5		3		5		4		5		5		3		5
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	0.83	3	1.02	5	2.30	24	1.24	6	2.02	15	1.56	11	0.69	3	0.55	3
Peat strength (kPa)	42	2	45	2	46	1	21	26	11	78	26	18	19	30	12	68
Slope and slope regularity	10^0	28	6^0	12	7^0	15	7^0	15	5^0	10	7^0	15	8^0	21	4^0	8
Geomorphology and history		18		18		6		9		6		26		9		9
Sub-profile drainage		11		13		4		8		2		5		7		2
Peatslide history		2		3		3		2		2		26		19		3
Potential peatslide severity		4		4		4		4		3		6		18		6
Total		80		69		69		81		135		125		126		113

Grid position	F4		F5		F6		F7		F8		F9		F10		F11	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		2		2		2		2		4		6		5		9
Rockhead or subsoil		5		2		4		4		4		4		5		5
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	0.91	4	0.64	3	0.61	3	0.97	4	1.37	8	1.59	11	1.45	8	1.60	13
Peat strength (kPa)	26	18	14	46	14	46	15	45	29	11	23	17	20	28	10	82
Slope and slope regularity	5^0	10	3^0	6	8^0	21	6^0	12	4^0	8	7^0	15	8^0	21	5^0	10
Geomorphology and history		6		9		6		9		12		6		18		7
Sub-profile drainage		3		2		7		3		9		2		13		2
Peatslide history		2		3		2		2		2		3		2		3
Potential peatslide severity		3		11		5		4		3		3		3		3
Total		58		89		101		90		66		72		108		139

Grid position	G3		G4		G5		G6		G7		G8		G9		G10	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		2		7		2		8		2		4		3		2
Rockhead or subsoil		2		2		2		5		3		3		3		5
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	0.05	1	1.15	5	1.19	6	1.77	12	1.24	6	1.51	10	0.79	3	0.87	3
Peat strength (kPa)	50	1	33	4	14	46	20	28	45	1	39	3	26	14	10	82
Slope and slope regularity	6^0	12	4^0	8	4^0	8	3^0	6	4^0	8	5^0	10	5^0	10	2^0	4
Geomorphology and history		6		11		9		9		6		16		16		9
Sub-profile drainage		3		6		2		14		13		5		12		3
Peatslide history		2		2		3		3		2		2		5		2
Potential peatslide severity		2		4		3		4		4		5		4		3
Total		36		54		86		94		50		63		75		118

Grid position	G11		G12		H3		H4		H5		H6		H7		H8	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		4		2		2		6		7		6		5		4
Rockhead or subsoil		5		3		5		5		5		5		5		5
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	1.96	14	1.82	12	0.47	3	3.05	40	0.84	4	1.51	10	1.13	5	0.98	5
Peat strength (kPa)	27	12	20	28	18	32	30	9	50	1	36	4	42	3	14	46
Slope and slope regularity	5^0	10	5^0	10	8^0	21	3^0	6	2^0	4	2^0	4	1^0	2	4^0	8
Geomorphology and history		18		6		9		6		9		6		9		11
Sub-profile drainage		8		2		3		3		2		8		3		2
Peatslide history		2		2		2		2		2		2		3		3
Potential peatslide severity		3		3		5		3		3		4		4		4
Total		81		73		87		85		42		54		44		93

Grid position	H9		H10		H11		H12		H13		I11		I12		I13	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		14		6		7		11		18		11		9		2
Rockhead or subsoil		5		5		5		4		3		5		3		3
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	1.27	7	1.25	6	2.31	26	2.39	27	2.36	26	3.45	84	1.85	13	2.72	34
Peat strength (kPa)	29	11	29	11	38	3	25	15	17	34	12	68	18	32	17	34
Slope and slope regularity	7^0	15	4^0	8	4^0	8	5^0	10	3^0	6	3^0	6	2^0	4	4^0	8
Geomorphology and history		9		9		6		6		6		6		6		7
Sub-profile drainage		3		2		2		9		11		4		6		3
Peatslide history		2		7		2		2		2		2		2		2
Potential peatslide severity		5		5		3		3		3		3		3		3
Total		76		64		67		92		114		194		83		101

Grid position	I14		J11		J12		J13		J14		J15		K11		K12	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		8		4		3		6		9		2		7		9
Rockhead or subsoil		5		3		5		3		3		4		3		4
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	2.39	27	3.01	39	2.43	28	2.19	21	1.98	14	0.86	4	2.93	37	1.98	14
Peat strength (kPa)	20	28	23	17	18	32	10	82	11	78	43	2	12	68	20	28
Slope and slope regularity	6^0	12	3^0	6	3^0	6	3^0	6	3^0	6	5^0	10	2^0	4	2^0	4
Geomorphology and history		9		6		6		4		4		9		6		7
Sub-profile drainage		3		3		2		2		2		2		2		3
Peatslide history		2		2		2		2		2		2		2		2
Potential peatslide severity		3		3		3		3		3		4		3		3
Total		102		88		92		134		126		44		137		79

Grid position	K13		K14		K15		K16		L11		L12		L13		L14	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5	1100	5
Presence of water on slope		8		7		2		2		2		9		8		4
Rockhead or subsoil		5		3		5		4		3		3		4		5
Zone length (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peat profile and depth (m)	2.01	15	2.21	22	0.66	3	0.81	3	0.98	5	1.91	13	2.39	27	2.16	20
Peat strength (kPa)	25	15	23	17	40	3	33	4	16	40	20	28	25	15	30	9
Slope and slope regularity	5^0	10	5^0	10	6^0	12	4^0	8	5^0	10	5^0	10	6^0	12	8^0	21
Geomorphology and history		6		6		9		6		6		6		7		7
Sub-profile drainage		3		8		3		2		3		2		2		7
Peatslide history		2		2		2		2		2		2		3		2
Potential peatslide severity		3		4		3		12		3		3		4		12
Total		72		84		47		48		79		81		77		92

Grid position	L15		L16		M11	
	Value	Score	Value	Score	Value	Score
Rainfall and climate (mm)	1100	5	1100	5	1100	5
Presence of water on slope		6		3		3
Rockhead or subsoil		3		5		4
Zone length (m)	-	-	-	-	-	-
Peat profile and depth (m)	1.14	5	0.69	3	1.36	8
Peat strength (kPa)	13	55	37	4	23	17
Slope and slope regularity	9^0	25	5^0	10	6^0	12
Geomorphology and history		9		9		6
Sub-profile drainage		3		3		3
Peatslide history		2		1		2
Potential peatslide severity		5		10		3
Total		118		53		63

Figure 4 Variations in PHRS scores at Craignagapple Wind Farm

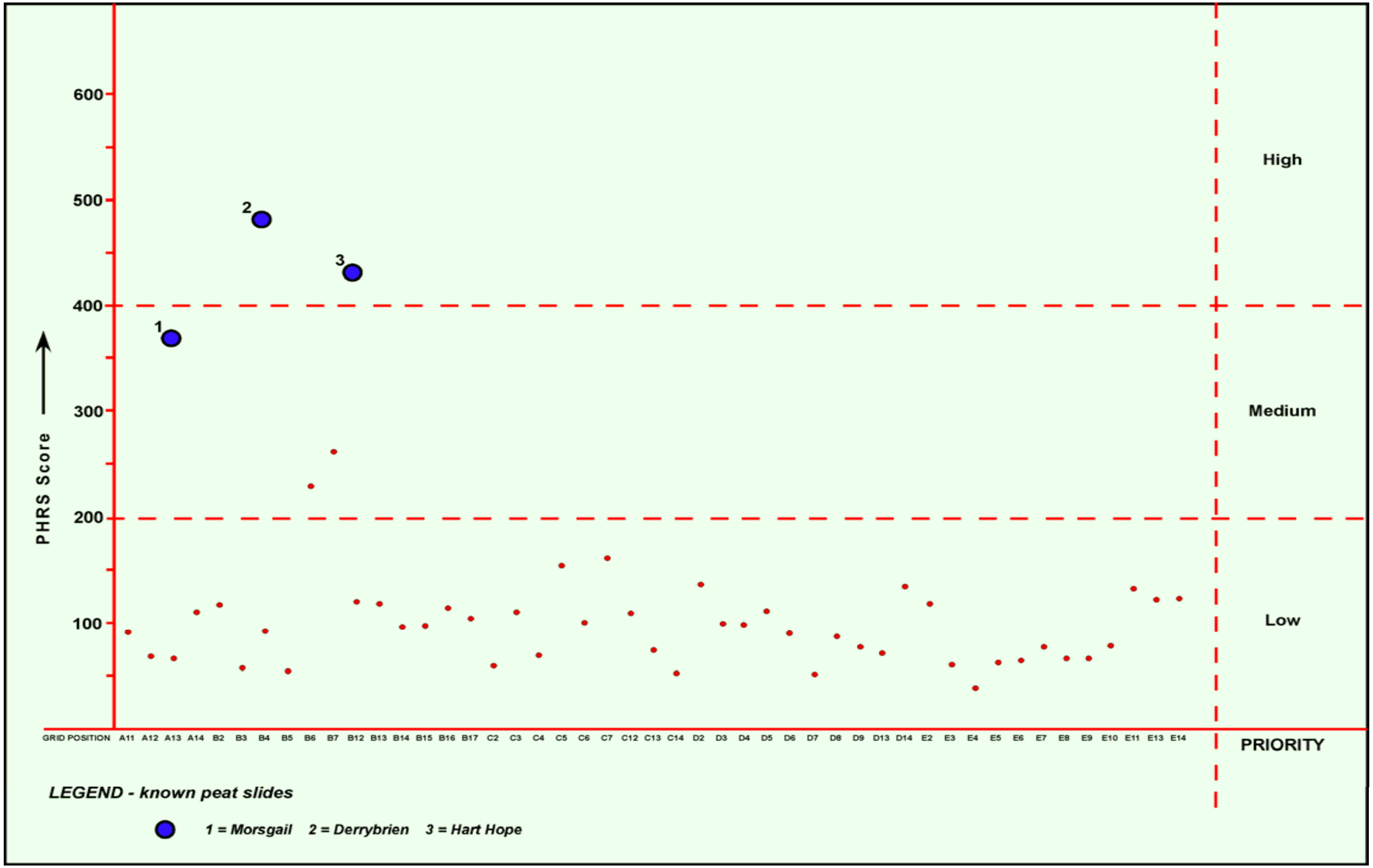
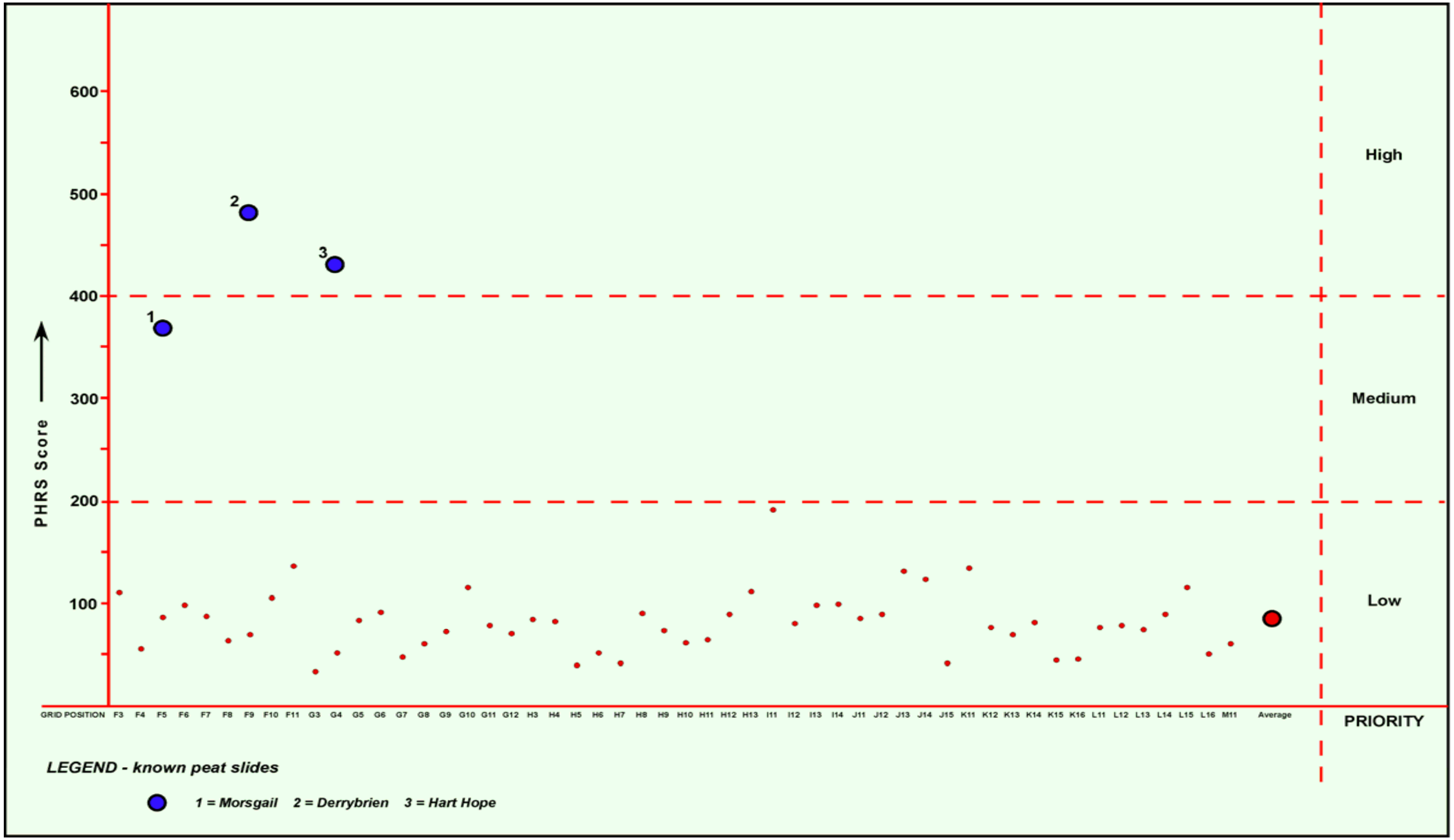


Figure 4 (cont) Variations in PHRS Scores at Craignagapple Wind Farm



3.2 Peat Profile Logs

The peat profile at Craignagapple is observationally accessible at numerous places across the site and detailed inspections were made using hand-dug trial pits and gouge auger holes. Selected peat profile log sheets are presented in Appendix C for four representative trial pits (labled **X1**-**X4** inclusive) across the site. Locations are shown in Figure 5.

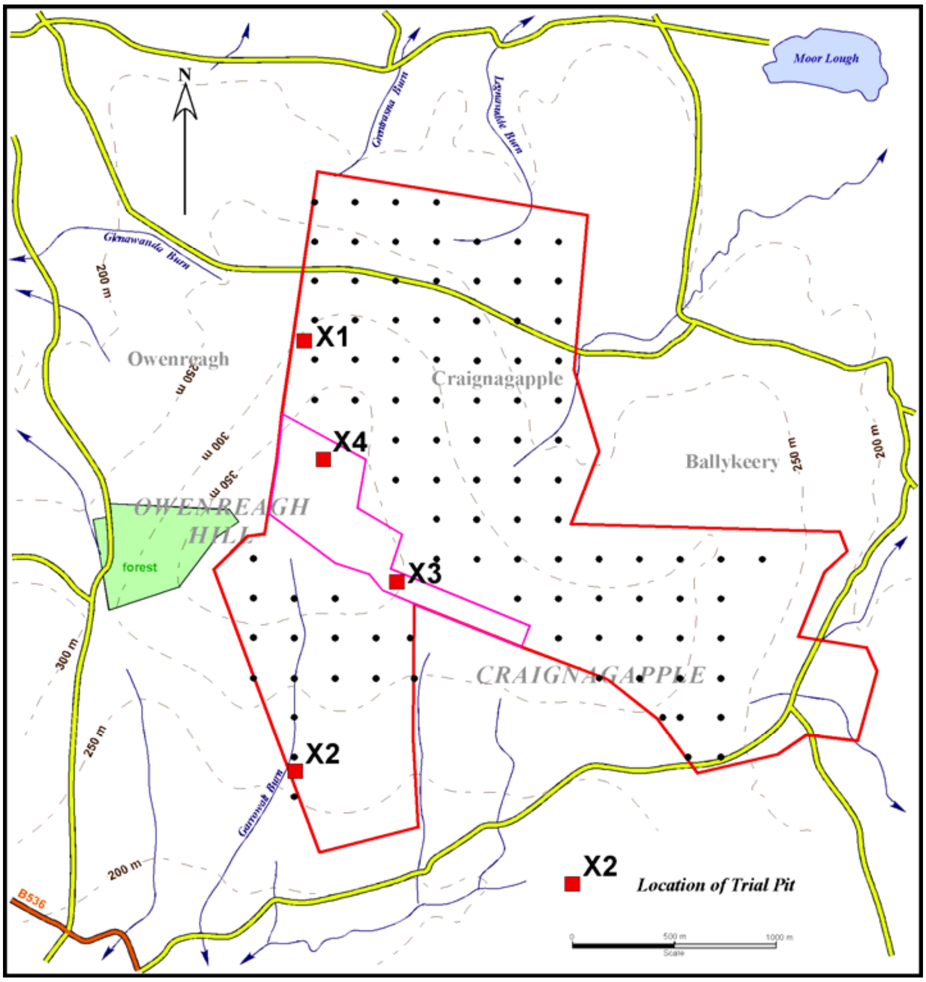
3.3 Sample Collection

Representative samples were collected at the peat profiles (see log sheets, Appendix C). The samples were placed in airtight plastic bags and submitted for laboratory testing.

Peat samples:-

Sample No T2/1: trial pit **X2**: depth 0.15 – 0.85 m – brown coarse fibrous peat
Sample No T3/2: trial pit **X4**: depth 0.25 – 1.15 m – brown fibrous peat
Sample No T3/3: trial pit **X4**: depth 1.15 – 2.05 m – dark brown fibrous peat

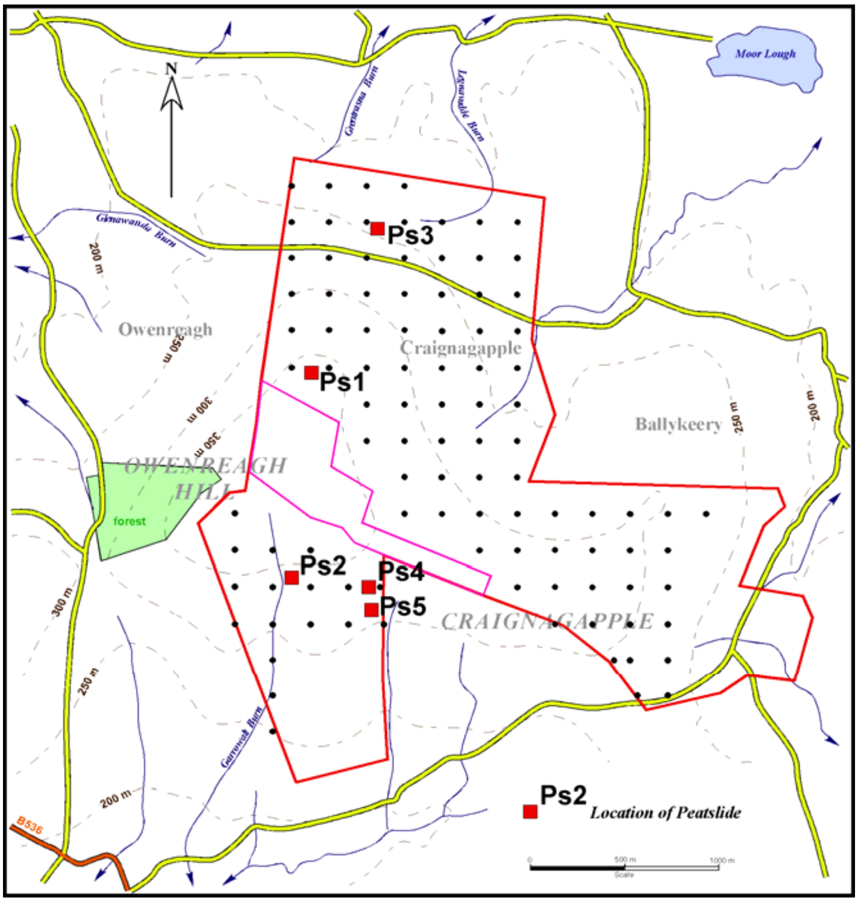
Figure 5 Locality Map for Peat Profile Logs at Craignagapple Wind Farm



3.4 Peatslide Inventory

Since previous peatslide activity around the wind farm site may serve as an indicator and guide to future slope movements, evidence of peat slope instability was sought in the field by walkover inspections. Peatslide localities are shown in Figure 6 and detailed descriptions are presented in Appendix D. Several ancient peatslide localities were identified along the banks of streams and rivers, usually around the outer bends of meanders, and are considered to be a normal part of the development of river systems.

Figure 6 Locality Map for Peatslide Sites at Craignagapple Wind Farm



3.5 Installations

No installations were considered warranted at this stage.

3.6 Sinkholes and Drainage

Sinkholes provide surface evidence of the presence of open subterranean conduits and appear uncommon throughout the site at Craignagapple. Only one collapsed pipe was encountered during the walkover (Figure 7). It lies at grid position IH 42988 969992 and measures approximately 1.5 m deep.

Figure 7 Collapsed Pipe Near E5 (view looking westwards)

The natural drainage characteristics of the area are affected in a few places by a network of man-made drainage channels. Widely spaced field drains cross areas of open moorland for agricultural improvement purposes at Craignagapple. These appear generally in a degraded condition but are extremely effective in draining surface water.

The presence of active subsurface drainage pipes in the peat profile is evident in several places but especially in the northern portion of the site. Surface indications include lines of reeds, grass lanes, sinkholes, seepage points and springs. However, no natural pipe outlets were observed in the banks of streams or ditches or in old turbary faces. Based on surface observations and using the scale given by Jones (1978) the pipe frequency across the bulk of the wind farm site is estimated at 15-25 per km^2 but increasing to about 30 per km^2 in the northern portion of the site.

According to Wilson & Smart (1984), the presence of subsurface pipes is thought to be a key contributory factor in preparing sites for failure. However, in the case of Craignagapple the surface drainage configurations appear favourable.

3.7 Peat Depths and Vane Shear Strengths

At any given site, the depth of penetration of a probe may provide a rough indication of the thickness of the peat profile. At Craignagapple wind farm site, a probe survey was carried out previously and areas of deep peat eliminated from further consideration. Depths encountered during this survey generally fall within the range of 0.2 m to 3.5 m with values less than 0.5 m commonplace. Deeper peat was found in several areas and values exceeding 2.5 m were recorded at grid positions D13, H4, I11, I13, J11 and K11. Although the results of the depth probings are interesting in their own right and useful for engineering design purposes, the benefits for peatslide assessment purposes appear limited. Indeed, typical depths of peat of only 0.80 m, 0. 61 m and 0.55 m are recorded at several well-known peatslide localities at Hart Hope (Warburton et al, 2003), Meldon Hill West (Crisp et al, 1964) and Llyn Ogwen (Nichol et al, 2007) respectively.

Vane testing was carried out on peat banks exposed along drainage ditches, old turbary faces and in shallow hand-dug pits. Undrained shear strength was measured using a hand-vane and the results of the test were taken as the average of three separate readings. Values varied between 10 and 50 kPa depending on degree of saturation but typically fell within the range 15-30 kPa. A wide scatter of results also existed and no noteworthy patterns were detected through the peat profile.

3.8 Terrain Analysis

One of the simplest and most efficient methods of evaluating peatslide risk involves the application of terrain evaluation procedures. The observational method used in this study was based primarily on the combined assessment of geomorphology, topography and geology by the trained-eye of a professional geo-engineer. However, other peatslide attributes of secondary importance also taken into consideration include orientation to the wind, orientation to the sun and forest cover. The findings are incorporated in the field data sheets in Appendix B and indicate the relative chance of slope failures occurring over time. The zones do not predict where peatslides will occur during the next rainfall event. Instead, it can be expected that over time, high susceptibility zones will experience more peatslides than lower susceptibility categories.

The analysis comprised two main components: desk study and field investigations. Three classes of peatslide susceptibility were adopted; Category I for low to very low susceptibility, Category II for moderate susceptibility and Category III for high to very high susceptibility.

The findings at Craignagapple wind farm project indicate that Category I zones predominate. Category II zones are restricted to the area around grid positions C5, C6 and C7 and Category III zones are present at grid positions B6 and B7.

4. LABORATORY TESTING

4.1 Testing Programme

The three samples collected from peat profiles at trial pits were quartered prior to testing. One portion was delivered to Jacobs Engineering Laboratory for determination of moisture content and another portion was used for microscopic examinations, Munsell colour determinations and von Post classifications. The other two portions were placed in air-tight plastic containers and stored for future reference if required.

Certificates of test and laboratory reports are assembled in Appendix E.

4.2 Results Summary

At Craignagapple, the surface vegetation consists predominantly of sphagnum mosses, heather, cotton grass, other grasses and reeds but diverse floras have been identified across various geomorphologies. The peat profile at Craignagapple comprises one principal layer of brown, fibrous, sphagnum-eriophorum peat between the present-day root mat at the top and the boundary with the underlying material at the bottom. The underlying material is either rock (e.g. trial pit X4) in areas of high ground or boulder clay (e.g. trial pits X1 & X3) elsewhere.

Based on the extended von Post classification system (Hobbs, 1986), the following engineering characterization of a representative peat profile at Craignagapple applies:-

S Er H_6 B_3 F_3 R_2 W_1 N_4 T_3 A_1 P_0 pH_L

Exposed faces in stream banks and turbary faces reveal a well-developed banded or laminated structure in the peat profile with marked variations in thicknesses of individual layers over short distances. Certain bands are highly fibrous with long fibres sparsely distributed. Typical moisture contents range from 500% to 700%, but in localized pockets, the moisture content is considerably higher. The moisture contents determined by laboratory testing were 547 %, 625 % and 544 % (see Appendix E).

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APPENDICES

1. PEATSLIDE HAZARD RATING SYSTEM FOR WIND FARM DEVELOPMENT PURPOSES

Peatslide hazard rating system for wind farm development purposes

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Introduction

Wind farm developments in peatland terrain are often susceptible to peatslide hazards. In 2002, a major peatslide associated with construction of a wind farm at Derrybrien, Ireland damaged two bridges, obstructed two roads and polluted watercourses and all work on the wind farm site ceased while engineers devised emergency measures to stem the flow of the slide (Fleming 2003). Following the events at Derrybren and because of the perception that increased human encroachment onto peatland has created an increase in the incidence of peatslides the need has arisen for a procedure to assess the hazard. Moreover, the interests of wind farm developers are also best served by addressing peatslide potential at an early stage because failure to deal with the matter may give rise to very expensive delays during the design, planning approval and construction phases.

The Peatslide Hazard Rating System (PHRS) is intended to be a proactive tool to rationally address peatslide hazards and provide a defensible, standardised way to assess priority by numerically differentiating the apparent risk at potential peatslide sites.

Hazard rating systems are used extensively for the engineering assessment of landslips, debris flows and rockfall along transportation corridors and internationally they have received wide acclaim (e.g. Miller, 2003; McMillan & Matheson, 1998; Winters et al, 2005). However, the existing systems appear unsuited to the assessment of peatslide potential on wind farm projects and so a new procedure was required. For example, much shallower slopes are required for peatslides than for other types of landslide and other contributory factors have different parts to play. After considering the range of options available, the hazard rating system developed by Pierson (1992) for the USA Federal Highway Administration (FHWA) for assessments of rockfall was adopted as the prototype for a Peatslide Hazard Rating System (PHRS). We simply modified, tailored and customised the original FHWA system into a peatslide hazard assessment protocol (Nichol, 2006).

Development of the PHRS system has included testing and validation at 3 sites to confirm a realistic set of values for each category. As far as the system has been developed and applied to date, several of the categories have been modified on the basis of the experience gained. In particular, the design of field survey forms have undergone extensive revision based on the field experience gained at different wind farm projects. Hopefully, it can now be implemented at a far greater number of sites to ensure a consistent approach to the problem that exists.

Description of System

The PHRS is a two-step process that provides a rational way to make informed decisions about peatslide risk across a site and to develop programmes aimed at reducing the peatslide risk at the worst sites.

The first step involves a walkover survey that allows a properly trained and experienced geo-engineer to gain an appreciation of the site and consider the best way to approach its subdivision into zones of similar levels of PHRS interest. Whereas grouping too many separate site segments into one long PHRS zone will diminish the value and the flexibility of the resulting database, too many PHRS zones may become cumbersome and difficult to manage. Some localities may have been previously subdivided into segments for other purposes and these may be appropriate to adopt as PHRS zones. It is important during this stage to also take account of the aim of the PHRS survey and the proposed end-use at the site. Since it is essentially a subjective evaluation of the peatslide potential, geo-engineering judgements need to be made by experienced and insightful personnel.

The PHRS is primarily concerned with the peatslide potential at sites such as turbine positions and access track routes and so the second step involves detailed rating of each PHRS zone. The criterion of the estimated potential for peatslides is therefore the controlling element of this rating. These hazard factors are summarised in Table 1 and described in detail in the subsequent sections.

Table 1: Peatslide Hazard Rating System (PHRS) – Summary of hazard factors.

Category	Rating criteria and score			
	Points 3	**Points 9**	**Points 27**	**Points 81**
Rainfall and climate	Low to moderate precipitation	Moderate precipitation	High precipitation	Very high precipitation
Presence of water on slope	No water on slope; Few water bodies	Intermittent water on slope; Occasional water bodies	Continual water on slope Many water bodies	Continual water on slope Major water bodies
Rockhead or subsoil	Rough and irregular rockhead or granular subsoil of sand and gravel	Undulating rockhead or granular subsoil	Planar and regular rockhead or cohesive subsoil	Smooth, polished and regular rockhead or cohesive subsoil of clay
Peat profile and depth	Single layer profile less than 1 m deep	Double layer profile less than 2 m deep	Triple layer profile greater than 2 m deep	Complex profile greater than 4 m deep
Peat strength (vane shear test)	40 kPa	30 kPa	20 kPa	10 kPa
Slope and slope regularity	2°; even	5°; uneven	10°; irregular	15°; very irregular
Geomorphology and site history	Few differential erosion features	Occasional erosion features	Many erosion features	Major erosion features
Sub-profile drainage	Few pipes	Occasional pipes	Many pipes	Many pipes and sinkholes
Peatslide history	Few slides	Occasional slides	Many slides	Major peatslide events
Potential peatslide severity	Few consequences; small impacted area	Minor consequences; minor impacted area	Many consequences; large impacted area	Major consequences; large impacted area

The Detailed Rating System

The detailed rating includes 10 categories that when evaluated, scored and totalled, allow one to numerically differentiate sites from the least to the most hazardous. Sites with higher scores present the highest risk. These 10 categories represent the significant elements of a peatslide prone location that contribute to the overall hazard.

In Table 1, the four columns of criteria on the right correspond to logical breaks in the increasing risk associated with each category. Accordingly, the benchmark scores above each column increase from left to right exponentially from 3 to 81. An exponential system provides a rapid increase in score that distinguishes the more hazardous sites. The set scores are representative of a continuum of points ranging from 1 to 100. Using a continuum of points instead of only the benchmark points listed at the top of each column allows the rater flexibility in evaluating the relative impact of conditions that are extremely variable.

To assist with scoring, the users manual includes a scoring graph for each category. The curve on the graph defines the cubic exponential scoring system used for all categories. The graph relates the category evaluation to an appropriate score (e.g. Fig. 1). Even with subjective categories such as peatslide history, the graph is quite useful in assigning a score to a condition that falls somewhere between the described benchmarks. A final hazard score for a given site is then obtained by summing the scores from each contributory factor.

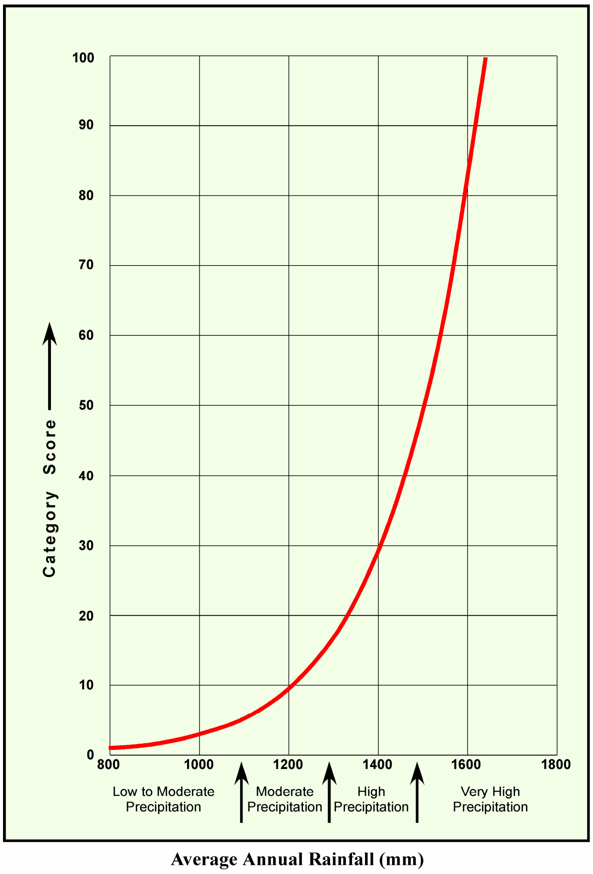

Fig. 1. Example of graph from users manual for rainfall and climate.

Before decisions can be made on how to score a peatslide section, the criteria for each category must be well understood and carefully considered and based on sound engineering judgement. This is crucial in relation to border-line cases to make sure the overall scores provide a fair and balanced representation of the site in question.

Rainfall and climate

The role of rainfall is the most important contributory factor for peatslides. Areas receiving high rainfall have more potential for peatslides than areas of low rainfall. Measurement is based on the average annual rainfall in mm for the nearest weather station and generally within the range 800-1800 mm per year. For higher levels of rainfall the maximum score of 100 applies. The rater may adjust the score within a discretionary maximum of 10 points to take account of elevation, slope aspect, exposure to winds, etc.

Water on slope

The wetness conditions of the ground are evaluated with this category. If water is known to flow continually or intermittently from the site, it is rated accordingly. This is combined with observations on the presence of streams, rivers, pools, lochs or other bodies of water that affect the wetness of the site. Comparisons are also made with the terrain conditions found at established sites of peatslides elsewhere. The following guidance applies :-

3 points	No water on slope – Dry ground.
9 points	Intermittent water on slope – Occasional pools and streamlets.
27 points	Continual water on slopes – Streams and ponds. Wet ground
81 points	Continual water on slopes – Rivers and lochs. Saturated ground

Rockhead or subsoil

The geologic conditions of the surface at engineering rockhead are evaluated with this category. The first case applies to solid rock and distinguishes between a smooth, polished and even rockhead surface and one that is rough and irregular. The second case applies where engineering rockhead consists of unconsolidated surficial or drift deposits and the distinction is made between cohesive subsoils of clay and granular subsoils of sand and gravel (Fig. 2).

This parameter directly relates to the potential for a block of peat to move relative to the rockhead surface. Friction along the surface is governed by the macro and micro roughness. Macro roughness is the degree of undulation on the surface whereas micro roughness is the texture of the surface itself. In addition, the presence of a impervious clay or rock at engineering rockhead may give rise to perched water tables and an increase in the peatslide potential. Peatslide potential is also greater in areas where the engineering rockhead surface contains highly weathered or hydrothermally altered products or where previous movements have given rise to slickensides.

Fig. 2. Initiation point of a shallow peatslide on a rockhead of coarse gravel and smooth rock.

Peat profile and depth

The characteristics of the peat profile are considered in this category and the distinction is made between complex profiles of deep peat that receive high scores and thin, simple, single-layer profiles that receive low ones. As far as possible, scoring should be consistent with the following scheme :-

3 points	Single layer profile of peat less than 1 m deep
9 points	Double layer profile of peat less than 2 m deep
27 points	Triple layer profile of peat greater than 2 m deep
81 points	Complex profile of peat greater than 4 m deep

The rater needs to consider several factors in estimating peat profile characteristics and not overstate the significance of peat depths obtained by probing. Other factors include von Post classification (after Hobbs, 1986) and particularly H-values (humification), M-values (moisture content) and F- and R-values (fibre content).

Peat strength (vane shear test)

Peat strength is notoriously difficult to measure. However, the hand vane provides an approximate indication and can be used to collect readings in cuttings, stream banks and shallow hand-dug pits. Lowest strength values should be used for scoring purposes. Scores are allocated based on results in the range 0-50 kPa.

Slope and slope regularity

Peat profiles resting on steep slopes have more potential energy than those on gentle slopes; thus they present a greater hazard and receive a higher rating (Fig. 3). Measurement is on the steepest slope in the section, preferably determined in the field using a clinometer or the results of a theodolite survey of the site. However, a good approximation of slope angle can also be obtained using the contour lines on a topographic map.
The rater may adjust the score by a discretionary maximum of 10 points to take account of slope regularity, outcrops of rock, presence of tracks, etc.

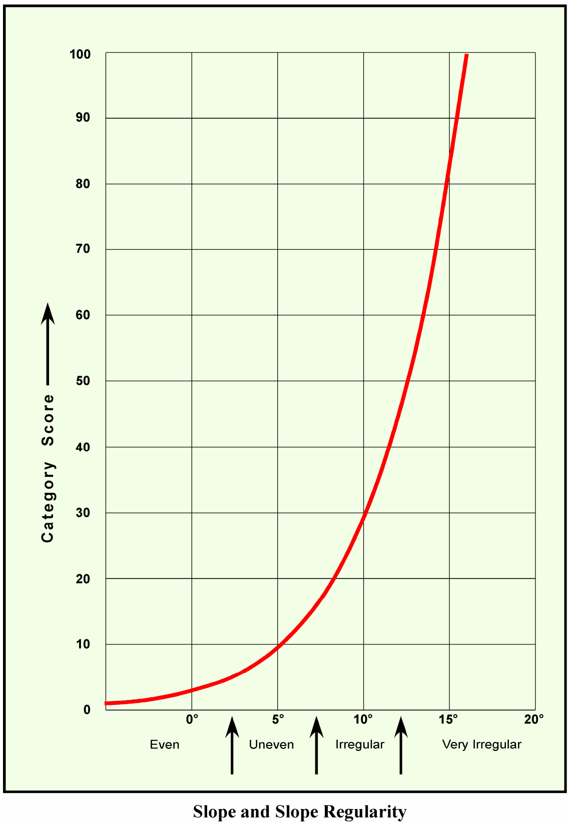

Fig. 3. Example of graph from users manual for angle and regularity of slope.

Geomorphology and site history

Natural erosion features such as hags, mounds, ridges, pools, incised streams as well as disruption of the ground surface by grazing, burning, forestry, drainage ditches, tracks, fence-lines and man-made cuttings for fuel, all affect the integrity of the near surface layers of peat and particularly the tensile strength of the root-mat. In addition, they may create localised oversteepening of slopes or unsupported blocks of peat.
The degree of hazard caused by erosion and degradation and thus the score given in this category should reflect how quickly erosion and degradation are taking place, the size of blocks or units being exposed and the amount of material being released.

Sub-profile drainage

Natural soil pipe networks are a localized feature in most peatland areas. The pipes comprise smooth walled approximately circular conduits or tunnels typically about 10-50 mm diameter; some pipes are over 150 m long. Since the presence of subterranean water courses may lead to the saturation of the local areas of peat, they give rise to an increase in the chance of peatsliding. The pipes can form throughout the peat profile, at the peat-substrate interface, or entirely within the subsoil but they usually occur at the contact between two layers of contrasting engineering properties. Large pipes may collapse and become open gullies. However, since the may underlie as much as 5 % of an area of peatland, the initial problem is to determine the location and distribution of piping. In most instances they may be discerned based on surface observation such as seepage points, sinkholes, grass lanes and lines of reeds.

According to Jones (1978) it seems clear that pipes, whilst not restricted to upland regions do occur more frequently in the uplands. In addition, based on a study of 180 catchments, Holden (2004) noted significantly higher soil pipe densities in catchments with peats dominated by Calluna species and also in catchments that are artificially drained.

Table 2. Soil pipe networks – type localities and typical pipe frequency counts.

Locality	Reference	Type	No of pipes per km of transect
Burbage Brook, Hathersage, Peak District	Jones (1978)	steep upland	100
Afon Cerist, Dinas Mawddwy, Gwynedd	Jones (1978)	upland	80
Cerrig yr Wyn, Cambria	Holden et al (2002)	upland	56
Nant Gerig, Cambria	Holden et al (2002)	upland	36
Maesnant, Plynlimon (mid-Wales)	Jones (1978)	intermediate	16
Little Dodgen Pot Sike, North Pennines	Holden et al (2002)	upland moor	10
Bourn Brook, Cambridge	Jones (1978)	lowland	7
New Forest	Jones (1978)	lowland	0

Simple frequency counts of the occurrence of pipe outlets in stream banks are available for a wide range of geomorphologies and a selection of typical values is given in Table 2 that can be used on a comparative basis to estimate pipe density at other sites. The actual fall-off in pipe frequency from uplands to lowlands is probably even greater than these counts suggest.

Peatslide history

Since the pre-existence of peatslides is considered to be a good predictor of future instability, this category directly represents the known peatslide activity at the site. It is best obtained during walkover surveys and also by reference to air photos and discussions with local landowners (Fig. 4). However, there may be no history available and so as far as possible, the following guidance should be followed: -

3 points — Few slides – Small peatslides have occurred several times according to historical information but it is not a persistent problem. If peatslides occur rarely or only during severe storms this category should be used. This category is also used if no peatslide history data is available.

9 points — Occasional slides – Small peatslides occur regularly and can be expected during most storms.

27 points — Many slides – Large slides are also present as a noteworthy feature of the site.

81 points — Major peatslide events –Peatslide events occur frequently throughout the year and severe events are common.

Fig. 4. Major peatslide on hillside showing head, track and run-out zones.

Potential peatslide severity

This is perhaps the most non-technical and subjective category to score because the potential consequences of a peatslide are difficult to surmise. Consideration should be given to potential impacts on (a) people, cattle and sheep, (b) physical assets such as roads, bridges, houses, fences etc, (c) environmental assets such as flora, fauna, landscape, water bodies, etc. It is also important to consider the size of an impacted area and distinguish large from small by using an appropriate score. Another consideration involves potential costs and delays to development projects and also the costs involved in any clean-up and subsequent site maintenance. And most difficult of all, potential recovery times that may apply for example in relation to fish stocks or revegetation etc.

Rated section length

Although the rated section length is not used for scoring purposes, it provides a useful measure in the scoring table as another means of attaching relative weight or significance to each PHRS zone. The heading itself is also useful for recording landmarks such as turbine positions.

Other considerations

In addition to scoring the above categories, the rating team should take photographs of significant features that influence the scores. They should also gather enough field information to recommend the most appropriate or suitable mitigation and/or remedial measures. Both total fix and hazard reduction strategies should be considered.

PHRS scores are intended as a means of comparing different sites and as a tool for prioritising risk reduction measures and mitigation works. The PHRS system itself does not attach any particular significance to the total score for each site and leaves it to the professional project engineers to draw their own conclusions based on an understanding of the local conditions that apply. However, as rule of thumb, sites with a rating of less than 200 are assigned a low priority while those with a rating of more than 400 are identified for urgent attention.

Total PHRS scores of 373, 482 and 434 apply in relation to the well-established peatslide localities at Morsgail, Isle of Lewis, Scotland (Bowes, 1960), Derrybrien, Galway, Republic of Ireland (Fleming 2003) and Hart Hope, North Pennines, England (Warburton et al, 2003) respectively (see Table 3).

Table 3. Peatslide Hazard Rating System (PHRS) results for established peatslide localities.

Zone / Site	Morsgail,	Lewis	Derrybrien,	Galway	Hart Hope,	Pennines
	Value	Score	Value	Score	Value	Score
Rainfall and climate	1600	81	1750	100	1100	6
Presence of water on slope		29		9		40
Rockhead or subsoil		55		75		80
Zone length (m)	220		180		550	
Peat profile and depth (m)	2.2	18	2.0	15	0.8	6
Peat strength – vane shear (kPa)	20	27	9	90	14	53
Slope and slope regularity	15^{o}	81	8^{o}	22	9^{o}	26
Geomorphology and site history		36		30		55
Sub-profile drainage		25		27		42
Peatslide history		11		34		88
Potential peatslide severity		10		80		38
Total		373		482		434

To illustrate the variation in PHRS scores, total scores for 3 typical wind farm projects prior to peatslide risk reduction measures (A, B & C) are plotted on Figure 5 together with those for the peatslide localities listed in Table 3. Interestingly, this scattergram also demonstrates how the PHRS system was validated. Although Figure 5 shows single spot identifiers for total scores, results for say, turbine positions may be plotted as a cluster of points or as a bar showing the range of results obtained.

In addition, PHRS scores are extremely useful for project design purposes and for recognising opportunities for peatslide hazard mitigation. Appropriate engineering responses include deleting or repositioning turbine positions and access road routes, supplementary drainage works, slope engineering or ground stabilization.

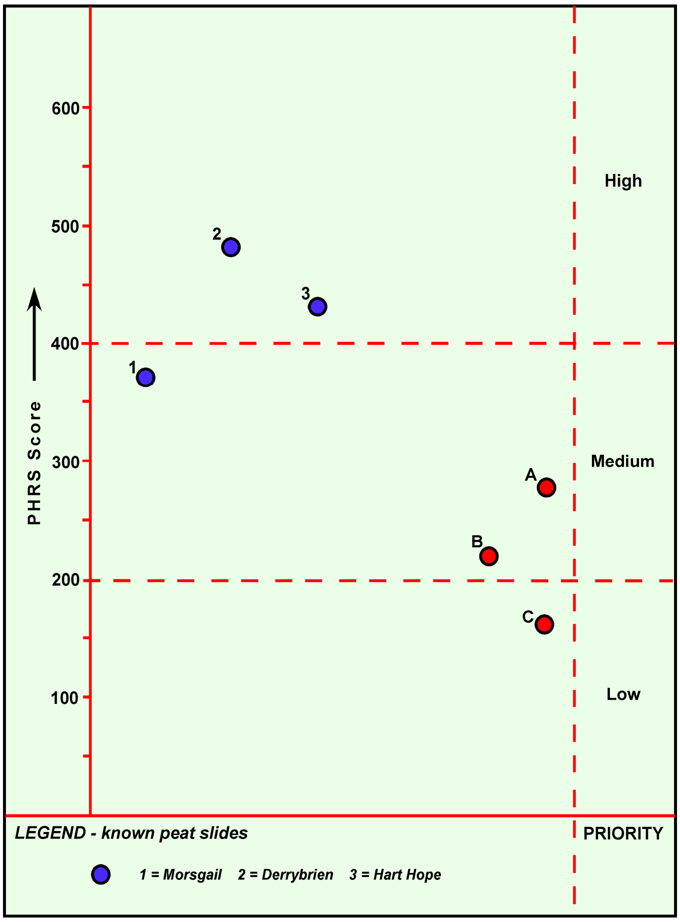

Fig. 5. Scattergram of PHRS scores for peatlide localities and 3 wind farm sites.

Conclusions

In this study, a Peatslide Hazard Rating System (PHRS) has been developed as a useful tool to rationally address peatslide hazards and provide a defensible, standardised way to assess priority by numerically differentiating the apparent risk at potential peatslide sites. As a screening tool it identifies high and low risk segments of a site so that high risk segments may be identified for further investigations.

The main factors affecting peatslide potential are rainfall, water on slope, rockhead, peat profile and depth, peat strength, slope, geomorphology, sub-profile drainage, peatslide history and severity. These factors are evaluated using a scoring matrix and the findings used as a means of comparing different sites and estimating the significance of the peatslide hazard.

Three case histories were considered to verify the appropriateness of the system and initial findings appear very promising for predicting the levels of risk associated with peatslides on peatland sites being considered for wind farm development projects.

Acknowledgements

The contributions and feedback from various colleagues at Enviros Ltd including Beverley Walker are appreciated.

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2. FIELD DATA AND PHRS SCORING SHEETS

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**A11**
Co-ords: X ..242000......	**Y** … 395800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1547 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Numerous field drains nearby	… … **2**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…multiple layers. Peat depth …1.59 m (1.5 m)	Peat	……… …… **11**…………
Peat strength (vane shear test) Reading No 1……14 kPa Reading No 2……17 kPa Reading No 3……18 kPa	Use 15 kPa	……….. **45**…………
Slope angle……6°………… Slope regularity…uneven….	Undulating and hummocky ground	…… … … **12**………
Geomorphology & site history: …… ….	Upper hillside Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **1**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **94**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**A12**
Co-ords: X ..242000......	**Y** … 395600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1548 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Numerous field drains and ditch nearby	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…multiple layers. Peat depth …1.77 m (2.0 m)	Peat	……… …… **12**…………
Peat strength (vane shear test) Reading No 1……42 kPa Reading No 2……38 kPa Reading No 3……39 kPa	Use 38 kPa	………… **4**………….
Slope angle……10^{o}………… Slope regularity…uneven….	Undulating and irregular	…… … … **28**………
Geomorphology & site history: …… ….	Upper hillside. Old turbary nearby. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… 71

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**A13**
Co-ords: X ..242000......	**Y** … 395400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1549 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Field drains nearby	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…simple Peat depth …1.91 m (2.0 m)	Peat	……… …… **13**…………
Peat strength (vane shear test) Reading No 1……22 kPa Reading No 2……23 kPa Reading No 3……25 kPa	Use 23 kPa	………… **17**…………
Slope angle……7^{o}………… Slope regularity…uneven….	Undulating	…… … … **15**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **69**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**A14**
Co-ords: X ..242000......	**Y** … 395200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1555 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **1**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …0.43 m (0.4 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……13 kPa Reading No 2……12 kPa Reading No 3……15 kPa	Use 12 kPa	……….. **68**…………
Slope angle……7°………… Slope regularity…even….	Gently undulating	…… … … **15**………
Geomorphology & site history: …… ….	Field on mid-hillside Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **2**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **3**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **113**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B2**
Co-ords: X ..242300......	**Y** … 397600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1520 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry. Stream alongside	… … **3**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.66 m (0.6 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……13 kPa Reading No 2……14 kPa Reading No 3……15 kPa	Use 13 kPa	………… **55**…………
Slope angle……8°………… Slope regularity…uneven….	Undulating	…… … … **21**………
Geomorphology & site history: …… ….	Upper hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Lines of reeds nearby	………… … **15**………
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **120**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum as well as lines of reeds

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **I**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B3**
Co-ords: X ..242300......	**Y** … 397400....	**Ref:** ...-

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1509 looking southwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.92 m (0.7 m)	Peat	……… … … **4**…………
Peat strength (vane shear test) Reading No 1……23 kPa Reading No 2……26 kPa Reading No 3……24 kPa	Use 24 kPa	………… **16**…………
Slope angle……3°………… Slope regularity…uneven….	Gently undulating	…… … … **6**………
Geomorphology & site history: …… ….	Upper hillside, Old turbary nearby. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	Lines of reeds in neighbouring field	………… … **5**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… 60

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B4**
Co-ords: X ..242300......	**Y** … 397200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1521 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	……….. **5**…………….
Peat profile…simple. Peat depth …0.97 m (0.7 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……31 kPa Reading No 2……29 kPa Reading No 3……29 kPa	Use 29 kPa	……….. **11**………...
Slope angle……13^{o}………… Slope regularity…uneven….	Undulating	…… … … **46**………
Geomorphology & site history: …… ….	Lower hillside Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **2**……….
Peatslide history ………. ……………………………….	No evidence	……….. … **3**…………
Potential peatslide severity ……………………	Road immediately downslope	……… … **11**……………..
		TOTAL SCORE:… **95**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B5**
Co-ords: X ..242300......	**Y** … 397000....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1537 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Gravelly boulder clay	……….. **4**………………
Peat profile…simple. Peat depth …0.97 m (0.0 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……27 kPa Reading No 2……23 kPa Reading No 3……28 kPa	Use 24 kPa	……….. **16**…………
Slope angle……6°………… Slope regularity…uneven….	Undulating and hummocky ground	…… … … **12**………
Geomorphology & site history: …… ….	Alongside access road Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **1**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **4**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **57**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B6**
Co-ords: X ..242300......	**Y** … 396800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1539 looking south-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry. Drainage ditch nearby	… … **3**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.29 m (1.1 m)	Peat	……… …… **2**…………
Peat strength (vane shear test) Reading No 1……40 kPa Reading No 2……38 kPa Reading No 3……39 kPa	Use 38 kPa	………… **4**…………
Slope angle……8°………… Slope regularity…uneven….	Undulating	…… … … **21**………
Geomorphology & site history: …… ….	Upper hillside Rough grazing	………… … **86**……………..
Sub-profile drainage pipes ………………………..	Patches of reeds	………… … **15**………
Peatslide history ………. ………………………………..	Major peatslide nearby	………… … **86**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **232**

COMMENTS:

Surface vegetation of heather, reeds, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category III

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………B7**
Co-ords: X ..242300......	**Y** … 396600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1545 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.17 m (2.0 m)	Peat	……… …… **6**…………
Peat strength (vane shear test) Reading No 1……13 kPa Reading No 2……14 kPa Reading No 3……17 kPa	Use 14 kPa	………… **45**…………
Slope angle……4^{o}………… Slope regularity…uneven….	Gently undulating	…… … … **8**………
Geomorphology & site history: …… ….	Collapsed ground nearby Rough grazing	………… … **86**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **16**………
Peatslide history ………. ………………………………..	No evidence	………… … **86**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… 265

COMMENTS:

Surface vegetation of heather, grasses, reeds and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **III**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………B12**
Co-ords: X ..242200……	**Y** … 395600….	**Ref:** …-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey….N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1570 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Damp ground with stream adjacent	… … **6**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.10 m (0.9 m)	Peat	……… …… **6**…………
Peat strength (vane shear test) Reading No 1……19 kPa Reading No 2……17 kPa Reading No 3……18 kPa	Use 17 kPa	………… **34**…………
Slope angle……10^{o}………… Slope regularity…uneven….		…… … … **28**………
Geomorphology & site history: …… ….	Old turbary nearby. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	Reedy patches nearby	………… … **14**………
Peatslide history ………. ………………………………..	Localised slumps nearby	………… … **13**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… 123

COMMENTS:

Surface vegetation of reeds, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B13**
Co-ords: X ..242200......	**Y** … 395400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1569 looking south-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Ditch adjacent	… … **4**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.89 m (1.6 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……16 kPa Reading No 2……17 kPa Reading No 3……19 kPa	Use 17 kPa	………… **34**…………
Slope angle……6°………… Slope regularity…uneven….	Undulating and irregular	…… … … **12**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	………… … **8**……………..
Sub-profile drainage pipes ………………………..	Lines of reeds	………… **17**………..
Peatslide history ………. ………………………………..	Minor slumps in nearby banks	………… … **29**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **121**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B14**
Co-ords: X ..242200......	**Y** … 395200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1554 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Stream alongside	… … **4**……………
Rockhead / Subsoil	Boulder clay and rocks	………… **3**………………
Peat profile…simple. Peat depth …0.15 m (0.0 m)	Peat	……… …… **1**…………
Peat strength (vane shear test) Reading No 1……33 kPa Reading No 2……34 kPa Reading No 3……32 kPa	Use 32 kPa	………… **6**…………
Slope angle……8°………… Slope regularity…uneven….	Undulating and irregular	…… … … **21**………
Geomorphology & site history: …… ….	Upper streambank on mid-hillside. Rough grazing	………… … **8**……………..
Sub-profile drainage pipes ………………………..	Patches of reeds nearby	………… … **14**………
Peatslide history ………. ………………………………..	Streambank failures nearby	………… … **21**…………
Potential peatslide severity ……………………	Stream adjacent	……… … **16**……………..
		TOTAL SCORE:… **99**

COMMENTS:

Surface vegetation of reeds, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B15**
Co-ords: X ..242200......	**Y** … 395000....	**Ref:** ...-

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1553 looking westwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Adjacent to stream	… … **4**……………
Rockhead / Subsoil	Boulder clay overlying rockhead (see photo)	………… **4**………………
Peat profile…simple. Peat depth …0.80 m (0.8 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……28 kPa Reading No 2……30 kPa Reading No 3……29 kPa	Use 29 kPa	………… **11**…………
Slope angle……9°………… Slope regularity…uneven….	Undulating	…… … … **25**………
Geomorphology & site history: …… ….	Streambank on mid-hillside Rough grazing	………… … **8**……………..
Sub-profile drainage pipes ………………………..	Reedy flush nearby	………… … **15**………
Peatslide history ………. ………………………………..	Streambank failures opposite (see photo)	………… … **8**…………
Potential peatslide severity ……………………	Stream adjacent	……… **16**……………..
		TOTAL SCORE:… **100**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**B16**
Co-ords: X ..242200......	**Y** … 394800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1552 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…simple. Peat depth …1.02 m (1.6 m)	Peat	……… …… **5**…………
Peat strength (vane shear test) Reading No 1……32 kPa Reading No 2……30 kPa Reading No 3……30 kPa	Use 30 kPa	………… **9**………….
Slope angle……14°………… Slope regularity…uneven….	Undulating ground on upper bank of stream	…… … … **75**………
Geomorphology & site history: …… ….	Old turbary adjacent Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **117**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..242200......	**Location: Northern Ireland** **Y** … 394600....	**Landmark:**…………**B17** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1550 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …0.25 m (1.2 m)	Peat	……… …… **2**…………
Peat strength (vane shear test) Reading No 1……12 kPa Reading No 2……13 kPa Reading No 3……15 kPa	Use 13 kPa	……….. **55**…………
Slope angle……6^{o}………… Slope regularity…even….	Gently undulating ground	…… … … **12**………
Geomorphology & site history: …… ….	Low rounded hillside. Track nearby. Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **2**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **3**…………
Potential peatslide severity ……………………	Dwellings in downslope areas	……… … **15**……………..
		TOTAL SCORE:… **107**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**C2**
Co-ords: X ..242500......	**Y** … 397600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1519 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry. Stream adjacent	… … **3**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …0.74 m (1.0 m)	Peat	……… …… **3**………..
Peat strength (vane shear test) Reading No 1……35 kPa Reading No 2……36 kPa Reading No 3……40 kPa	Use 36 kPa	……….. **4**…………
Slope angle……8°………… Slope regularity…uneven….	Undulating	…… … … **21**………
Geomorphology & site history: …… ….	Streambank Rough grazing	……….. … **8**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **2**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **3**………..
Potential peatslide severity ……………………	Stream adjacent	……… … **8**……………..
		TOTAL SCORE:… **62**

COMMENTS:

Surface vegetation of heather with some grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **I**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**C3**
Co-ords: X ..242500......	**Y** … 397400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1510 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …1.80 m (1.9 m)	Peat	……… …… **13**…………
Peat strength (vane shear test) Reading No 1……14 kPa Reading No 2……17 kPa Reading No 3……15 kPa	Use 14 kPa	……….. **46**…………
Slope angle……5°………… Slope regularity…uneven….	Gently undulating ground	…… … … **10**………
Geomorphology & site history: …… ….	Head of reedy flush Rough grazing	……….. … **18**……………..
Sub-profile drainage pipes ………………………..	Lines of reeds nearby	……….. … **7**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **113**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum. Dense patch of reeds nearby

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**C4**
Co-ords: X ..242500......	**Y** … 397200....	**Ref:** ...boundary position

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1522 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry. Reedy flush nearby	… … **6**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …0.91 m (1.0 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……45 kPa Reading No 2……47 kPa Reading No 3……48 kPa	Use 45 kPa	……….. **2**…………
Slope angle……5°………… Slope regularity…uneven….	Undulating	…… … … **10**………
Geomorphology & site history: …… ….	Head of reedy flush Rough grazing	……….. … **18**……………..
Sub-profile drainage pipes ………………………..	Reedy flush adjacent	……….. … **9**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Road in downslope area	……… … **11**……………..
		TOTAL SCORE:… **72**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………C5**
Co-ords: X ..242500......	**Y** … 397800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1536 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…simple. Peat depth …0.27 m (0.5 m)	Peat	……… …… **2**…………
Peat strength (vane shear test) Reading No 1……14 kPa Reading No 2……12 kPa Reading No 3……13 kPa	Use 12 kPa	………… **68**…………
Slope angle……9°………… Slope regularity…uneven….	Undulating	…… … … **25**………
Geomorphology & site history: …… ….	Head of reedy flush Rough grazing	………… … **18**……………..
Sub-profile drainage pipes ………………………..	Patches of reeds nearby	………… … **27**………
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **157**

COMMENTS:

Surface vegetation of reeds, heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **II**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**C6**
Co-ords: X ..242500......	**Y** … 396800....	**Ref:** ...-

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1540 looking southwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Occasional pools	… … **8**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.95 m (1.8 m)	Peat	……… …… **13**…………
Peat strength (vane shear test) Reading No 1……29 kPa Reading No 2……27 kPa Reading No 3……28 kPa	Use 27 kPa	………… **12**…………
Slope angle……9°………… Slope regularity…uneven….	Undulating ground	…… … … **25**………
Geomorphology & site history: …… ….	Overgrown turbary area Rough grazing	………… … **12**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	Old peatslide nearby	………… … **17**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **103**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category II

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**C7**
Co-ords: X ..242500......	**Y** … 396600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1541 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…multiple layers. Peat depth …1.74 m (1.6 m)	Peat	……… …… **12**…………
Peat strength (vane shear test) Reading No 1……18 kPa Reading No 2……19 kPa Reading No 3……18 kPa	Use 18 kPa	………… **32**…………
Slope angle……4^{o}………… Slope regularity…uneven….	Gently undulating ground	…… … … **6**………
Geomorphology & site history: …… ….	Platform area on upper hillside. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	Major peatslide nearby	………… … **86**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **164**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category II

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..242400......	**Location: Northern Ireland** **Y** … 395600....	**Landmark:**…………**C12** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1571 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Drainage ditch adjacent	… … **4**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.29 m (0.8 m)	Peat	……… …… **7**…………
Peat strength (vane shear test) Reading No 1……13 kPa Reading No 2……12 kPa Reading No 3……18 kPa	Use 12 kPa	………… **68**…………
Slope angle……5^{o}………… Slope regularity…uneven….	Undulating	…… … … **10**………
Geomorphology & site history: …… ….	Upper hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **4**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **112**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**C13**
Co-ords: X ..242400......	**Y** … 395400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1566 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Wet patches and occasional pools	… … **8**……………
Rockhead / Subsoil	Boulder clay and rocks	………… **3**………………
Peat profile…simple. Peat depth …1.92 m (2.1 m)	Peat	……… …… **13**…………
Peat strength (vane shear test) Reading No 1……29 kPa Reading No 2……27 kPa Reading No 3……32 kPa	Use 28 kPa	………… **12**…………
Slope angle……5°………… Slope regularity…even….	Platform area on upper hillside	…… … … **10**………
Geomorphology & site history: …… ….	Small plantation of pines nearby. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	Patches of reeds	………… … **8**……….
Peatslide history ………. ………………………………..	Minor slumps and disturbed ground nearby	………… … **6**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **77**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum with clumps of reeds

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **I**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**C14**
Co-ords: X ..242400......	**Y** … 395200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1556 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.11 m (1.1 m)	Peat	……… …… **5**…………
Peat strength (vane shear test) Reading No 1……24 kPa Reading No 2……31 kPa Reading No 3……42 kPa	Use 25 kPa	………… **15**…………
Slope angle……5°………… Slope regularity…uneven….	Undulating	…… … … **10**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **55**

COMMENTS:

Surface vegetation of grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**D2**
Co-ords: X ..242700......	**Y** … 397600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1518 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry. Stream adjacent	… … **3**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.42 m (0.4 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……15 kPa Reading No 2……17 kPa Reading No 3……18 kPa	Use 15 kPa	………… **45**…………
Slope angle……7^{o}………… Slope regularity…uneven….	Undulating	…… … … **15**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Grass lanes nearby	………… … **50**………
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… 139

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**D3**
Co-ords: X ..242700......	**Y** … 397400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1511 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry. Reedy flush nearby	… … **4**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.74 m (0.3 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……27 kPa Reading No 2……27 kPa Reading No 3……28 kPa	Use 27 kPa	………… **12**…………
Slope angle……3^{o}………… Slope regularity…uneven….	Undulating	…… … … **6**………
Geomorphology & site history: …… ….	On bank alongside reedy flush. Rough grazing	………… **18**……………..
Sub-profile drainage pipes ………………………..	Reedy flush adjacent	………… … **23**………
Peatslide history ………. ………………………………..	Minor peatslide on bank nearby	………… … **19**…………
Potential peatslide severity ……………………	Low	……… … **7**……………..
		TOTAL SCORE:… **102**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum with patch of reeds nearby

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**D4**
Co-ords: X ..242700......	**Y** … 397200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1523 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…multiple layers. Peat depth …0.38 m (0.0 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……15 kPa Reading No 2……17 kPa Reading No 3……18 kPa	Use 16 kPa	………… **40**…………
Slope angle……1^{o}………… Slope regularity…uneven….		…… … … **2**………
Geomorphology & site history: …… ….	Old roadside quarry nearby Rough grazing	………… … **13**……………..
Sub-profile drainage pipes ………………………..	Reedy patches and grass lanes nearby	………… … **21**………
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Road adjacent	……… … **11**……………..
		TOTAL SCORE:… **101**

COMMENTS:

Surface vegetation of heather, reeds, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..242700......	**Location: Northern Ireland** **Y** … 397000....	**Landmark:**…………**D5** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1535 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.74 m (1.5 m)	Peat	……… …… **12**…………
Peat strength (vane shear test) Reading No 1……35 kPa Reading No 2……37 kPa Reading No 3……38 kPa	Use 36 kPa	………… **4**…………
Slope angle……8°………… Slope regularity…uneven….	Undulating and disturbed ground	…… … … **21**………
Geomorphology & site history: …… ….	Old turbary area and grassy flush. Rough grazing	………… … **18**……………..
Sub-profile drainage pipes ………………………..	Grassy flush nearby	………… … **32**………
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Road in downslope area	……… **11**……………..
		TOTAL SCORE:… **114**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..242700......	**Location: Northern Ireland** **Y** … 396800....	**Landmark:**…………**D6** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1575 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …0.66 m (0.6 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……14 kPa Reading No 2……17 kPa Reading No 3……16 kPa	Use 14 kPa	………… **46**…………
Slope angle……7°………… Slope regularity…uneven….	Undulating Track nearby	…… … … **15**………
Geomorphology & site history: …… ….	Old turbary area on mid-slope of hillside. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **93**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**D7**
Co-ords: X ..242700…...	**Y** … 396600….	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1574 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Occasional wet patches	… … **4**……………
Rockhead / Subsoil	Boulder clay and rock	……….. **4**………………
Peat profile…simple. Peat depth …1.86 m (2.1 m)	Peat	……… …… **12**…………
Peat strength (vane shear test) Reading No 1……42 kPa Reading No 2……45 kPa Reading No 3……43 kPa	Use 43 kPa	……….. **2**…………
Slope angle……6°……….. Slope regularity…even….	Gently undulating	…… … … **12**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **3**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **54**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**D8**
Co-ords: X ..242700......	**Y** … 396400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1573 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Occasional field drains nearby	… … **3**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…multiple layers. Peat depth …2.27 m (2.4 m)	Deep peat	……… …… **24**…………
Peat strength (vane shear test) Reading No 1……24 kPa Reading No 2……20 kPa Reading No 3……19 kPa	Use 20 kPa	………… **28**…………
Slope angle……5^o………… Slope regularity…even….	Gently undulating ground	…… … … **10**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **90**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**D9**
Co-ords: X ..242700......	**Y** … 396200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1572 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but small stream nearby	… … **5**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …2.21 m (2.3 m)	Deep peat	……… …… **22**…………
Peat strength (vane shear test) Reading No 1……24 kPa Reading No 2……25 kPa Reading No 3……24 kPa	Use 24 kPa	………… **16**…………
Slope angle……6°………… Slope regularity…uneven….	Gently undulating	…… … … **12**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **80**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..242600......	**Location: Northern Ireland** **Y** … 395400....	**Landmark:**…………**D13** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1565 looking north-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools. Field drains nearby	… … **7**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …2.59 m (2.6 m)	Deep peat	……… …… **32**…………
Peat strength (vane shear test) Reading No 1……38 kPa Reading No 2……37 kPa Reading No 3……39 kPa	Use 37 kPa	………… **4**…………
Slope angle……3°………… Slope regularity…uneven….	Undulating	…… … … **6**………
Geomorphology & site history: …… ….	Platform area on upper hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **74**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **I**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**D14**
Co-ords: X ..242600......	**Y** … 395200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1557 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock. Rocky outcrop nearby	………… **1**………………
Peat profile…simple. Peat depth …0.44 m (0.5 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……10 kPa Reading No 2……12 kPa Reading No 3……13 kPa	Use 11 kPa	………… **78**………….
Slope angle……11°………… Slope regularity…uneven….	Old turbary upslope and other turbary areas nearby	…… … … **32**………
Geomorphology & site history: …… ….	Rounded mid slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **137**

COMMENTS:

Surface vegetation of grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………E2**
Co-ords: X ..242900......	**Y** … 397600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1517 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.90 m (0.9 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……10 kPa Reading No 2……12 kPa Reading No 3……11 kPa	Use 11 kPa	………… **78**…………
Slope angle……5°………… Slope regularity…uneven….	Gently undulating	…… … … **10**………
Geomorphology & site history: …… ….	Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **4**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… 121

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E3**
Co-ords: X ..242900......	**Y** … 397400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1515 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but stream adjacent	… … **3**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…simple. Peat depth …1.39 m (0.9 m)	Peat	……… …… **8**…………
Peat strength (vane shear test) Reading No 1……27 kPa Reading No 2……25 kPa Reading No 3……24 kPa	Use 24 kPa	………… **16**…………
Slope angle……4^{o}………… Slope regularity…uneven….	Gently undulating	…… … … **8**………
Geomorphology & site history: …… ….	Stream bank between two rounded hills. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Lines of reeds nearby	………… … **7**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **6**……………..
		TOTAL SCORE:… **63**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..242900......	**Location: Northern Ireland** **Y** … 397200....	**Landmark:**…………**E4** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1524 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.44 m (0.1 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……35 kPa Reading No 2……36 kPa Reading No 3……38 kPa	Use 36 kPa	………… **4**………….
Slope angle……4^{o}………… Slope regularity…uneven….	Road nearby	…… … … **8**………
Geomorphology & site history: …… ….	Rounded upper hillside. Rough grazing	………… … **5**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **41**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E5**
Co-ords: X ..242900......	**Y** … 397000....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1534 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.85 m (0.8 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……32 kPa Reading No 2……32 kPa Reading No 3……33 kPa	Use 32 kPa	………… **6**…………
Slope angle……7^{o}………… Slope regularity…uneven….	Undulating	…… … … **15**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Collapsed pipe at reedy flush nearby	………… … **9**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Road downslope	……… … **11**……………..
		TOTAL SCORE:… **65**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E6**
Co-ords: X ..242900......	**Y** … 396800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1576 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …0.70 m (0.5 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……47 kPa Reading No 2……42 kPa Reading No 3……49 kPa	Use 44 kPa	………… **2**…………
Slope angle……11°………… Slope regularity…uneven….	Irregular ground. Old turbary nearby	…… … … **32**………
Geomorphology & site history: …… ….	Moundy ground on mid slope of hillside. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **67**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E7..**
Co-ords: X ..242900......	**Y** … 396600....	**Ref:** ...-

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1583 looking eastwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …0.83 m (1.0 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……45 kPa Reading No 2……42 kPa Reading No 3……43 kPa	Use 42 kPa	……….. **2**…………
Slope angle……10^{o}………… Slope regularity…uneven….		…… … … **28**………
Geomorphology & site history: …… ….	Mid-slope of hillside Rough grazing	……….. … **18**……………..
Sub-profile drainage pipes ………………………..	Several collapsed pipes nearby	……….. … **11**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **80**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E8**
Co-ords: X ..242900......	**Y** … 396400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1584 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Minor drainage ditch nearby	… … **4**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.02 m (1.1 m)	Peat	……… …… **5**…………
Peat strength (vane shear test) Reading No 1……48 kPa Reading No 2……45 kPa Reading No 3……49 kPa	Use 45 kPa	………… **2**…………
Slope angle……6°………… Slope regularity…uneven….	Undulating and irregular	…… … … **12**………
Geomorphology & site history: …… ….	Upper hillside Rough grazing	………… … **18**……………..
Sub-profile drainage pipes ………………………..	Grass lane adjacent (see photo)	………… … **13**………
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **69**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum with clumps of reeds

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E9**
Co-ords: X ..242900......	**Y** … 396200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1585 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …2.30 m (2.3 m)	Deep peat	……… …… **24**…………
Peat strength (vane shear test) Reading No 1……45 kPa Reading No 2……46 kPa Reading No 3……49 kPa	Use 46 kPa	………… **1**………...
Slope angle……7^{o}………… Slope regularity…even….	Undulating	…… … … **15**………
Geomorphology & site history: …… ….	Upper slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **4**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **69**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E10**
Co-ords: X ..242900......	**Y** … 396000....	**Ref:** ...-

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1586 looking eastwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry.	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	……….. **4**………………
Peat profile…simple. Peat depth …1.24 m (1.3 m)	Peat	……… …… **6**…………
Peat strength (vane shear test) Reading No 1……24 kPa Reading No 2……22 kPa Reading No 3……21 kPa	Use 21 kPa	……….. **26**…………
Slope angle……7°………… Slope regularity…uneven….	Gently undulating	…… … … **15**………
Geomorphology & site history: …… ….	Old turbary areas nearby. Rough grazing	……….. … **9**……………..
Sub-profile drainage pipes ………………………..	Minor grass lanes	……….. … **8**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **81**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E11**
Co-ords: X ..242900…...	**Y** … 395800….	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey….N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1587 looking north-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Wet ground	… … **9**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …2.02 m (2.3 m)	Deep peat	……… …… **15**…………
Peat strength (vane shear test) Reading No 1……11 kPa Reading No 2……12 kPa Reading No 3……15 kPa	Use 11 kPa	………… **78**…………
Slope angle……5°………… Slope regularity…uneven….	Undulating	…… … … **10**………
Geomorphology & site history: …… ….	Upper hillside Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **135**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **I**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**E13**
Co-ords: X ..242767......	**Y** … 395400....	**Ref:** ...at boundary of site

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1564 looking southwards at boundary fence

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Wet ground nearby. Drainage channel adjacent	… … **8**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.56 m (1.0 m)	Peat	……… …… **11**…………
Peat strength (vane shear test) Reading No 1……28 kPa Reading No 2……27 kPa Reading No 3……26 kPa	Use 26 kPa	………… **18**…………
Slope angle……7°………… Slope regularity…uneven….		…… … … **15**……
Geomorphology & site history: …… ….	Lower slope of hillside Rough grazing	………… … **26**……………..
Sub-profile drainage pipes ………………………..	Minor grass lane	………… … **5**……….
Peatslide history ………. ………………………………..	Peatslide adjacent	………… … **26**…………
Potential peatslide severity ……………………	Low	……… … **6**……………..
		TOTAL SCORE:… **125**

COMMENTS:

Surface vegetation of grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..242793......	**Location: Northern Ireland** **Y** … 395200....	**Landmark:**…………**E14** **Ref:** ...at boundary of site

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1561 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Pools and numerous drainage ditches nearby	… … **11**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …0.69 m (0.4 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……18 kPa Reading No 2……19 kPa Reading No 3……22 kPa	Use 19 kPa	………… **30**…………
Slope angle……8°………… Slope regularity…uneven….	Undulating	…… … … **21**………
Geomorphology & site history: …… ….	Overlooking grass fields. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	Lines of reeds adjacent	………… … **7**……….
Peatslide history ………. ………………………………..	Peatslide nearby	………… … **19**…………
Potential peatslide severity ……………………	Farm downslope	……… … **18**……………..
		TOTAL SCORE:… **126**

COMMENTS:

Surface vegetation of grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………F3**
Co-ords: X ..243100......	**Y** … 397400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 18 May 2009	Photo Ref. Nos: 1516 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but stream nearby	… … **4**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.55 m (0.4 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……15 kPa Reading No 2……12 kPa Reading No 3……13 kPa	Use 12 kPa	………… **68**…………
Slope angle……4°………… Slope regularity…uneven….	Gently undulating and local stream bank nearby	…… … … **8**………
Geomorphology & site history: …… ….	Stream bank Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **6**……………..
		TOTAL SCORE:… 113

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**F4**
Co-ords: X ..243100......	**Y** … 397200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1525 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.91 m (0.6 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……26 kPa Reading No 2……30 kPa Reading No 3……28 kPa	Use 26 kPa	………… **18**…………
Slope angle……5^o………… Slope regularity…uneven….	Gently undulating	…… … … **10**………
Geomorphology & site history: …… ….	Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **58**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**F5**
Co-ords: X ..243100......	**Y** … 397000....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1531 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…simple. Peat depth …0.64 m (0.6 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……15 kPa Reading No 2……14 kPa Reading No 3……18 kPa	Use 14 kPa	………… **46**…………
Slope angle……3^{o}………… Slope regularity…uneven….	Lower hillside. Disturbed ground	…… … … **6**………
Geomorphology & site history: …… ….	Old turbary areas nearby. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**………
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **11**…………….
		TOTAL SCORE:… **89**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………F6**
Co-ords: X ..243100......	**Y** … 396800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1577 looking north-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	……….. **4**………………
Peat profile…simple. Peat depth …0.61 m (0.3 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……17 kPa Reading No 2……15 kPa Reading No 3……13 kPa	Use 14 kPa	……….. **46**………….
Slope angle……8^{o}………… Slope regularity…uneven….	Moundy ground	…… … … **21**………
Geomorphology & site history: …… ….	Lower slope of hillside Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	Grass lanes nearby	……….. … **7**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **101**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………F7**
Co-ords: X ..243100......	**Y** … 396600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1582 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …0.97 m (1.6 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……17 kPa Reading No 2……14 kPa Reading No 3……15 kPa	Use 15 kPa	………… **45**…………
Slope angle……6°………… Slope regularity…uneven….	Disturbed ground by old turbary areas	…… … … **12**………
Geomorphology & site history: …… ….	Old turbary ground Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**………
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… 90

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**F8**
Co-ords: X ..243100......	**Y** … 396400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1627 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but reedy flush adjacent	… … **4**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …1.37 m (1.6 m)	Peat	……… …… **8**…………
Peat strength (vane shear test) Reading No 1……32 kPa Reading No 2……28 kPa Reading No 3……29 kPa	Use 29 kPa	………… **11**…………
Slope angle……4°………… Slope regularity…uneven….	Stream channel nearby	…… … … **8**………
Geomorphology & site history: …… ….	Lower slope of hillside. Rough grazing	………… …**12**………..
Sub-profile drainage pipes ………………………..	Collapsed pipe adjacent	………… … **9**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **66**

COMMENTS:

Surface vegetation of grasses, heather, reeds and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**F9**
Co-ords: X ..243100......	**Y** … 396200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1628 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Wet patches	… … **6**……………
Rockhead / Subsoil	Boulder clay and rock	……….. **4**………………
Peat profile…simple. Peat depth …1.59 m (1.6 m)	Peat	……… …… **11**………..
Peat strength (vane shear test) Reading No 1……29 kPa Reading No 2……22 kPa Reading No 3……28 kPa	Use 23 kPa	……….. **17**…………
Slope angle……7°………… Slope regularity…even….	Undulating	…… … … **15**………
Geomorphology & site history: …… ….	Mid slope of hillside. Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **2**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **3**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **72**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………F10**
Co-ords: X ..243100......	**Y** … 396000....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1589 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but large patch of reeds adjacent	… … **5**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.45 m (1.5 m)	Peat	……… …… **8**…………
Peat strength (vane shear test) Reading No 1……26 kPa Reading No 2……19 kPa Reading No 3……24 kPa	Use 20 kPa	………… **28**…………
Slope angle……8°………… Slope regularity…even….	Irregular and undulating	…… … … **21**………
Geomorphology & site history: …… ….	Reedy flush adjacent Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Reedy flush nearby	………… … **13**………
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… 108

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**F11**
Co-ords: X ..243100......	**Y** … 395800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1588 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Wet ground. Field drain nearby	… … **9**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.60 m (1.9 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……10 kPa Reading No 2……12 kPa Reading No 3……11 kPa	Use 10 kPa	………… **82**…………
Slope angle……5°………… Slope regularity…even….		…… … … **10**………
Geomorphology & site history: …… ….	Rough pasture	………… … **7**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **139**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**G3**
Co-ords: X ..243300......	**Y** … 397400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1527 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	……….. **2**………………
Peat profile…simple. Peat depth …0.05 m (0.0 m)	Peat	……… …… **1**…………
Peat strength (vane shear test) Reading No 1……50 kPa Reading No 2……- kPa Reading No 3……- kPa	Use 50 kPa	……….. **1**…………
Slope angle……6°………… Slope regularity…uneven….	Undulating	…… … … **12**………
Geomorphology & site history: …… ….	Low rounded hill. Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **3**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **3**…………
Potential peatslide severity ……………………	Low	……… … **2**……………..
		TOTAL SCORE:… **36**

COMMENTS:

Surface vegetation of grasses, reeds and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**G4**
Co-ords: X ..243300......	**Y** … 397200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1526 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools. Stream adjacent	… … **7**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…simple. Peat depth …1.15 m (1.1 m)	Peat	……… …… **5**…………
Peat strength (vane shear test) Reading No 1……36 kPa Reading No 2……32 kPa Reading No 3……33 kPa	Use 33 kPa	………… **4**…………
Slope angle……4^{o}………… Slope regularity…uneven….	Gently undulating	…… … … **8**………
Geomorphology & site history: …… ….	Stream adjacent Rough grazing	………… … **11**……………..
Sub-profile drainage pipes ………………………..	Reedy patches	………… … **6**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **54**

COMMENTS:

Surface vegetation of grasses and sphagnum with reedy patches

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **I**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..243300......	**Location: Northern Ireland** **Y** … 397000....	**Landmark:**…………**G5** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1530 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **2**………………
Peat profile…simple. Peat depth …1.19 m (1.0 m)	Peat	……… …… **6**…………
Peat strength (vane shear test) Reading No 1……14 kPa Reading No 2……16 kPa Reading No 3……17 kPa	Use 14 kPa	………… **46**…………
Slope angle……4^{o}………… Slope regularity…uneven….	Undulating Road nearby	…… … … **8**………
Geomorphology & site history: …… ….	Old turbary areas nearby. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **86**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**G6**
Co-ords: X ..243300…...	**Y** … 396800….	**Ref:** …-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1578 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools	… … **8**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.77 m (1.8 m)	Peat	……… …… **12**…………
Peat strength (vane shear test) Reading No 1……19 kPa Reading No 2……21 kPa Reading No 3……25 kPa	Use 20 kPa	………… **28**…………
Slope angle……3^o………… Slope regularity…uneven….		…… … … **6**………
Geomorphology & site history: …… ….	Old turbary area on lower hillside. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	Lines of reeds	………… **14**………..
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **94**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum with occasional clump of reeds

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **I**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..243300......	**Location: Northern Ireland** **Y** … 396600....	**Landmark:**…………**G7** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1581 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.24 m (1.0 m)	Peat	……… …… **6**…………
Peat strength (vane shear test) Reading No 1……45 kPa Reading No 2……49 kPa Reading No 3……47 kPa	Use 45 kPa	………… **1**………….
Slope angle……4°………… Slope regularity…uneven….		…… … … **8**………
Geomorphology & site history: …… ….	Lower slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Grass lane nearby	………… … **13**………
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… 50

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**G8**
Co-ords: X ..243300......	**Y** … 396400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1626 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but reedy stream nearby	… … **4**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.51 m (1.4 m)	Peat	……… …… **10**…………
Peat strength (vane shear test) Reading No 1……45 kPa Reading No 2……38 kPa Reading No 3……43 kPa	Use 39 kPa	………… **3**…………
Slope angle……5^{o}………… Slope regularity…uneven….	Irregular and disturbed	…… … … **10**………
Geomorphology & site history: …… ….	Old turbary areas nearby Rough grazing	………… … **16**……………..
Sub-profile drainage pipes ………………………..	Few reedy patches	………… … **5**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity …………………….	Low	……… … **5**……………..
		TOTAL SCORE:… 63

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**G9**
Co-ords: X ..243300......	**Y** … 396200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1629 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but major stream channel nearby	… … **3**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …0.79 m (1.0 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……26 kPa Reading No 2……27 kPa Reading No 3……27 kPa	Use 26 kPa	………… **14**…………
Slope angle……5^{o}………… Slope regularity…uneven….	Incised and disturbed	…… … … **10**………
Geomorphology & site history: …… ….	Upper stream bank. Rough grazing	………… … **16**……………..
Sub-profile drainage pipes ………………………..	Minor indications	………… … **12**………..
Peatslide history ………. ………………………………..	Several stream bank failures	………… … **5**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **75**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………G10**
Co-ords: X ..243300......	**Y** … 396000....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1590 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay	……….. **5**…………….
Peat profile…simple. Peat depth …0.87 m (0.8 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……10 kPa Reading No 2……12 kPa Reading No 3……11 kPa	Use 10 kPa	……….. **82**…………
Slope angle……2°………… Slope regularity…even….		…… … … **4**………
Geomorphology & site history: …… ….	Old turbary area. Rough grazing	……….. … **9**………...
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **3**………
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… 118

COMMENTS:

Surface vegetation of grasses

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**G11**
Co-ords: X ..243300......	**Y** … 395800....	**Ref:** ...-

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1591 looking north-eastwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but reedy flush nearby	… … **4**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.96 m (1.8 m)	Peat	……… …… **14**…………
Peat strength (vane shear test) Reading No 1……29 kPa Reading No 2……27 kPa Reading No 3……32 kPa	Use 11 kPa	………… **12**…………
Slope angle……5°………… Slope regularity…uneven….	Lower slope of hillside	…… … … **10**………
Geomorphology & site history: …… ….	Head of reedy flush	………… … **18**……………..
Sub-profile drainage pipes ………………………..	Patches of reeds nearby	………… … **8**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **81**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………G12**
Co-ords: X ..243300......	**Y** … 395600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1592 looking north-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.82 m (1.8 m)	Peat	……… …… **12**…………
Peat strength (vane shear test) Reading No 1……20 kPa Reading No 2……21 kPa Reading No 3……24 kPa	Use 20 kPa	………… **28**…………
Slope angle……5°………… Slope regularity…even….	Undulating	…… … … **10**………
Geomorphology & site history: …… ….	Upper hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… 73

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**H3**
Co-ords: X ..243500......	**Y** … 397400....	**Ref:** ...-

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1528 looking westwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.47 m (0.0 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……18 kPa Reading No 2……19 kPa Reading No 3……19 kPa	Use 18 kPa	………… **32**…………
Slope angle……8^{o}………… Slope regularity…uneven….	Gently undulating. Disturbed ground	…… … … **21**………
Geomorphology & site history: …… ….	Old turbary nearby. Flush downslope. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **87**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**H4**
Co-ords: X ..243500......	**Y** … 397200….	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 19 May 2009	Photo Ref. Nos: 1529 looking north-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools. Field drain adjacent	… … **6**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …3.05 m (2.9 m)	Deep peat	……… …… **40**…………
Peat strength (vane shear test) Reading No 1……29 kPa Reading No 2……32 kPa Reading No 3……30 kPa	Use 30 kPa	………… **9**…………
Slope angle……3°………… Slope regularity…uneven….	Gently undulating	…… … … **6**………
Geomorphology & site history: …… ….	Lower hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **85**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..243500......	**Location: Northern Ireland** **Y** … 397000....	**Landmark:**…………**H5** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1620 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools	… … **7**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.84 m (0.0 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……50 kPa Reading No 2……55 kPa Reading No 3……- kPa	Use 50 kPa	………… **1**…………
Slope angle……2^o………… Slope regularity…even….	In local valley bottom	…… … … **4**………
Geomorphology & site history: …… ….	Old turbary nearby. Track nearby. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **42**

COMMENTS:

Surface vegetation of grasses, heather, reeds and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**H6**
Co-ords: X ..243500......	**Y** … 396800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1579 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools	… … **6**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.51 m (1.7m)	Peat	……… …… **10**…………
Peat strength (vane shear test) Reading No 1……39 kPa Reading No 2……40 kPa Reading No 3……35 kPa	Use 36 kPa	………… **4**…………
Slope angle……2°………… Slope regularity…uneven….	Undulating	…… … … **4**………
Geomorphology & site history: …… ….	Lowermost slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Lines of reeds	………… … **8**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Road nearby but at a higher level	……… … **4**……………..
		TOTAL SCORE:… **54**

COMMENTS:

Surface vegetation of reeds, heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**H7**
Co-ords: X ..243500......	**Y** … 396600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 21 May 2009	Photo Ref. Nos: 1580 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but numerous field drains nearby	… … **5**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …1.13 m (2.0 m)	Peat	……… …… **5**…………
Peat strength (vane shear test) Reading No 1……45 kPa Reading No 2……42 kPa Reading No 3……49 kPa	Use 42 kPa	……….. **3**………….
Slope angle……1°………… Slope regularity…uneven….		…… … … **2**………
Geomorphology & site history: …… ….	Numerous old turbary areas. Rough grazing	……….. … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **3**……….
Peatslide history ………. ……………………………….	No evidence	……….. … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **44**

COMMENTS:

Surface vegetation of heather, grasses, reeds and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**H8**
Co-ords: X ..243500......	**Y** … 396400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1625 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but stream nearby	… … **4**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.98 m (0.7 m)	Peat	……… …… **5**…………
Peat strength (vane shear test) Reading No 1……17 kPa Reading No 2……15 kPa Reading No 3……14 kPa	Use 14 kPa	………… **46**…………
Slope angle……4^{o}………… Slope regularity…uneven….	Undulating and incised. Track nearby	…… … … **8**………
Geomorphology & site history: …… ….	Upper stream bank on lower hillside. Rough grazing	………… … **11**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **93**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**H9**
Co-ords: X ..243500......	**Y** … 396200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1557 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Wet ground	… … **14**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.27 m (1.1 m)	Peat	……… …… **7**…………
Peat strength (vane shear test) Reading No 1……30 kPa Reading No 2……32 kPa Reading No 3……29 kPa	Use 29 kPa	………… **11**…………
Slope angle……7°………… Slope regularity…even….	Old turbary site and other turbary areas nearby	…… … … **15**………
Geomorphology & site history: …… ….	Rounded mid slope of hillside. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **76**

COMMENTS:

Surface vegetation of grasses

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**H10**
Co-ords: X ..243500......	**Y** … 396000....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1631 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Stream adjacent	… … **6**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …1.25 m (1.7 m)	Peat	……… …… **6**…………
Peat strength (vane shear test) Reading No 1……31 kPa Reading No 2……29 kPa Reading No 3……35 kPa	Use 29 kPa	………… **11**…………
Slope angle……4^{o}………… Slope regularity…even….	Undulating and incised	…… … … **8**………
Geomorphology & site history: …… ….	Old turbary site adjacent. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	Numerous stream bank failures nearby	………… … **7**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **64**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**H11**
Co-ords: X ..243500......	**Y** … 395800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1632 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Occasional pools	… … **7**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …2.31 m (2.0 m)	Peat	……… …… **26**…………
Peat strength (vane shear test) Reading No 1……42 kPa Reading No 2……39 kPa Reading No 3……38 kPa	Use 38 kPa	………… **3**………….
Slope angle……4°………… Slope regularity…even….	Undulating. Fence-line nearby	…… … … **8**………
Geomorphology & site history: …… ….	Mid slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **67**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..243500......	**Location: Northern Ireland** **Y** … 395600....	**Landmark:**…………**H12** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1633 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Wet. Stream adjacent	… … **11**……………
Rockhead / Subsoil	Boulder clay and rock	……….. **4**………………
Peat profile…simple. Peat depth …2.39 m (2.3 m)	Deep peat	……… …… **27**…………
Peat strength (vane shear test) Reading No 1……24 kPa Reading No 2……27 kPa Reading No 3……29 kPa	Use 25 kPa	……….. **15**…………
Slope angle……5°………… Slope regularity…even….	Undulating	…… … … **10**………
Geomorphology & site history: …… ….	Upper slope of hillside	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	Grass lane nearby	……….. … **9**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **92**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………H13**
Co-ords: X ..243500......	**Y** … 395400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1634 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Numerous pools	… … **18**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …2.36 m (2.5 m)	Peat	……… …… **26**…………
Peat strength (vane shear test) Reading No 1……18 kPa Reading No 2……19 kPa Reading No 3……17 kPa	Use 17 kPa	………… **34**…………
Slope angle……3°………… Slope regularity…even….	Undulating	…… … … **6**………
Geomorphology & site history: …… ….	Upper hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Few grass lanes	………… … **11**………
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **114**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**I11**
Co-ords: X ..243700......	**Y** … 395800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1624 looking south-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing	……… **5**……………
Presence of water on slope	Wet patches	… … **11**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …3.45 m (3.5 m)	Deep peat	……… …… **84**…………
Peat strength (vane shear test) Reading No 1……15 kPa Reading No 2……12 kPa Reading No 3……13 kPa	Use 12 kPa	………… **68**…………
Slope angle……3°………… Slope regularity…even….	Undulating	…… … … **6**………
Geomorphology & site history: …… ….	Platform area on mid slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **4**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **194**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**I12**
Co-ords: X ..243700......	**Y** … 395600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1623 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Wet patches	… … **9**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.85 m (1.9 m)	Peat	……… …… **13**…………
Peat strength (vane shear test) Reading No 1……17 kPa Reading No 2……22 kPa Reading No 3……28 kPa	Use 18 kPa	………… **32**…………
Slope angle……2^{o}………… Slope regularity…even….	Undulating	…… … … **4**………
Geomorphology & site history: …… ….	Platform area on upper hillside	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Grass lanes nearby	………… … **6**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **83**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**I13**
Co-ords: X ..243700......	**Y** … 395400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1622 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …2.72 m (2.6 m)	Peat	……… …… **34**…………
Peat strength (vane shear test) Reading No 1……17 kPa Reading No 2……18 kPa Reading No 3……20 kPa	Use 17 kPa	………… **34**…………
Slope angle……4°………… Slope regularity…even….	Gently undulating. Knoll nearby	…… … … **8**………
Geomorphology & site history: …… ….	Upper slope of hillside. Rough grazing	………… … **7**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **101**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**I14**
Co-ords: X ..243700......	**Y** … 395200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 23 May 2009	Photo Ref. Nos: 1621 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools	… … **8**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …2.39 m (2.2 m)	Deep peat	……… …… **27**…………
Peat strength (vane shear test) Reading No 1……20 kPa Reading No 2……25 kPa Reading No 3……25 kPa	Use 20 kPa	………… **28**…………
Slope angle……6^{o}………… Slope regularity…even….	Undulating	…… … … **12**………
Geomorphology & site history: …… ….	Upper slope of hillside. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **102**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**J11**
Co-ords: X ..243900......	**Y** … 395800....	**Ref:** ...-

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1602 looking westwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry with occasional pools.	… … **4**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …3.01 m (2.9 m)	Deep peat	……… …… **39**…………
Peat strength (vane shear test) Reading No 1……24 kPa Reading No 2……23 kPa Reading No 3……24 kPa	Use 23 kPa	………… **17**…………
Slope angle……3°………… Slope regularity…even….	Gently undulating	…… … … **6**………
Geomorphology & site history: …… ….	Mid slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **88**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………J12**
Co-ords: X ..243900…...	**Y** … 395600….	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1601 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Dry. Field drains nearby	… … **3**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …2.43 m (2.5 m)	Peat	……… …… **28**…………
Peat strength (vane shear test) Reading No 1……19 kPa Reading No 2……18 kPa Reading No 3……18 kPa	Use 18 kPa	……….. **32**…………
Slope angle……3°………… Slope regularity…even….	Gently undulating	…… … … **6**………
Geomorphology & site history: …… ….	Upper slope of hillside. Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **2**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… 92

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..243900......	**Location: Northern Ireland** **Y** … 395400....	**Landmark:**…………**J13** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1600 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm	North facing slope	……… **5**……………
Presence of water on slope	Occasional pools. Field drains nearby	… … **6**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …2.19 m (2.0 m)	Deep peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……10 kPa Reading No 2……12 kPa Reading No 3……13 kPa	Use 11 kPa	………… **21**…………
Slope angle……3^{o}………… Slope regularity…even….		…… … … **6**………
Geomorphology & site history: …… ….	Platform area on upper slope of hillside. Rough grazing	………… … **4**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **134**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**J14**
Co-ords: X ..243900......	**Y** … 395200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1599 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Small pools	… … **9**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.98 m (1.9 m)	Peat	……… …… **14**…………
Peat strength (vane shear test) Reading No 1……11 kPa Reading No 2……12 kPa Reading No 3……13 kPa	Use 11 kPa	………… **78**…………
Slope angle……3^{o}………… Slope regularity…even….	Undulating	…… … … **6**………
Geomorphology & site history: …… ….	Upper slope of hillside. Rough grazing	………… … **4**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **126**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**J15**
Co-ords: X ..244012......	**Y** … 395000....	**Ref:** ... boundary position

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1616 looking north-westwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …0.86 m (1.0 m)	Peat	……… …… **4**…………
Peat strength (vane shear test) Reading No 1……42 kPa Reading No 2……47 kPa Reading No 3……45 kPa	Use 43 kPa	………… **2**………….
Slope angle……5°………… Slope regularity…even….	Undulating and disturbed	…… … … **10**………
Geomorphology & site history: …… ….	Old turbary adjacent. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **44**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**K11**
Co-ords: X ..244100......	**Y** … 395800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1603 looking south-westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools. Field drains nearby	… … **7**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …2.93 m (3.3 m)	Deep peat	……… …… **37**…………
Peat strength (vane shear test) Reading No 1……19 kPa Reading No 2……12 kPa Reading No 3……32 kPa	Use 12 kPa	………… **68**…………
Slope angle……2^{o}………… Slope regularity…even….	Undulating. Knoll nearby	…… … … **4**………
Geomorphology & site history: …… ….	Upper slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **137**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..244100......	**Location: Northern Ireland** **Y** … 395600....	**Landmark:**…………**K12** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1607 looking northwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Numerous pools	… … **9**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …1.98 m (2.1 m)	Peat	……… …… **14**…………
Peat strength (vane shear test) Reading No 1……20 kPa Reading No 2……20 kPa Reading No 3……23 kPa	Use 20 kPa	………… **28**…………
Slope angle……2°………… Slope regularity…even….	Hummocky	…… … … **4**………
Geomorphology & site history: …… ….	Flat platform area on upper hillside. Rough grazing	………… … **7**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **79**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..244100......	**Location: Northern Ireland** **Y** … 395400....	**Landmark:**…………**K13** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1608 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools	… … **8**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …2.01 m (1.9 m)	Deep peat	……… …… **15**…………
Peat strength (vane shear test) Reading No 1……24 kPa Reading No 2……26 kPa Reading No 3……34 kPa	Use 25 kPa	………… **15**…………
Slope angle……5^{o}………… Slope regularity…even….	Gently undulating	…… … … **10**………
Geomorphology & site history: …… ….	Upper slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **72**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**K14**
Co-ords: X ..244100......	**Y** … 395200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1611 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools. Stream nearby	… … **7**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …2.21 m (2.4 m)	Deep peat	……… …… **22**…………
Peat strength (vane shear test) Reading No 1……22 kPa Reading No 2……24 kPa Reading No 3……26 kPa	Use 23 kPa	………… **17**…………
Slope angle……5^{o}………… Slope regularity…even….	Undulating	…… … … **10**………
Geomorphology & site history: …… ….	Mid slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	Grass lanes nearby	………… … **8**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… **84**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple **Co-ords: X** ..244100......	**Location: Northern Ireland** **Y** … 395000....	**Landmark:**…………**K15** **Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1612 looking south-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.66 m (0.9 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……42 kPa Reading No 2……39 kPa Reading No 3……45 kPa	Use 40 kPa	………… **3**………….
Slope angle……6°………… Slope regularity…even….	Gently undulating	…… … … **12**………
Geomorphology & site history: …… ….	Old turbary area on mid slope of hillside. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **47**

COMMENTS:

Surface vegetation of grasses and sphagnum with occasional clumps of heather and reeds

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category **I**

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**K16**
Co-ords: X ..244138......	**Y** … 394800....	**Ref:** ...boundary position

GENERAL	**DATE & PERSONNEL**	**PHOTOGRAPHS**
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1615 looking north-westwards

CATEGORY	**REMARKS**	**CATEGORY SCORE**
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …0.81 m (0.8 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……34 kPa Reading No 2……33 kPa Reading No 3……33 kPa	Use 33 kPa	………… **4**………….
Slope angle……4°………… Slope regularity…even….	Undulating	…… … … **8**………
Geomorphology & site history: …… ….	Lower slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **12**……………..
		TOTAL SCORE:… **48**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**L11**
Co-ords: X ..244300......	**Y** … 395800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1604 looking eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry	… … **2**……………
Rockhead / Subsoil	Boulder clay and rock	……….. **3**…………….
Peat profile…simple. Peat depth …0.98 m (1.1 m)	Peat	……… …… **5**…………
Peat strength (vane shear test) Reading No 1……18 kPa Reading No 2……17 kPa Reading No 3……16 kPa	Use 16 kPa	……….. **40**…………
Slope angle……5°………… Slope regularity…even….	Gently undulating	…… … … **10**………
Geomorphology & site history: …… ….	Upper slope of hillside. Rough grazing	……….. … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	……….. … **3**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **79**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**L12**
Co-ords: X ..244300......	**Y** … 395600....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 20 May 2009	Photo Ref. Nos: 1606 looking south-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Wet patches	… … **9**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.91 m (2.0 m)	Peat	……… …… **13**…………
Peat strength (vane shear test) Reading No 1……18 kPa Reading No 2……24 kPa Reading No 3……26 kPa	Use 20 kPa	………… **28**…………
Slope angle……5^{o}………… Slope regularity…even….	Gently undulating	…… … … **10**………
Geomorphology & site history: …… ….	Mid slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **81**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**L13**
Co-ords: X ..244300......	**Y** … 395400....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1609 looking southwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Occasional pools	… … **8**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …2.39 m (3.0 m)	Deep peat	……… … **27**…………
Peat strength (vane shear test) Reading No 1……24 kPa Reading No 2……28 kPa Reading No 3……30 kPa	Use 25 kPa	………… **15**…………
Slope angle……6°………… Slope regularity…even….	Gently undulating and moundy	…… … … **12**………
Geomorphology & site history: …… ….	Rounded mid slope of hillside. Rough grazing	………… … **7**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **2**……….
Peatslide history ………. ………………………………..	No evidence	………… … **3**…………
Potential peatslide severity ……………………	Low	……… … **4**……………..
		TOTAL SCORE:… 77

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:…………L14**
Co-ords: X ..244300......	**Y** … 395200....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1610 looking south-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry but stream adjacent	… … **4**……………
Rockhead / Subsoil	Boulder clay	……….. **5**………………
Peat profile…simple. Peat depth …2.16 m (2.2 m)	Deep peat	……… …… **20**………..
Peat strength (vane shear test) Reading No 1……38 kPa Reading No 2……29 kPa Reading No 3……33 kPa	Use 30 kPa	……….. **9**…………
Slope angle……8°………… Slope regularity…uneven….	Undulating and hummocky	…… … … **21**………
Geomorphology & site history: …… ….	Lower slope of hillside. Rough grazing	……….. … **7**……………..
Sub-profile drainage pipes ………………………..	In deep channel	……….. … **7**……….
Peatslide history ………. ………………………………..	No evidence	……….. … **2**………..
Potential peatslide severity ……………………	Road downslope	……… … **12**……………..
		TOTAL SCORE:… **92**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**L15**
Co-ords: X ..244300......	**Y** … 395000....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1613 looking north-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Wet patches	… … **6**……………
Rockhead / Subsoil	Boulder clay and rock	………… **3**………………
Peat profile…simple. Peat depth …1.14 m (0.9 m)	Peat	……… …… **5**………
Peat strength (vane shear test) Reading No 1……15 kPa Reading No 2……17 kPa Reading No 3……13 kPa	Use 13 kPa	………… **55**…………
Slope angle……9°………… Slope regularity…even….	Undulating	…… … … **25**………
Geomorphology & site history: …… ….	Old turbury area on mid slope of hillside. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **5**……………..
		TOTAL SCORE:… **118**

COMMENTS:

Surface vegetation of heather, grasses and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**L16**
Co-ords: X ..244300......	**Y** … 394800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1614 looking westwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Occasional pools nearby	… … **3**……………
Rockhead / Subsoil	Boulder clay	………… **5**………………
Peat profile…simple. Peat depth …0.69 m (0.4 m)	Peat	……… …… **3**…………
Peat strength (vane shear test) Reading No 1……36 kPa Reading No 2……39 kPa Reading No 3……42 kPa	Use 37 kPa	………… **4**…………
Slope angle……5^{o}……… Slope regularity…even….	Lower slopes of hillside. Alongside road	…… … … **10**………
Geomorphology & site history: …… ….	Old turbary workings nearby. Rough grazing	………… … **9**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **1**…………
Potential peatslide severity ……………………	Road adjacent	……… … **10**……………..
		TOTAL SCORE:… **53**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

ENVIROS CONSULTING
FIELD DATA & PHRS SCORING SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**M11**
Co-ords: X ..244500......	**Y** … 395800....	**Ref:** ...-

GENERAL	DATE & PERSONNEL	PHOTOGRAPHS
New / Update survey Date of last survey....N/A	Rated by: D. Nichol Date: 22 May 2009	Photo Ref. Nos: 1605 looking south-eastwards

CATEGORY	REMARKS	CATEGORY SCORE
Rainfall & climate 1100 mm		……… **5**……………
Presence of water on slope	Dry. Field drains nearby	… … **3**……………
Rockhead / Subsoil	Boulder clay and rock	………… **4**………………
Peat profile…simple. Peat depth …1.36 m (1.2 m)	Peat	……… …… **8**…………
Peat strength (vane shear test) Reading No 1……22 kPa Reading No 2……26 kPa Reading No 3……25 kPa	Use 23 kPa	………… **17**…………
Slope angle……6^{o}………… Slope regularity…even….	Undulating	…… … … **12**………
Geomorphology & site history: …… ….	Mid slope of hillside. Rough grazing	………… … **6**……………..
Sub-profile drainage pipes ………………………..	No surface indications	………… … **3**……….
Peatslide history ………. ………………………………..	No evidence	………… … **2**…………
Potential peatslide severity ……………………	Low	……… … **3**……………..
		TOTAL SCORE:… **63**

COMMENTS:

Surface vegetation of grasses, heather and sphagnum

Bedrock is metamorphic strata belonging to the Argyle Group of the Dalradian Supergroup (Neoproterozoic)

Terrain Analysis: Category I

3. PEAT PROFILE LOG SHEETS

ENVIROS CONSULTING
TRIAL PIT LOG SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**X1**……..
Co-ords: X .242333......	**Y** …396898.....	**Z** …-..................

TYPE	DATE & PERSONNEL	PHOTOGRAPHS
Trial pit in road cutting near grid position B6	Logged by: D. Nichol Date: …19 May 2009	Photo Ref. No: 1546 looking northwards……

Depth (m)	Description	Other
0 to 0.35	Surface root zone	Sphagnum, grasses & heather
0.35 to 1.37	Dark brown fibrous peat	Banded dark and light layers
1.37 to 2.30	Grey brown gravelly till	Glacial boulder clay
End of section 2.30 m		

ENVIROS CONSULTING
TRIAL PIT LOG SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**X2**……..
Co-ords: X .242205......	**Y** …394786.....	**Z** …-..................

TYPE	DATE & PERSONNEL	PHOTOGRAPHS
Trial pit hand-dug in old turbary near grid position B16	Logged by: D. Nichol Date: …20 May 2009	Photo Ref. Nos: 1551 looking westwards……

Depth (m)	Description	Other
0 to 0.15	Surface root zone	Sphagnum, grasses & heather
0.15 to 0.85	Brown coarse fibrous peat	Sample identifier No T2/1
End of section 0.85 m		

ENVIROS CONSULTING
TRIAL PIT LOG SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**X3**……..
Co-ords: X .242705......	**Y** …395699.....	**Z** …-..................

TYPE	DATE & PERSONNEL	PHOTOGRAPHS
Trial pit in excavation at existing turbine site near grid position E11	Logged by: D. Nichol Date: …21 May 2009	Photo Ref. Nos: 1593 & 1597 looking northwards……

Depth (m)	Description	Other
0 to 0.20	Surface root zone	Sphagnum & grasses
0.20 to 1.70	Brown fibrous peat	Banded dark and light layers
1.70 to 1.90	Dark brown fibrous peat	Amorphous texture
1.90 to 3.35	Grey brown till subsoil	Glacial boulder clay
End of section 3.35 m		

ENVIROS CONSULTING
TRIAL PIT LOG SHEET

Project: Craignagapple	**Location: Northern Ireland**	**Landmark:**…………**X4**……..
Co-ords: X .242208……	**Y** …396233…..	**Z** …-………………..

TYPE	DATE & PERSONNEL	PHOTOGRAPHS
Trial pit in road cutting near grid position I16	Logged by: D. Nichol Date: …23 May 2009	Photo Ref. Nos: 1635-37 looking northwards……

Depth (m)	Description	Other
0 to 0.25	Surface root zone	Sphagnum, grasses & heather
0.25 to 1.15	Brown fibrous peat	Sample identifier No T3/2
1.15 to 2.05	Dark brown fibrous peat	Sample identifier No T3/3
2.05 to 2.85	Weathered rock	Schistose psammite of the Dart Formation (Argyll Group, Dalradian Supergroup) of Neoproterozoic age
2.85 to 2.90	Fresh bedrock	
End of section 2.90 m		

4. PEATSLIDE LOCALITY FIELD SHEETS

ENVIROS CONSULTING
PEATSLIDE FIELD SHEET

Project: Craignagapple	**Location: Co Tyrone, NI**	**Landmark:**……**P/S 1**
Co-ords: X .242410.	**Y** ……396576.	**Z** …-…………

LOCALITY	DATE & PERSONNEL	PHOTOGRAPHS
Owenreagh Hill near grid position B6	Logged by: D. Nichol Date: …19 May 2009	Photo Ref. Nos:…1542-1544 incl …looking eastwards…

Description	Other
Old peatslide area about 80 m wide by 120 m long. Peat profile consists of 1.3 m of brown fibrous peat overlying gravel-rich boulder clay. Large blocks of peat around 2-5 metres across have rafted down the slope. The ground movements appear to be due predominantly to failure at the head of an old turbary on a steep stretch of the hillside with the rafted blocks sliding down the floor of the turbary.	

ENVIROS CONSULTING
PEATSLIDE FIELD SHEET

Project: Craignagapple	**Location: Co Tyrone, NI**	**Landmark:**……**P/S 2**
Co-ords: X .242295.	**Y** ……395432.	**Z** …-…………

LOCALITY	DATE & PERSONNEL	PHOTOGRAPHS
Owenreagh Hill near grid position B13	Logged by: D. Nichol Date: …20 May 2009	Photo Ref. Nos:…1567-1568 incl …looking eastwards…

Description	Other
Peatslide area about 15 m wide by 30 m long. Peat profile consists of 0.8 m of brown fibrous peat overlying gravel-rich boulder clay. Failure surface lies within the boulder clay some 0.5 m below the peat/subsoil interface. Blocks of peat have rafted down the slope and into a stream channel causing a substantial blockage within the channel of the stream.	

PEATSLIDE FIELD SHEET

Project: Craignagapple	**Location: Co Tyrone, NI**	**Landmark:**……**P/S 3**
Co-ords: X .242710.	**Y** ……397363.	**Z** …-…………

LOCALITY	DATE & PERSONNEL	PHOTOGRAPHS
Owenreagh Hill near grid position D3	Logged by: D. Nichol Date: …18 May 2009	Photo Ref. Nos:…1512…looking southwards

Description	Other
Old peatslide area about 6-12 m wide on a steep, 26^{o} stream bank adjacent to a reedy flush. Regrowth of vegetation indicates >50 years old.	

ENVIROS CONSULTING

PEATSLIDE FIELD SHEET

Project: Craignagapple	**Location: Co Tyrone, NI**	**Landmark:**……**P/S 4**
Co-ords: X .242751.	**Y** ……395397.	**Z** …-…………

LOCALITY	DATE & PERSONNEL	PHOTOGRAPHS
Owenreagh Hill near grid position E13	Logged by: D. Nichol Date: …20 May 2009	Photo Ref. Nos:…1562-1563 incl …looking northwards…

Description	Other
Recent peatslide area about 20 m wide by 30 m long in stream channel at break in slope. Peat profile consists of 1.6 m of brown fibrous peat overlying gravel-rich boulder clay which in turn overlies solid rock exposed in the floor of the stream channel. Large blocks of peat around 1-2 metres across block the channel. The ground movements appear to be due predominantly to undercutting of the boulder clay by the stream and subsequent collapse of unsupported parts of the overlying peat layer.	

ENVIROS CONSULTING

PEATSLIDE FIELD SHEET

Project: Craignagapple	**Location: Co Tyrone, NI**	**Landmark:**……**P/S 5**
Co-ords: X .242734.	**Y** ……395250.	**Z** …-…………

LOCALITY	DATE & PERSONNEL	PHOTOGRAPHS
Owenreagh Hill near grid position E14	Logged by: D. Nichol Date: …20 May 2009	Photo Ref. Nos:…1558-1560 incl …looking north-eastwards…

Description	Other
Old peatslide area about 8 m wide with a 1m high backscar and minor bulging in the area of the toe of the slip. Slope measures 26^{o}. Peat profile consists of 0.7 m of brown fibrous peat overlying gravel-rich boulder clay which crops out at the bottom of the backscar.	

5. LABORATORY TEST RESULTS

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Whitegate Road
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UKAS TESTING 0888

JACOBS

CERTIFICATE OF TEST
TYSTYSGRIF PRAWF

Authorised signatories:
W.H.Gosling (Technical Director)
H.D.M.John (Principal Engineer)
B.J.Simpson (Materials Engineer)
C.P.Bradley (Materials Engineer)

REPORT ON MOISTURE CONTENT OF SOIL

Date 05/06/2009

LabRef No.	**09W2721**	Test No: 1	Site / Client Ref	**T2/1**
Scheme / Site	**Craignagapple, N.I.**			
Location	**T2/1**			
Material	**Disturbed Soil Sample**			
Specification	**Soil Tests**			
Contractor	**Not Applicable**			
Source	**On Site**		Ticket No.	**N/A**
Date Sampled	**N/K**	Time Sampled	Date Received	**26/05/2009**
Sampled By	**Client**		Date Tested – From	**27/05/2009**
Sample Type	**Disturbed**		Date Tested – To	**30/05/2009**

TEST RESULTS

Soil Description :	Brown PEAT.
Moisture Content	**547 %**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Remarks:

Result for Information.

Certificate of Sampling: Non UKAS Accredited, Copy Available.

Sampling Method	Not sampled by Jacobs Staff.
Test Method	BS 1377 : Part 2 : 1990 3.2
Client Name	**Dr Douglas Nichol**
	39 Buckingham Road
	Wrexham
	LL11 2RH

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B.J.Simpson (Materials Engineer)
C.P.Bradley (Materials Engineer)

REPORT ON MOISTURE CONTENT OF SOIL

Date 05/06/2009

LabRef No.	**09W2722**	Test No: 1		Site / Client Ref	**T3/2**
Scheme / Site	**Craignagapple, N.I.**				
Location	**T3/2**				
Material	**Disturbed Soil Sample**				
Specification	**Soil Tests**				
Contractor	**Not Applicable**				
Source	**On Site**			Ticket No.	**N/A**
Date Sampled	**N/K**	Time Sampled		Date Received	**26/05/2009**
Sampled By	**Client**			Date Tested – From	**27/05/2009**
Sample Type	**Disturbed**			Date Tested – To	**30/05/2009**

TEST RESULTS

Soil Description :	Brown PEAT.
Moisture Content	**625 %**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Remarks:

Result for Information.

Certificate of Sampling: Non UKAS Accredited, Copy Available.

Sampling Method	Not sampled by Jacobs Staff.
Test Method	BS 1377 : Part 2 : 1990 3.2
Client Name	**Dr Douglas Nichol**
	39 Buckingham Road
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H.D.M.John (Principal Engineer)
B.J.Simpson (Materials Engineer)
C.P.Bradley (Materials Engineer)

REPORT ON MOISTURE CONTENT OF SOIL

Date 05/06/2009

LabRef No.	**09W2723**	Test No: 1	Site / Client Ref	**T3/3**
Scheme / Site	**Craignagapple, N.I.**			
Location	**T3/3**			
Material	**Disturbed Soil Sample**			
Specification	**Soil Tests**			
Contractor	**Not Applicable**			
Source	**On Site**		Ticket No.	**N/A**
Date Sampled	**N/K**	Time Sampled	Date Received	**26/05/2009**
Sampled By	**Client**		Date Tested – From	**27/05/2009**
Sample Type	**Disturbed**		Date Tested – To	**30/05/2009**

TEST RESULTS

Soil Description :	Brown PEAT.
Moisture Content	**544 %**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Remarks:

Result for Information.

Certificate of Sampling: Non UKAS Accredited, Copy Available.

Sampling Method	Not sampled by Jacobs Staff.
Test Method	BS 1377 : Part 2 : 1990 3.2
Client Name	**Dr Douglas Nichol**
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Phone: 01978 290376
Mobile : 07968 157757
Email: *douglasnichol@btconnect.com*

CERTIFICATE OF TEST

Peat profile at Crainagapple (Irish National Grid (IH 425960)

Sample No T3/2 : trial pit **X4**: depth 0.25 – 1.15 m – brown fibrous peat
Sample No T3/3 : trial pit **X4**: depth 1.15 – 2.05 m – dark brown fibrous peat

PEAT SAMPLES – VON POST CLASSIFICATIONS

Sample T3/2: trial pit **X4**: depth 0.25–1.15 m – S Er H_5 B_3 F_3 R_2 W_1 N_4 T_3 A_1 P_0 pH_L

Sample T3/3: trial pit **X4**: depth 1.15–2.05 m – S Er H_7 B_3 F_2 R_1 W_1 N_4 T_2 A_1 P_0 pH_L

Dr Douglas Nichol
24 June 2009

Dr Douglas Nichol
BSc(Hons) MSc PhD FICE FIMMM CEng
FGS CGeol FAusIMM CPGeo FIHT EurIng
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CERTIFICATE OF TEST

Peat profile at Crainagapple (Irish National Grid (IH 425960)

Sample No T3/2 : trial pit **X4**: depth 0.25 – 1.15 m – brown fibrous peat
Sample No T3/3 : trial pit **X4**: depth 1.15 – 2.05 m – dark brown fibrous peat

MUNSELL COLOUR DESIGNATIONS (Rock Colour Chart Committee, 1980)

Sample T3/2: trial pit **X4**: depth 0.25–1.15 m –	Dusky brown (5YR 2/2) and dusky yellowish brown (10YR 2/2)
Sample T3/3: trial pit **X4**: depth 1.15–2.05 m –	Moderate yellowish brown (10YR 5/4), moderate brown (5YR 4/4) and dusky brown (5YR 2/2)

Dr Douglas Nichol
24 June 2009

A REPORT BY ENVIROS CONSULTING LIMITED: JUNE 2009

SWS NATURAL RESOURCES CRAIGNAGAPPLE WIND FARM

PEATSLIDE HAZARD AND RISK ASSESSMENT: INTERPRETIVE REPORT

Publication title	Peatslide Hazard and Risk Assessment: Interpretive Report
CAN	SW0300004
Volume number	Volume 2 of 2
Version	Final Report
Date	June 2009
File Reference	Craignagapple – Peatslide Report/Interpretive Report

Prepared under the management of:

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Directed, reviewed and approved by:

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FIGURES

APPENDICES

EXECUTIVE SUMMARY

1. In recent years, peatslides have emerged as a new and significant consideration for wind farm projects on peatlands. Developers need to understand peatslide risk and demonstrate that it is being properly controlled, kept under review and further reduced as and when possible. This is the interpretive report for the preliminary peatslide risk assessment undertaken for the proposed Craignagapple wind farm project. The factual report is provided in a separate document.

2. Desk studies and field surveys using the Peatslide Hazard Rating System (PHRS) were employed to evaluate peatland stability at the Craignagapple site. This work identified the salient features of the local bedrock, geomorphology, topography, peat profile, glacial drift deposits, drainage and weather that influence slope stability in relation to the turbine positions and possible access track routes.

3. Rainfall is an important trigger for peatsliding events and it is noteworthy that the local microclimate at Craignagapple features relatively moderate total rainfall compared to the neighbouring maritime regions of the west coast of Ireland.

4. Peatslide potential increases with clayey subsoils that not only impede water flows but also provide smooth slip surfaces. However, at Craignagapple, observations of substrate conditions indicate that grey-brown sandy clay till and boulder clay with patches of gravel predominate but glacially roughened bedrock also appears commonplace in areas of high ground.

5. Much of the peatland at Craignagapple appears severely degraded with surface disturbances associated mainly with extraction of peat for fuel as well as erosion and agricultural activities. During the field survey, examples of ancient peatslides were identified including one major locality in the vicinity of B7. Although one example of a collapsed pipe was found, few other surface indications of shallow subterranean drainage pipes were detected.

6. The peat profile contains mainly Sphagnum-Eriophorum material as layers containing fibres that impart a moderate degree of reinforcement to the peat stratum. The reinforced layers enhance stability. On the other hand, localised steep slopes and areas of wet ground conditions increase peatslide susceptibility in certain areas.

7. The Peatslide Hazard Rating System (PHRS) provides a comparative method for ranking sites by geohazard. It was used to assess the peatslide hazard at Craignagapple. Based on the PHRS scores as well as terrain analysis, important design parameters have been established in support of the layout design.

8. Specific design constraints for layout purposes include (a) avoidance of areas of deep peat (> 2m), (b) avoidance of areas of steep gradient (> 10^{o}), (c) avoidance of areas of wet ground using set back distances of > 50m from watercourses. During the design phase, these areas should be avoided as far as possible for access road routes as well as turbine positions.

9. Importantly, the ancient peatslide locality in the vicinity of B7 is ruled out for all activities associated with the development.

10. An overall PHRS score of 93 for the total site places it in the low category of peatslide risk and it is anticipated that the preliminary turbine layout using the foregoing design constraints will result in a significantly lower overall PHRS score for the project.

11. Engineering responses may be required to deal with localized instability during the construction phase of the project. These responses can be implemented under geotechnical supervision. The first geotechnical risk register for the project is provided herein for the purpose of managing geotechnical risk during the construction phase.

1. INTRODUCTION

1.1 Background Information

Bord Gáis Energy (formerly SWS Energy Ltd) proposes building a wind farm on an area of undulating peatland in upland terrain at Craignagapple in County Tyrone, Northern Ireland (Figure 1). The wind farm project involves erecting around 9 turbines at widely spaced locations within an area of some 4 km^2 together with construction of access roads and tracks. It extends on the existing array of sixteen turbines already installed and known as the Owenreagh wind farm.

A special geo-engineering study on peat slope stability was carried out to consider the risk of peatslides occurring at the site so that suitable controls and methodologies can be employed during design/construction to mitigate these risks.

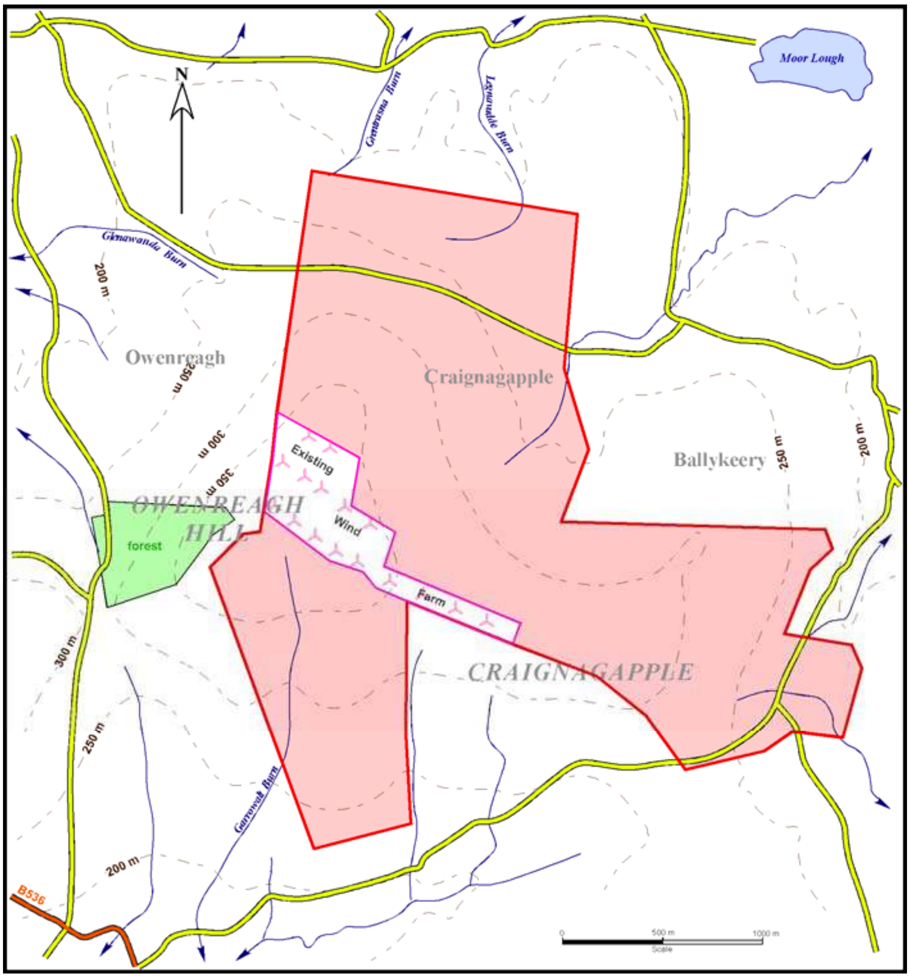
This is the interpretive report for the peatslide hazard and risk assessment for the Craignagapple project. It should be read in conjunction with the separate factual report which details the work carried out and the information obtained. Both documents were prepared in accordance with the format recommended in the Scottish Executive's best practice guide (Scottish Executive, 2006).

Figure 1 Orientation Map, Craignagapple Wind Farm

1.2 Site Location and Layout

The proposed wind farm site lies within County Tyrone, Northern Ireland. It is situated in hilly ground some 8 km northwest of Plumbridge and 8 km east-southeast of Strabane. Irish Grid Reference IH 425960 applies. Figure 2 details the site location and initial study area. The site occupies relatively open upland with an area of coniferous forest to the west. Access to the site from the B536 highway is northwards by a series of narrow rural roads.

Figure 2 Site Plan



1.3 Scope and Purpose of the Investigation

Enviros was commissioned to undertake a study of peatslide risks for the wind farm project at Craignagapple. A constraints based approach was used to provide design guidance for the preliminary layout. This report has been compiled with the following aims, to:-

- estimate the geotechnical risks associated with peatsliding;
- identify key areas of the wind farm potentially affected by unstable peat conditions;

- suggest strategies for mitigation of peatslide risk; and
- formulate a preliminary geotechnical risk register for the project.

This report therefore provides a summary of the work undertaken to date, an overall interpretation of the hazard and risks associated with peatsliding and an appraisal of engineering and mitigation considerations. The report also includes the first geotechnical risk register for the project.

1.4 Field and Laboratory Studies

An estimate of the risk of peatslides was undertaken at the proposed Craignagapple wind farm by using the Peatslide Hazard Rating System (PHRS) (Nichol, 2006) and identifying the salient features of local bedrock, glacial drift deposits, geomorphology, topography, peat profile, peat strength, drainage and weather that may influence slope stability across the site.

The assessment involved:

- A front end desk-study concerning peatslides in general and the occurrence of landslides in the region around Craignagapple in order to focus upon the development of hazard models and provide an estimation of the nature, size (magnitude) and frequency characteristics of peatsliding events deemed to have immediate background relevance to this study. The findings are incorporated in this report.
- Site walkovers and field surveys in order to estimate the size, frequency, likelihoods and consequences of peatslide events by identifying and delineating specific hazard-prone areas or individual slopes within the proposed development site at Craignagapple that are likely to be more prone to failure than others. The principal approach involved the Peatslide Hazard Rating System (PHRS) which provided a comparative method for ranking sites by peatslide geohazard potential. The field data are presented in the accompanying factual report.
- Laboratory testing to determine certain properties of the peat profile at Craignagapple. The information and data obtained are presented in the accompanying factual report.
- Collection of site information and local knowledge from landowners and local residents about the site. Notes made during interviews have been included into the relevant sections of the report.

Further ground investigations will be required during the early stages of the detailed design and construction phases of the project to verify ground conditions particularly at turbine positions and along the routes of new access roads.

2. DESCRIPTION AND SITE HISTORY

2.1 Geography, Topography and Geomorphology

The proposed development site occupies the upland slopes of Owenreagh Hill, a prominent area of high ground at the western end of the Sperrin Mountains. The hillside features three principal slopes facing southwards, north-eastwards and north-westwards and Owenreagh Hill itself attains a height of around 400m AOD. In general, the ground slopes vary from very gentle with broad almost level watersheds to steep slopes on hillsides and valley flanks.

The peatland occupies several geomorphologies throughout the development site and the peat varies in depth according to local topographic conditions. In addition, the peatland appears severely degraded by peat extraction for fuel, grazing, burning and drainage schemes. Natural erosion of the peatland exists in several places and gives rise to localized disruption of the ground surface.

The following Ordnance Survey of Northern Ireland topographic map is available for the site – Discoverer Series, Sheet 12, Strabane, 1:50,000.

Much of the landscape of the Craignagapple district was created during complex phases of glaciation affecting this region in Late Pleistocene (Devensian) time (approx 10,000 years BP). The movement of glaciers carved and moulded the rocks and left behind varied accumulations of glacial deposits. Glacial landforms range from upland fringe hills to river valleys.

Geomorphological observations made during desk studies and the walkover and PHRS field surveys are discussed within the relevant sections of this report, in particular section 3 on ground conditions and material properties.

2.2 Land Use, Historical Development and Man-made Features

Farming and forestry dominate the land use pattern. At Craignagapple, the lower slopes are used for grazing of cattle and sheep and the moorland ground is used as rough grazing.

An existing array of 16 turbines is established along the highest part of the hillside.

2.3 Geology

2.3.1 Existing Information

The geological setting of the region is described in detail by Mitchell (2004).

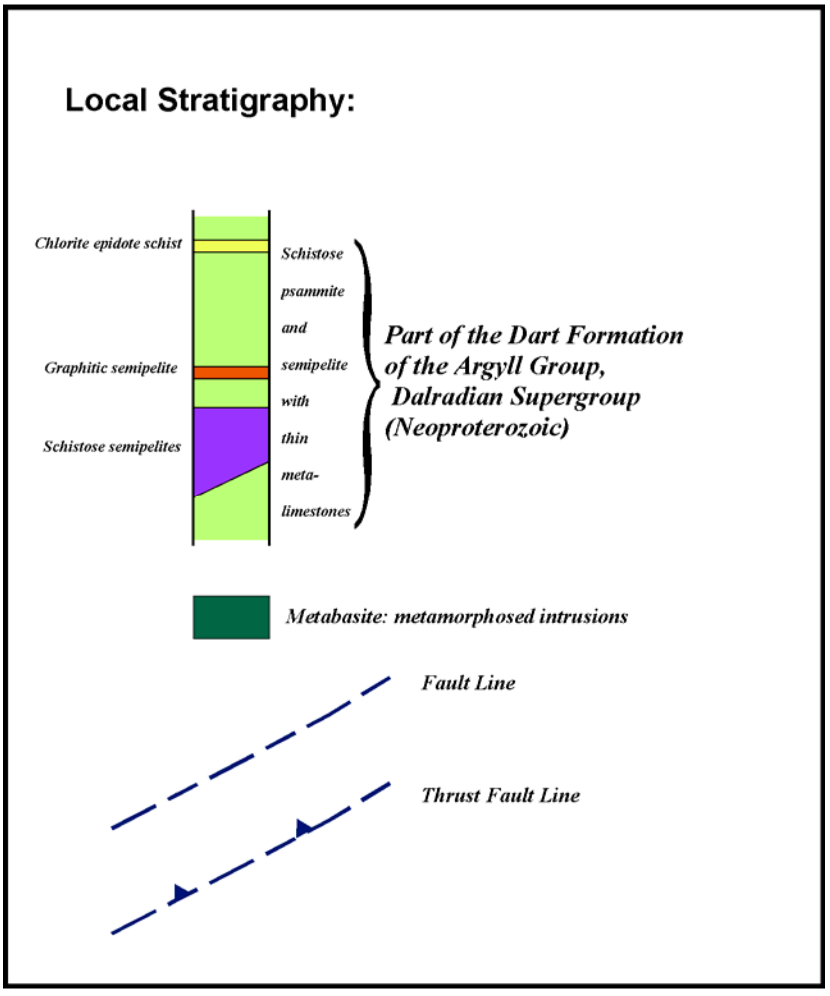
The following Geological Survey of Northern Ireland maps of the geology for the southern part of the site are available – Sheet 25, Newtownstewart, 1:50,000 Series, solid geology edition (published 2008) and solid & drift edition (also published 2008). Unfortunately, the corresponding geology maps for the northern portion of the site are unavailable at the present time.

An account of the geology, based on the published sources and supplemented by geological observations made during the site walkover and PHRS field surveys is presented hereunder.

2.3.2 Geological Setting

At Craignagapple, the solid geology involves metamorphic strata of the Argyll Group (Dalradian Supergroup) of Neoproterozoic age (Figures 3 & 4).

Figure 3 Local Stratigraphic Column for the Craignagapple District



The development site is underlain predominantly by a monotonous succession of schistose psammite and semipelite formations within the Dart Formation. Generally, the strata strike northeast and dip at shallow to moderate angles northwards.

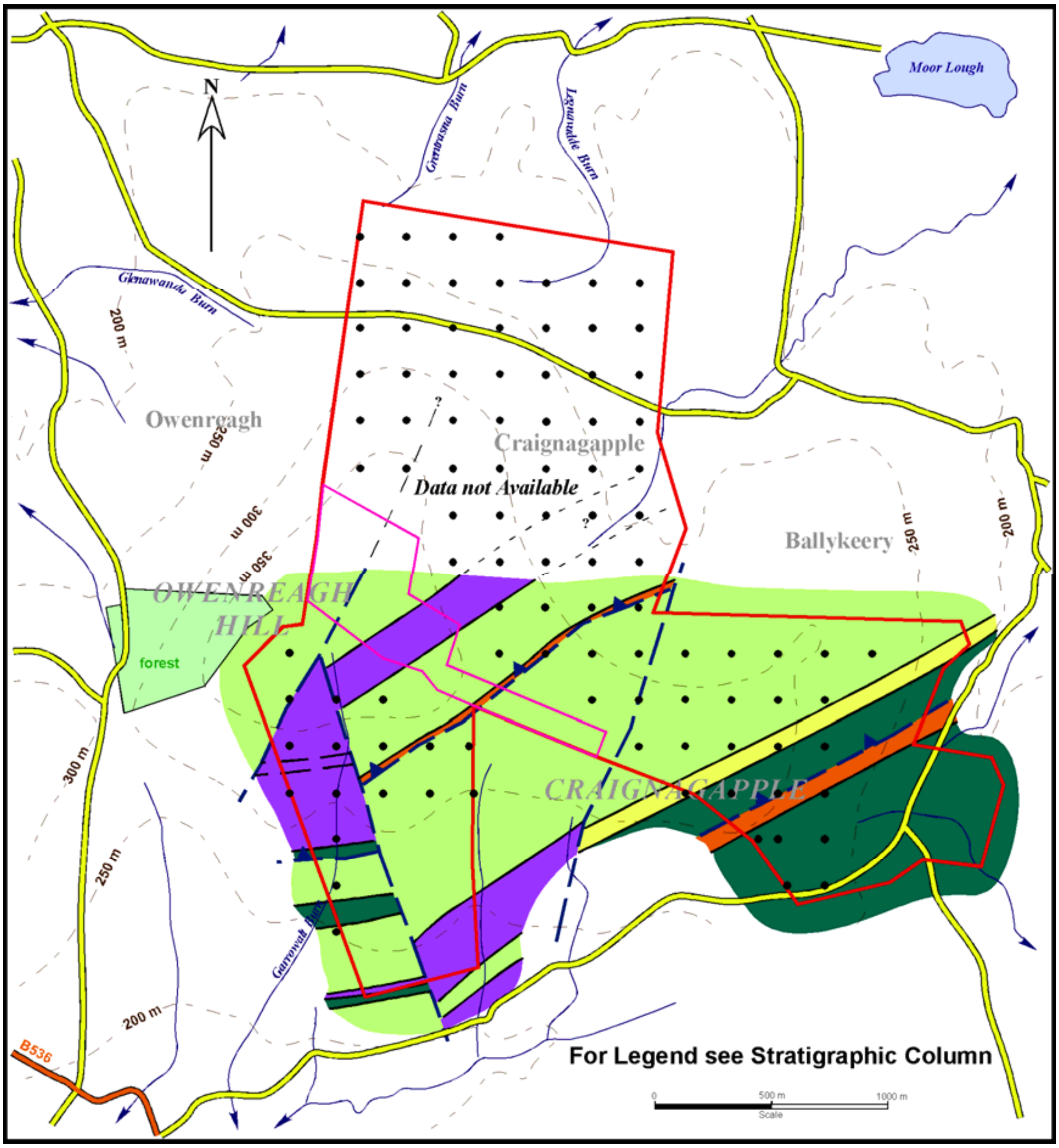
The principal rock formations are exposed at the existing wind farm where they form prominent outcrops in excavations and road cuttings (e.g. see peat profile X4).

To the southeast, the site is underlain by metabastite which formed as a result of metamorphism of gabbroic, amphibolitic and other igneous intrusions.

Minor sills and dykes of porphyrite intrude the Dalradian strata.

Importantly, in relation to the present study, the effects of glaciation are seen on scattered outcrops where rockhead surfaces are severely fractured and roughened by plucking during glacial advance. Plucking instead of polishing is generally ascribed to the presence of close spaced discontinuities in bedrock that provide readily exploited weaknesses in the rock mass.

Figure 4 **Solid Geology at Craignagapple Wind Farm**



2.3.3 Surficial Deposits

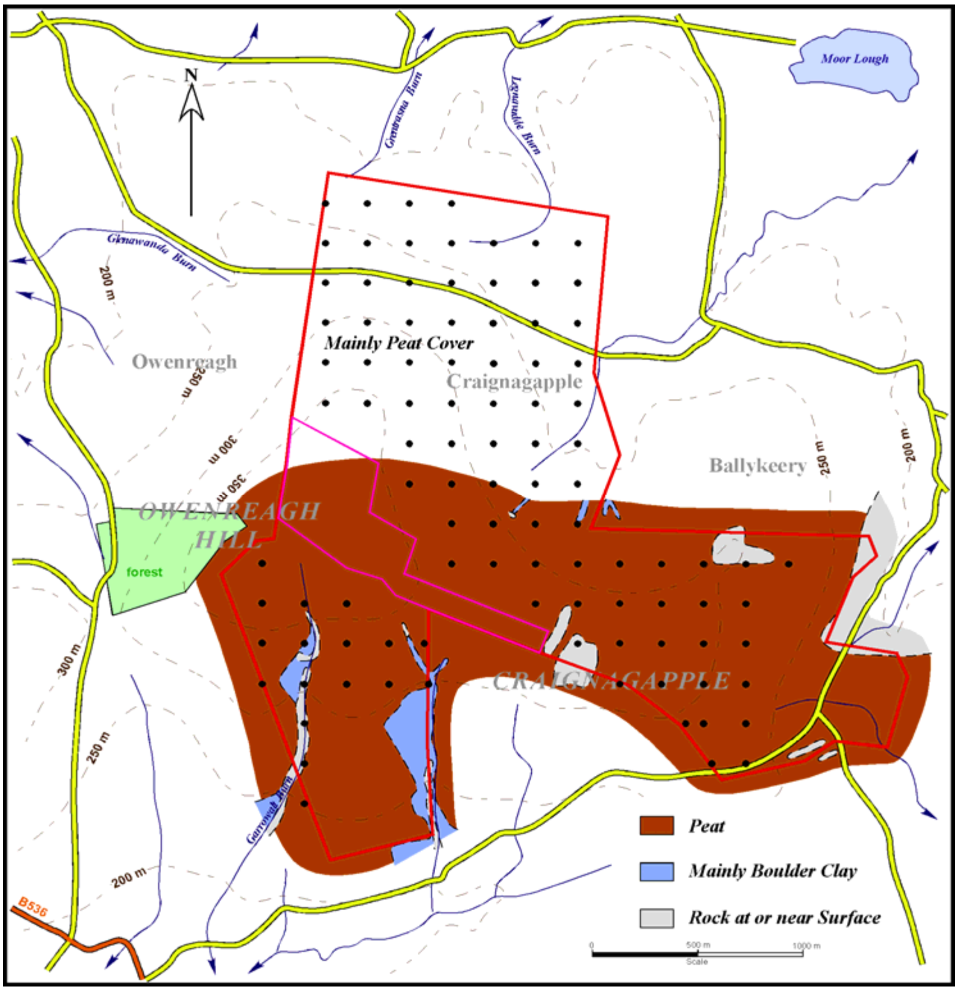
At Craignagapple, bedrock is overlain by drift of glacial derivation and tracts of peatland of post-glacial age (Figure 5).

Surface exposures of the glacial drift are observationally accessible within the existing wind farm site (e.g. peat profiles X1 and X3). Almost invariably it consists of grey-brown, heterogeneous, silty, sandy, clayey till (boulder clay) with irregular bands and scattered pockets of gravel.

The majority of slopes where bedrock is not exposed were probably covered with a thin veneer of glacial till after the retreat of the ice. This would subsequently have been modified by solifluction. Hence, the present day slopes are expected to be mantled by a thin cover (1 m to 5 m) of modified till and superficial deposits consisting of clayey silts and silty clays with a variable gravel, cobble and boulder content.

Extensive areas of peat appear widespread. The deposits of peat usually overlie boulder clay but in a few places on the high ground they rest directly on bedrock.

Figure 5 Drift Geology at Craignagapple Wind Farm



2.3.4 Peat Profile

Peat is essentially an accumulation of plant remains at various stages of decomposition, formed in waterlogged areas. It developed as a result of the cool wet climate (Lindsay, 1995). The blanket peat of the upland at Craignagapple is mostly less than 2.5 m deep but in localized areas thicknesses exceeding 3 m infill old glacial drainage channels.

At Craignagapple, the surface vegetation consists predominantly of sphagnum mosses, cotton grass, other grasses and heather but diverse floras have been identified across various geomorphologies. The peat profile at Craignagapple comprises one principal layer of brown, fibrous, sphagnum-eriophorum peat between the present-day root mat at the top and the boundary with the underlying material at the bottom. The underlying material is either rock (e.g. trial pit X4) in areas of high ground or boulder clay (e.g. trial pits X1 & X3) elsewhere.

Exposed faces in stream banks and turbary faces reveal a well-developed banded or laminated structure in the peat profile with marked variations in thicknesses of individual layers over short distances.

2.4 Hydrology and Hydrogeology

The site lies within the catchments of Douglas Burn to the south, Glenmornan River to the northwest and Dunnyboe Burn to the northeast.

The main slopes of the site are gentle to moderate and usually well drained. Generally, runoff will be rapid and groundwater flow will largely be confined to the rockhead where more granular material and fractured rock will form a more permeable zone. The bedrock itself is expected to be relatively low permeability whereas the boulder clay is expected to be very low permeability, except along fault zones or major discontinuities where groundwater will be preferentially concentrated. Groundwater flows are expected to be small on the slopes.

The natural drainage characteristics of the area are affected in certain places by man-made drainage channels. Open ditches presumably associated with ground improvements for agricultural purposes exist in several parts of the site. These open ditches are generally in a somewhat degraded condition but appear extremely effective in draining surface water.

2.5 Mining

The Coal Authority indicated that no coal mining has taken place or is presently being carried out within the study area and advised any future workings, either on or beneath the surface were considered unlikely.

Numerous old turbary sites were identified on the site. However, digging of peat for fuel from the site appears to have virtually ceased.

Excavations for turbine foundations and access roads at the existing wind farm have generated substantial quantities of road-making materials. One abandoned roadside quarry was also noted in the vicinity of D4.

2.6 Geo-environmental

For the most part, bedrock at the wind farm site consists of slow weathering rocks that pose no significant problems for the chemistry of watercourses or groundwater.

3. GROUND CONDITIONS AND MATERIAL PROPERTIES

3.1 Bedrock Geology

At Craignagapple, the solid geology involves meta-sedimentary rocks of the Argyll Group (Dalradian Supergroup) of Neoproterozoic age. The wind farm site is underlain by Schistose Psammites and semi-pelites. Generally, the strata strike northeast and dip at shallow to moderate angles northwards.

To the southeast, the site is underlain by metabastite which formed as a result of metamorphism of gabbroic, amphibolitic and other igneous intrusions. These rocks are not exposed at the site and so uncertainty exists in relation to their condition. If they are deeply weathered then special measures may be required during earthworks activities.

Typically, the uniaxial compressive strength of the Dalradian rocks ranges from about 50 to 150 MPa and averages around 90 MPa. They are expected to provide excellent foundation conditions for the construction of turbines.

3.2 Cohesive Glacial Till (boulder clay)

At Craignagapple, bedrock is overlain by drift of glacial derivation. Surface exposures of the glacial drift are observationally accessible within the existing wind farm site and show it consists of grey-brown, heterogeneous, silty, sandy, clayey till (boulder clay) with a variable gravel, cobble and boulder content and irregular bands and scattered pockets of gravel.

The tills are cohesive glacial deposits of variable undrained shear strength (generally increasing with depth) and ranged from very soft to stiff but more typically firm, and were described as sandy gravelly clay. Layers of lower strength (very soft and soft) material were noted in certain places.

3.3 Alluvium

Alluvium is confined to the active stream valleys. It is variable, from firm to stiff clayey silts through to sands and gravels and is encountered at very few locations.

3.4 Peat Profile

The representative peat profile at Craignagapple comprises one principal layer of brown, fibrous, sphagnum-eriophorum peat between the present-day root mat at the top and the boundary with the underlying material at the bottom. The underlying material is either rock (e.g. trial pit X4) in areas of high ground or boulder clay (e.g. trial pits X1 & X3) elsewhere.

Based on the extended von Post classification system (Hobbs, 1986), the following engineering characterization of a representative peat profile at Craignagapple applies:-

S Er H_6 B_3 F_3 R_2 W_1 N_4 T_3 A_1 P_0 pH_L

Exposed faces in stream banks and turbary faces reveal a well-developed banded or laminated structure in the peat profile with marked variations in thicknesses of individual layers over short distances. Certain bands are highly fibrous with long fibres sparsely distributed. Typical moisture contents range from 500% to 700%, but in localized pockets, the moisture content is considerably higher. The moisture contents determined by laboratory testing were 547 %, 625 % and 544 %.

3.5 Seismicity

According to Walker et al (2003) the region is characterized by weak seismic activity with low seismic hazard values. Using the current draft UK seismic hazard map with return period of 475 years, for Craignagapple there is a 10 % chance of experiencing an acceleration of 0.01 g or greater in 50 years. Accordingly, in relation to the present study, seismic tremors are unlikely to induce movements in peat in either marginally stable slopes or saturated peatland areas.

3.6 Local Climate

The County Tyrone region of Northern Ireland has an unsettled cool climate, with unevenly distributed annual rainfall and strong winds. Total annual average rainfall appears somewhat lower than expected compared to the neighbouring maritime regions of the west coast of Ireland. However, levels of rainfall reduce rapidly from west to east.

According to the annual rainfall isohyets for 1980 (Meteorological Office, 1984), Craignagapple would expect to receive around 1000-1200 mm of rain per annum.

Rainfall data recorded in an instrumented weather station at Ligfordrum Forest (grid reference, IH 418935, altitude 161 m AOD), some 2.5 km south of the wind farm site showed an annual mean of 1089 mm for the period of 30 years from 1941 to 1970.

For the purposes of the peatslide hazard assessment a figure of 1100 mm was used for the estimated annual rainfall at Craignagapple.

However, like much of western Ireland, the Craignagapple district may receive prolonged and heavy rainfall in any one month but cloudbursts appear more common during the late summer, autumn and early winter months. Typically, April and May are comparatively drier months.

3.7 Peatslide Inventory

3.7.1 Existing Information

Peatslides are defined as the downward and outward movement of masses of saturated peat. This definition is non-genetic and intended to embrace a wide array of ground movements associated with peatlands. As such, peatslides range from catastrophic and rapid downhill flows to minor slips and longitudinal cracking on gentle slopes.

A literature survey concerning peatslides, their field relations, distribution, occurrence and consequences is summarised in Table 1. This indicates that in relation to the effects of peatslide events, they rarely affect people directly by causing injury or death. The principal concern at the present day appears to focus on potential damage to water bodies, watercourses and fisheries interests. Other impacts on the environment include the loss of peat, discolouration of downstream watercourses by dissolved organic matter, loss of wildlife habitats, visual obtrusion on the local landscape, removal of vegetation cover and exposure of bare faces of peat to erosion. Moreover, the perception prevails that peatslides are increasing in frequency and that, at least in part, this is the result of increased human activity encroaching on peatland areas.

Table 1 Selection of Recorded Peatslide Events and Their Consequences

Authors	Location	Event	Date	Trigger	Size (000 m^3)	Consequences
Acreman (1991)	Pennygrant Hill, Scotland	Multiple peatslides	25 July 1983	Intense rainfall	1	Land, building & fences damaged. Fish killed
Barkley (1887), Bailey (1879)	Port Stanley, Falkland Islands	Compound peatslide	2 June 1886	Intense rainfall	40	Damage to buildings, roads and harbour. Death of 1 person.
Bowes (1960)	Morsgail, Lewis, Scotland	Peatslide	20 November 1959	Heavy rainfall. Lake breach	4	Erosion. Land damage. Fish killed
Winter et al (2005)	Channerwick, Shetland, Scotland	Peatslide	19 September 2003	Intense rainfall	500	Damage to buildings, roads, bridge & services. Sheep killed
Carling (1986); McCahon et al (1987)	Nein Head II, North Pennines, England	Multiple peatslides	17 July 1983	Intense rainfall	31	Erosion. Land damage. Fish killed
Colhoun et al (1965)	Glendun, Antrim, Ireland	Peatslide	10 November 1963	Intense rainfall	400	Damage to land, buildings, roads, a bridge and farm machinery. Erosion
Crisp et al (1964)	Meldon Hill, England	Multiple peatslides	6 July 1963	Intense rainfall	6	Erosion. Land damage
Dykes & Kirk (2001)	Cuilcagh Mountain, Ireland	Compound peatslide	25 October1998	Rainstorm & degraded ditches	10	Erosion. Land damage
Gallart et al (1994)	Tierra del Fuego, Argentina	Multiple peatslides	1957-1970	Steep slopes, snowfalls & earthquakes	8	Temporary environmental deterioration
Hemingway & Sledge (1946)	Danby-in-Cleveland, Engl	Peat flow	12 August 1938	Rainstorm	100	Damage to walls and buildings. Sheep killed
Hungr & Evans (1985)	Prince Rupert, Canada	Peat flow	1982	Excessive loading	10	Land damage. Construction delays
Long & Jennings (2006)	Pollatomish, Mayo, Ireland	Multiple peatslides	19 September 2003	Intense rainfall & steep slopes	200	Damage to buildings, roads and cemetery. Village evacuated
McEwen & Withers (1989)	Solway Moss, Carlisle England	Peatslide and flow	16 November 1771	Intense rainfall	3700	Damage to buildings, farmland and roads. Cattle, horses and fish killed
Nichol et al (2007)	Capel Curig, North Wales	Peatlide	8 November 2005	Intense rainfall	1	Damage to road. One person injured
Selkirk (1996)	Stony Creek, Macquarie Is	Multiple peatslides	February 1992	Steep slope, rainfall & seismicity	2	Temporary environmental deterioration

Authors	Location	Event	Date	Trigger	Size (000 m^3)	Consequences
Sollas et al (1897)	Knocknageedha, Ireland	Peat flow	28 December 1896	Intense rainfall	5000	Damage to land, buildings, roads & bridges. Death of 8 persons.
Tallis (1987)	Holme Moss, England	Peatslide	23 July 1777	Intense rainfall	10	Erosion. Land damage
Warburton et al (2003)	Hart Hope, N.Pennines,Eng	Peatslide	February 1995	Heavy rainfall, clayey substrate	31	Erosion. Land damage
Wilson & Hegarty (1993)	Skerry Hill, Antrim, Ireland	Multiple peatslides	November 1991	Heavy rainfall & degraded drainage ditches	3	Erosion. Land damage
Wilson et al (1996)	Carntogher, Londonderry, Ireland	Peat flow	10 September 1993	Heavy rainfall & degraded drainage ditches	300	Damage to land, fences and services. Sheep & fish killed.

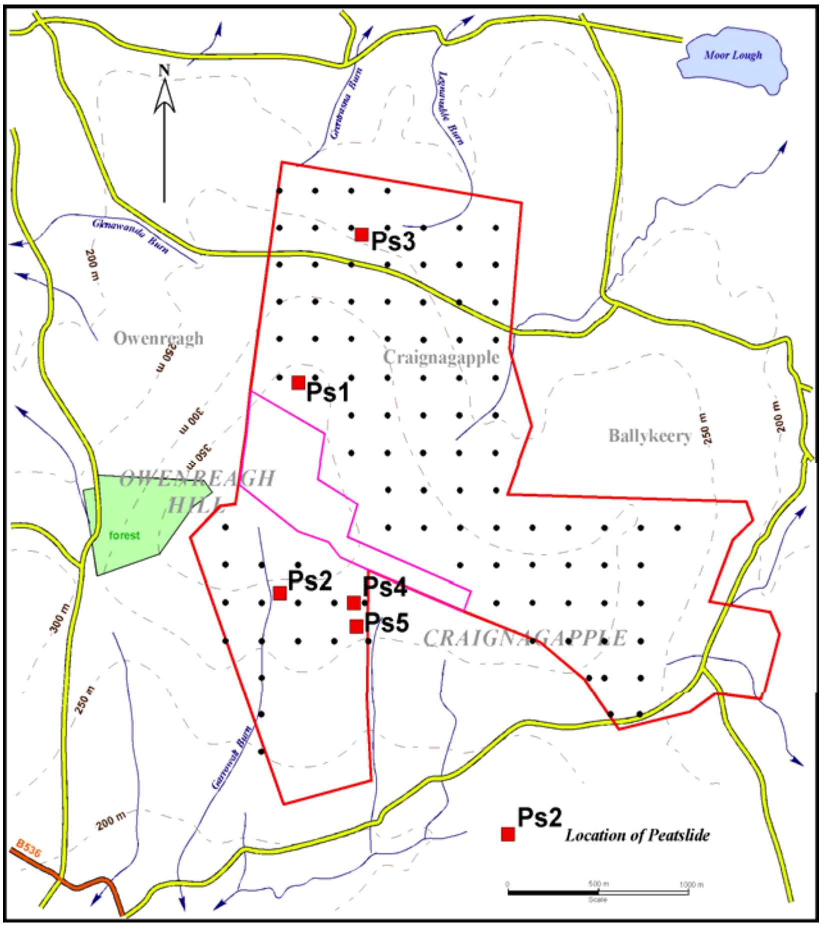
3.7.1 Peatslides in Ireland

A comprehensive review of the technical literature concerning peatslides in Ireland is provided by Creighton (2006) with important supplementary information provided more recently by Boylan et al (2008). This work established that in an Irish context, the incidence of peatslides appears relatively low and the effects rarely result in significant harm to people and property. Nonetheless, peatsliding undoubtedly happens more often in Ireland than elsewhere in the British Isles. In addition, the perception prevails that peatslides are increasing in frequency and that, at least in part, this is the result of increased human activity encroaching on peatland areas. Several noteworthy peatslide events are recorded in the technical literature for the region around Craignagapple. Only one locality is reported for County Tyrone, some 30 km to the south at Clogher where two historical peatslide events happened pre-1640 and again in 1712 (see Colhoun et al, 1965). More recently, peatslide events are reported for neighbouring County Fermanagh, some 45 km to the southwest at Cuilcagh Mountain in October 1998 (Dykes & Kirk, 2000 & 2001) and some 50 km to the south at Carrowmaculla in November 1979 (Tomlinson, 1981). To the west in County Donegal, two peatslide events are recorded some 85 km to the west at Meenacharvy in January 1945 (Bishopp & Mitchell, 1946) and some 45 km to the west at Barnesmore in November 1963 (Colhoun et al, 1965). None of these historical peatslides appear to have direct relevance to Craignagapple.

3.7.2 Peatslides at Craignagapple

Since previous peatslide activity around the wind farm site may serve as an indicator and guide to future slope movements, evidence of peat slope instability was sought in the field by walkover inspections (Figure 6). Several ancient peatslide localities were identified but for the most part they appear intimately associated with watercourses, usually around the outer bends of meanders, and are considered to be a normal part of the development of river systems.

Figure 6 Locality Map for Peatslides at Craingagapple Wind Farm



However, one noteworthy ancient peatslide of large dimensions was encountered in the vicinity of B6 (locality Ps1). It measures about 80 m wide by 120 m long and the peat profile consists of 1.3 m of brown fibrous peat overlying gravel-rich boulder clay. Numerous large blocks of peat around 2-5 metres across have rafted down the slope and pockets of exceedingly soft ground have formed within the intervening ground between the blocks. The ground movements appear to be due predominantly to failure at the head of an old turbary on a steep stretch of the hillside with the rafted blocks sliding down the floor of the turbary (Figure 7). However, further detailed investigations would be required to fully characterise the site.

3.8 Sinkholes and Sub-profile Drainage

Sinkholes provide surface evidence of the presence of open subterranean conduits and appear uncommon throughout the site at Craignagapple. Only one collapsed pipe was encountered during the walkover (Figure 8). It lies at grid position IH 42988 969992 and measures approximately 1.5m deep.

Figure 7 Ancient Peatslide Ps1 Near Point B6 (view looking eastwards)

Figure 8 Collapsed Pipe Near Point E5 (view looking westwards)

The natural drainage characteristics of the area are affected in a few places by a network of man-made drainage channels. Widely spaced field drains cross areas of open moorland for agricultural improvement purposes. These appear generally in a degraded condition but are extremely effective in draining surface water. Nevertheless, the presence of active subsurface drainage pipes in the peat profile is evident in several places but especially in the northern portion of the site. Surface indications include lines of reeds, grass lanes, sinkholes, seepage points and springs. However, no natural pipe outlets were observed in the banks of streams or ditches or in old turbary faces. Based on surface observations and using the scale given by Jones (1978) the pipe frequency across the bulk of the wind farm site is estimated at 15-25 per km^2 but increasing to about 30 per km^2 in the northern portion of the site.

According to Wilson & Smart (1984), the presence of subsurface pipes is thought to be a key contributory factor in preparing sites for failure. However, in the case of Binnawooda the surface drainage configurations appear favourable.

3.9 Peat Depths and Vane Shear Strengths

At any given site, the depth of penetration of a probe may provide a rough indication of the thickness of the peat profile. At Craignagapple wind farm site, a probe survey was carried out previously and areas of deep peat eliminated from further consideration. Depths encountered during this survey generally fall within the range of 0.2 m to 3.5 m with values less than 0.5 m commonplace. Deeper peat was found in several areas and values exceeding 2.5 m were recorded at grid positions D13, H4, I11, I13, J11 and K11. Although the results of the depth probings are interesting in their own right and useful for engineering design purposes, the benefits for peatslide assessment purposes appear limited. Indeed, typical depths of peat of only 0.80 m, 0. 61 m and 0.55 m are recorded at several well-known peatslide localities at Hart Hope (Warburton et al, 2003), Meldon Hill West (Crisp et al, 1964) and Llyn Ogwen (Nichol et al, 2007) respectively.

Vane testing was carried out on peat banks exposed along drainage ditches, old turbary faces and in shallow hand-dug pits. Undrained shear strength was measured using a hand-vane and the results of the test were taken as the average of three separate readings. Values varied between 10 and 50 kPa depending on degree of saturation but typically fell within the range 15-30 kPa. A wide scatter of results also existed and no noteworthy patterns were detected through the peat profile.

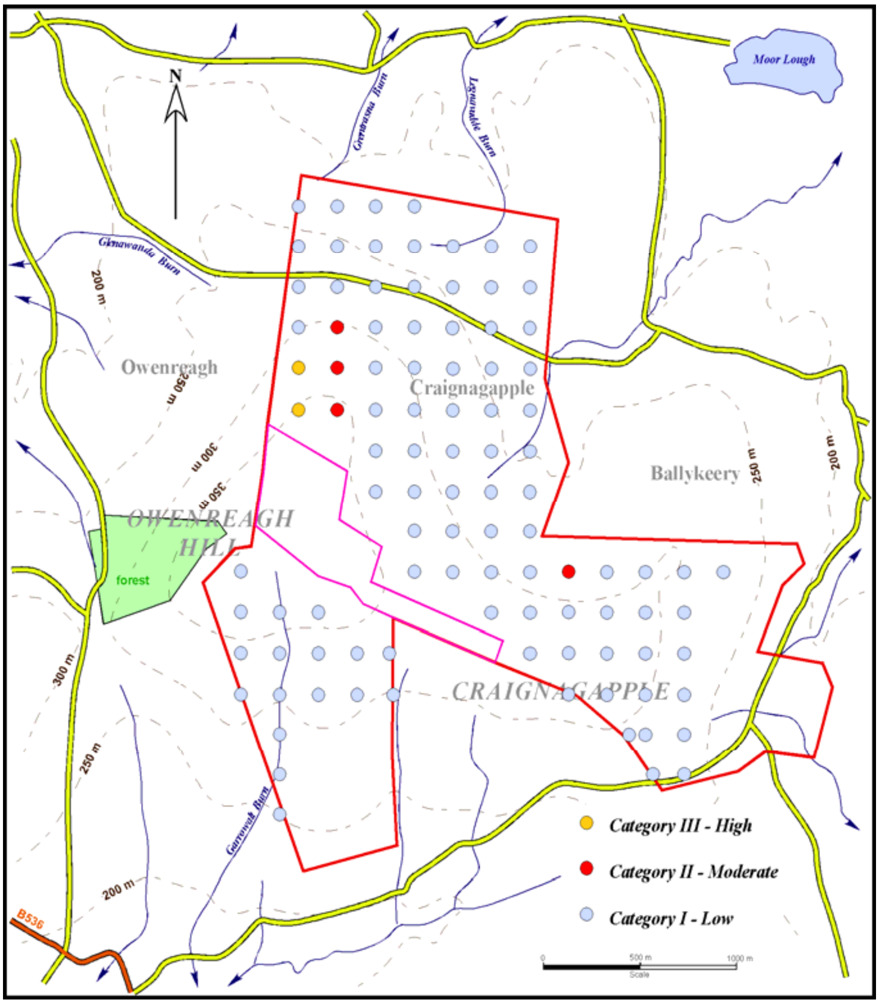
3.10 Terrain Analysis

One of the simplest and most efficient methods of evaluating peatslide risk involves the application of terrain evaluation procedures. The observational method used in this study was based primarily on the combined assessment of geomorphology, topography and geology by the trained-eye of a professional geo-engineer. However, other peatslide attributes of secondary importance also taken into consideration include orientation to the wind, orientation to the sun and forest cover.

Three classes of peatslide susceptibility were adopted; Category I for low to very low susceptibility, Category II for moderate susceptibility and Category III for high to very high susceptibility.

The findings at Craignagapple wind farm project indicate that Category I zones predominate. Category II zones are restricted to the area around grid positions C5, C6 and C7 and Category III zones are limited to the area around grid positions B5 and B6 (see Figure 9).

Figure 9 Results of Terrain Analysis for Craignagapple Wind Farm



4. EVALUATION OF STABILITY

4.1 The Peatslide Hazard Rating System – Survey & Results

The Peatslide Hazard Rating System (PHRS) (Nichol, 2006) was used to evaluate stability. The PHRS is a proactive tool to rationally address peatslide hazards and provide a defensible, standardised way to assess priority by numerically differentiating the apparent risk at potential peatslide sites. The principal features of the assessment criteria and scores for the hazard rating system are summarized in Table 2.

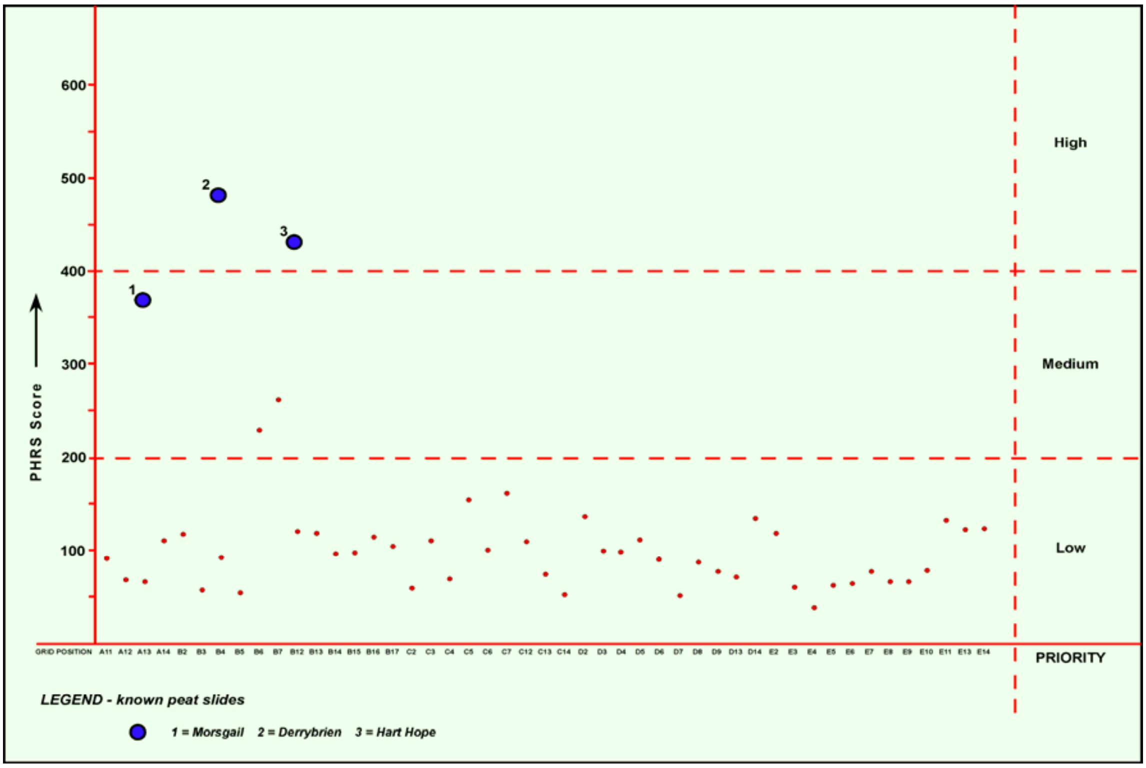
Table 2 Peatslide Hazard Rating System (PHRS)

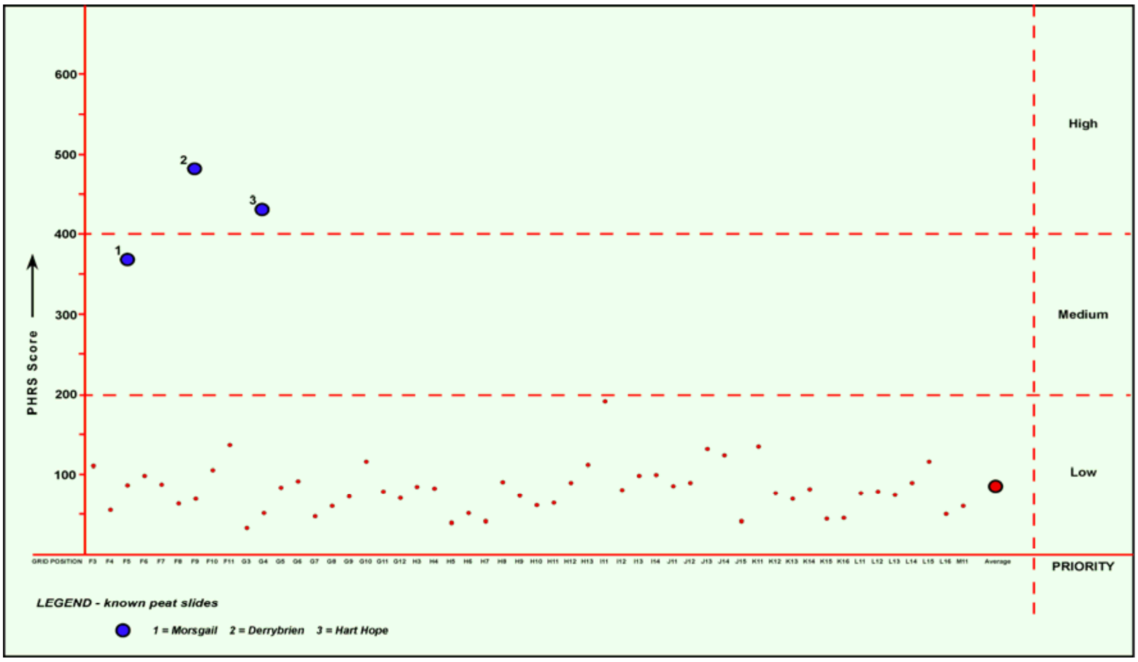
Category	Rating Criteria and Score			
	Points 3	Points 9	Points 27	Points 81
Rainfall and climate	Low to moderate precipitation	Moderate precipitation	High precipitation	High precipitation
Presence of water on slope	No water on slope	Intermittent water on slope	Continual water on slope	Continual water on slope
Rockhead or subsoil	Rough and irregular rockhead or granular subsoil of sand & gravel	Undulating rockhead or granular subsoil	Planar and regular rockhead or cohesive subsoil	Smooth, polished and regular rockhead or cohesive clay subsoil
Peat profile and depth	Single layer profile less than 1 m deep	Double layer profile less than 2 m deep	Triple layer profile greater than 2 m deep	Complex profile greater than 4 m deep
Peat strength (vane test)	40 kPa	30 kPa	20 kPa	10 kPa
Slope and slope regularity	2^{o} ; even	5^{o} ; uneven	10^{o} ; irregular	15^{o} ; very irregular
Geomorphology and site history	Few differential erosion features	Occasional erosion features	Many erosion features	Major erosion features
Sub-profile drainage	Few pipes	Occasional pipes	Many pipes	Many pipes and sinkholes
Peatslide history	Few slides	Occasional slides	Many slides	Major peatslides
Potential peatslide severity	Few consequences; small impacted area	Minor consequences; minor impacted area	Many consequences; large impacted area	Major consequences; large impacted area

4.2 Grid Positions – PHRS Scores

To illustrate the variation across the wind farm site, detailed investigations were carried out at 99 individual grid positions, each resulting in a different PHRS rating. The PHRS method was used in order to provide a comparative method for ranking sites by peatslide geohazard potential. The results are listed in the factual report and illustrated graphically in Figure 10.

Figure 10 Variations in PHRS Scores at Craignagapple Wind Farm





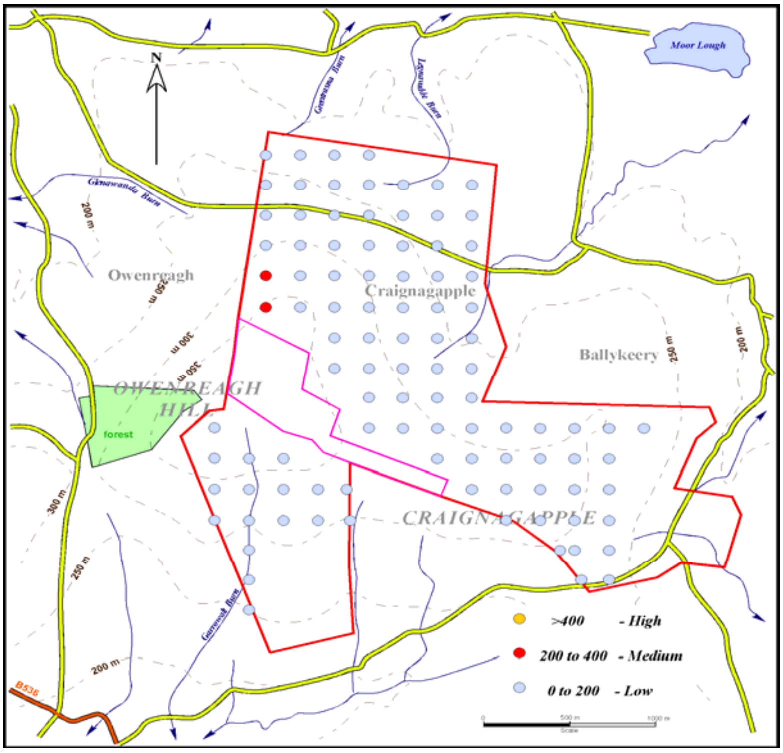
All of the turbine positions received the same low PHRS score of 5 for rainfall and climate and several positions received comparatively high scores for steep slope angles, deep peat profiles and low peat strengths. However, several benefited from comparatively low scores for ground wetness, rockhead or subsoil, peatslide history and potential peatslide severity resulting in scores of generally less than 150.

Grid positions A11, A12, A13, B3, B4, B5, B14, C2, C4, C13, C14, D6, D7, D8, D9, D13, E3, E4, E5, E6, E7, E8, E9, E10, F4, F5, F7, F8, F9, G3, G4, G5, G6, G7, G8, G9, G11, G12, H3, H4, H5, H6, H7, H8, H9, H10, H11, H12, I12, J11, J12, J15, K12, K13, K14, K15, K16, L11, L12, L13, L14, L16 & M11 have relatively shallow peat and/or gentle slopes and/or favourable geomorphology and therefore have comparatively low ratings. Grid positions A14, B2, B12, B13, B15, B16, B17, C3, C5, C6, C7, C12, D2, D3, D4, D5, D14, E2, E11, E13, E14, F3, F6, F10, F11, G10, H13, I11, I13, I14, J13, J14, K11 & L15 have relatively thicker peat, or steeper slopes, or lower peat strengths, or greater potential peatslide severity resulting in higher ratings. Importantly, only 2 of the grid positions (B6 & B7) received PHRS scores greater than 200. Grid position B7 received the highest score of 265. These findings accord with the terrain analysis in section 3.10.

A PHRS score of 93 for the entire Craignagapple wind farm site was calculated as the arithmetic average. This PHRS score falls within the low range for peatslide risk. For comparison purposes, PHRS scores of 373, 482 and 434 apply in relation to the well-established peatslide localities at Morsgail, Isle of Lewis, Scotland (Bowes, 1960) and Hart Hope, North Pennines, England (Warburton et al, 2003) respectively.

PHRS scores are intended as a means of comparing different sites and as a tool for prioritising mitigation works. The PHRS system itself does not attach any particular significance to the total score for each site and leaves it to the project engineers to draw their own conclusions based on an understanding of the local conditions that apply. However, as a rule of thumb, sites with a rating of less than 200 are assigned a low priority while those with a rating of more than 400 are identified for urgent attention. The findings for Craignagapple are summarized in Figure 11.

Figure 11 Results of PHRS Scores for Craignagapple Wind Farm



4.3 Design Considerations and Peatslide Hazard Zonation Plan

By combining the results of terrain analysis and the geohazard potential established by the PHRS scores with an analysis of individual grid positions several constraints emerge that are useful in guiding the layout design process for turbine positions and access tracks. The findings are summarised in the peatslide hazard zonation plan (see Fig. 13).

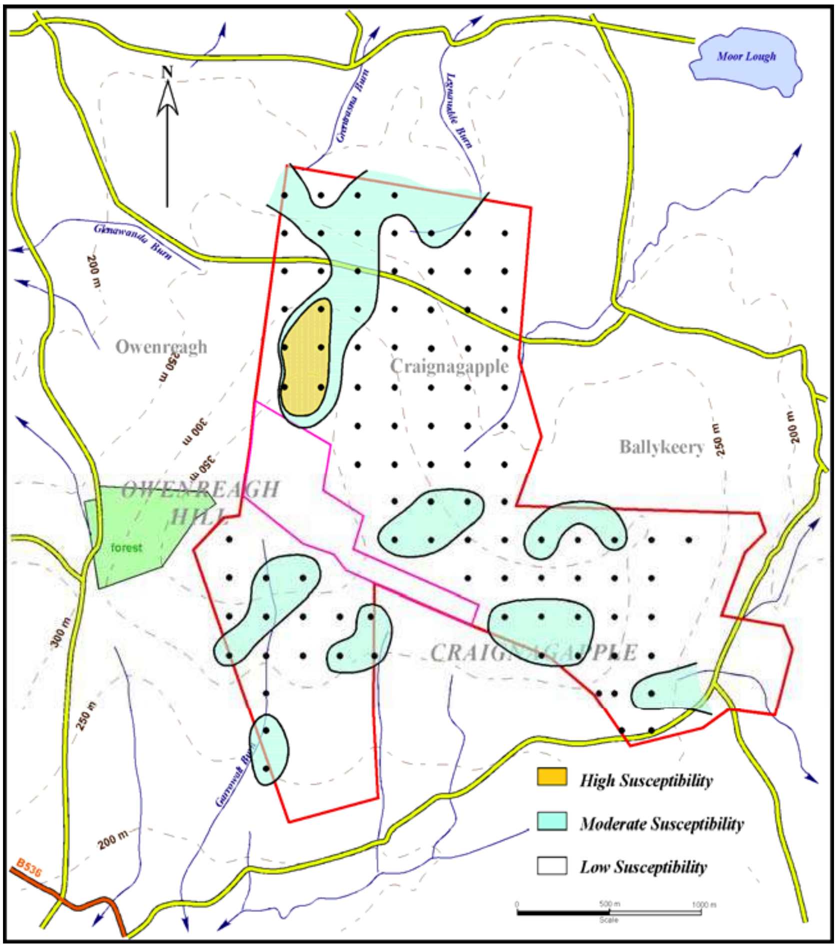
Relatively high PHRS scores were associated with areas of deep peat (peat (e.g. D8, D9, D13, E9, E11, H11, H12, H13, I11, I13, I14, J11, J12, J13, K11, K13, K14, L13 & L14) and so it is recommended that those grid positions and any other similar pockets of deep peat should be avoided during the design process.

Similarly, moderate peatslide susceptibility and geohazard potential was identified in areas of wet ground in proximity to watercourses (e.g. D2, D3, E10, G10, G14, K17, R18) and so it is recommended that set back distances should be adopted of > 50 m for watercourses.

Perhaps the most evident constraint to emerge from this study is the significance of gradients in relation to the dip and scarp topography across the site in general and along the northern ridge in particular. Relatively high PHRS scores were associated with steep scarp slopes and an ancient peatslide (e.g. D7, C7, D9, E11, F11, G11, G12I13, I15, I17, J15, L14, L16, M15, N15, O15, P15, R17, S16 & T16) and these appear in marked contrast to the relatively low PHRS scores associated with the gentle dip slopes of the platform areas on the hillside. Accordingly, it is recommended that a maximum gradient of 10^{o} is adopted as a design constraint.

These are specific recommendations for Craignagapple arising from the constraints based approach adopted in this instance.

Figure 12 Peatslide Hazard Zonation Plan for Craignagapple Wind Farm



4.4 Geotechnical Considerations

Failure occurs and peatslide initiation is possible when the combined forces from the downslope (slope parallel) weight of peat (shear force) and triggers equal or exceed the shear strength in a weak layer or the boundary between layers. However, strong variations in peat properties (and stability) across slopes pose difficulties and so there is always residual uncertainty.

The various methods available for analysis of slope stability involve the factor of safety which is the ratio of resisting forces to the driving forces acting on a mass of peat on a potential failure surface:

F = Resisting forces ("strength") ÷ Disturbing forces ("stress")

Thus, for a given failure mode, calculation of the Factor of Safety (F) in excess of 1.0 indicates that the slope is unlikely to fail in that way. Conversely, F values less than 1.0 indicates that failure of the type considered, is likely.

Typically, the Factor of Safety methodology is used for assessments of specific slopes of up to about one hectare in size. Generally, the method is somewhat cumbersome for sites such as Craignagapple which is more extensive with variable slope morphologies. However, using the SLIP4EX program developed by Greenwood (2006) in connection with the EU funded ECOSLOPES project for routine stability analysis and the assessment of the contribution of vegetation to slope stability, a reconnaissance survey of F values across Craignagapple disclosed that values well in excess of 4 predominate except on the steep north facing scarp slopes where F values approach unity.

5. DISCUSSION AND MITIGATION MEASURES

5.1 General

The design constraints established herein should result in a layout for positions of turbines and routes for access roads that fall within the low category of risk for peatslide geohazard potential.

However, like any natural hazard mitigation, good peatslide safety does not just happen. It is the result of logical thinking and action involving a logically sequenced risk reduction strategy and a well-organised approach so that precious time is used as efficiently as possible. Based on the findings of the investigations carried out to date on peatslide susceptibility at Craignagapple, potentially unsafe terrain can be avoided during the design process but special care and attention may be required at certain places.

Accordingly, further investigation of the peatslide geohazard may be warranted once the layout is established to ensure turbine positions and road routes remain in the low category of risk.

5.2 Access Roads

New tracks will be required for access to individual turbine positions. As far as possible, these should follow routes parallel to slopes and avoid steeply sidelong ground and they should be approved by a geotechnical engineer before construction commences. The provision of special drainage measures may be necessary during construction.

5.3 Special Measures Relating to Loose Peat

Excavation of peat at turbine sites and along access roads will give rise to a series of subsoil storage mounds. Considerable guidance already exists in the technical literature on the procedures for design and construction of subsoil storage mounds (e.g. Garrard & Walton, 1990; Geoffrey Walton Practice, 1991) and is not reiterated herein. However, it is strongly recommended that proposed peat repository sites are selected on the basis of geotechnical criteria and design and construction of subsoil storage mounds should be supervised by a geotechnical engineer.

5.4 Geotechnical Risk Register

It is recommended that a system of geotechnical risk management is adopted during the detailed design and construction phases of the project as a key element in the overall risk assessment document for the project. The first risk register for Craignagapple is presented in Annex A in order to demonstrate that geotechnical risk may be properly controlled, kept under review and further reduced as and when possible and also to demonstrate that geotechnical risk management has commenced.

The geotechnical risk register is a “live document” and once commenced is continued through to project completion. Regular reviews of existing risks as well as the addition of newly discovered risks are incorporated in the register.

5.5 Effects of Construction

Although the peatslide risk at Craignagapple appears low to negligible, the potential effects of the construction of the wind farm infrastructure that might influence peat stability should be considered as a matter of prudence. They are threefold. The first involves concentrated loads such as material from turbine foundation excavations being placed on marginally stable ground at the top of a slope. The second involves removal of toe support at the bottom of a slope and the third entails the adverse concentration of water flows within a slope or into unstable excavations. These matters are discussed below (***a* - *d***) and elaborated in the Geotechnical Risk Register presented as Annex A.

a) Head loading

Concentrated loads, such as excavated material placed on the slope, create the single most adverse effect on the stability of a slope. Accordingly, during the construction phase, all excavated materials should be removed to temporary storage mounds positioned off-slope at a safe position certified by a geotechnical engineer.

Loading associated with the construction of floating roads may in certain cases lead to unstable ground conditions. Accordingly, during the construction phase, all tracks will, as far as possible, be constructed under geotechnical supervision and monitored during and after construction.

b) Removal of toe support

Excavation of the slope for turbine foundations or for excavated tracks may remove toe support and increase potential for ground movements involving peat. However, the adverse effect on F values appears small (< 10 %) and any localised movements will be into the new excavation and thereby contained. Excavations for tracks will be backfilled with free draining granular rock material.

c) Adverse concentration of water flows

Disturbance to the natural drainage system may increase potential for peat instability. However, the design should incorporate substantial improvements to the drainage of the site and since peatsliding almost invariably involves increased pore water pressures, it follows that robust drainage plans and engineering control of water during the development should result in a significant overall reduction in the risk of a peat instability.

d) Other

Peatslide potential also increases with:-

- rockhead smoothness
- clayey subsoils that impede water flows and provide smooth slip-surfaces
- localized steep gradients
- improvements such as drainage works
- localized erosion features such as animal paths and stream channels

The influence of these features at Craignagapple is difficult to surmise. However, all construction activities should be carried out under full-time geotechnical supervision and protection measures should be implemented using the observational method.

5.6 Peatslide Control

The design and construction process incorporates methods for preventing peatslides or minimising their effects. The various methods either prevent peat masses from moving out of place or protect sensitive sites by keeping peat masses that do move out of place from reaching a target site. These include:-

- Limited duration improvements to remove loose blocks or masses of peat;
- Earthworks to create interception ditches;
- Minor modifications to track alignments to avoid difficult ground;
- Drainage works to collect or divert uncontrolled water flows;
- Installation of multi-rows of recycled plastic pin-piles ;
- Installation of arrays of plate piles;
- Gabion barrier walls to apply direct support to a peat face;
- Rockfill buttressing to provide support for large masses of unstable peat; and
- Channel training works such as ditch deepening and reshaping to mitigate erosion.

5.7 Potential Losses Resulting from Peatslides

From a ground engineering standpoint, peatslide events at Craignagapple are avoidable. However, consideration was given to potential consequences associated with the 3 zones of a peatslide.

A peatslide starting zone (or zone of origin) is the location where unstable peat fails and begins to move. The backscar (or crown, fracture line, head, initiation point) of a peatslide defines the upper limit of the starting zone for each peatslide. While the lower limit of peatslide origin is usually ill defined, it is sometimes quite obvious. Consequences in the starting zone of a peatslide may include disruption of the ground surface, exposure of peat faces, loss of vegetation and habitats and reduction in lateral ground support.

The track (or zone of transition) is the slope below the starting zone that connects the starting zone with the zone where debris collects (runout zone). While the track is the major terrain feature for large peatslides, it is often ill defined in peatslides with a short run out distance. Peatslide speed attains its maximum value in the track but speed variations are smallest there. Consequences along the track may include disruption of the ground surface and watercourses, destruction of vegetation and habitats and damage to physical assets such as sheep, fences, forest plantation, buildings and roads.

The runout zone (or zone of deposition, zone of accumulation) is the area where deceleration is rapid, debris is deposited, and the peatslide stops. An abrupt change in slope angle can mark the transition between track and runout zone but this is often not the case. Consequences in the runout zone may include disruption of the ground surface and watercourses, destruction of vegetation and habitats and in particular, damage to fisheries interests.

The three zones vary and are specific for every individual peatslide.

The foregoing comments should not be taken to indicate any particular likelihood of peatsliding at Craignagapple which remains low to negligible. However, careful management of the site and full-time geotechnical supervision of the construction works should be implemented.

6. CONCLUSIONS AND RECOMMENDATIONS

At Craignagapple in County Tyrone, Northern Ireland, a wind farm development is proposed on an irregular expanse of peatland which covers engineering bedrock of Carboniferous sedimentary rocks and Late Pleistocene glacial till deposits.

A comprehensive multi-factor approach was adopted to search the area of the Craignagapple wind farm for peatslide prone sites. A total of 99 positions on a 200m grid pattern were examined in detail. The results of the study were used to establish constraints to avoid areas identified as potentially vulnerable to ground movements albeit at a low level of probability.

Three principal design constraints that are specific to Craignagapple apply:-

1. Pockets of deep peat (> 2m) should be avoided.

2. Areas of wet ground in proximity to watercourses should be avoided by adopting set back distances of > 50m for watercourses.

3. Steep scarp slopes should be avoided and as far as possible development restricted to areas having gradients of less than 10^{o}.

Further investigations of the peatslide geohazard potential at Craignagapple may be warranted once the design process reaches an advanced stage and the layout of turbine positions and access track routes has been established.

Various short-term and long-term strategies and measures exist for peatslide risk control purposes and include a comprehensive range of engineering responses to deal with peatslide problems. These strategies can be managed using the geotechnical risk register and implemented during construction under geotechnical supervision.

On the Craignagapple wind farm site, the “elements at risk” may be classified broadly into two categories: (1) environmental impairment and (2) impacts on land, buildings and roads. Overall, based on the findings of the PHRS scores, the level of potential damage or degree of loss of both elements appears low.

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APPENDICES

1. MANAGING GEOTECHNICAL RISK: GEOTECHNICAL RISK REGISTER FOR CRAIGNAGAPPLE WIND FARM PROJECT

Managing Geotechnical Risk: Geotechnical Risk Register for Craignagapple Wind Farm (revised 21 June 2009)

Risk rating (R) = Probability (P) x Impact (I)

Probability (P)		
Very likely	1 in 10	5
Likely	1 in 100	4
Probable	1 in 1000	3
Unlikely	1 in 10000	2
Negligible	1 in 100000	1

Impact (I)		Time	Cost
Very High	5	>10 weeks on completion	>20%
High	4	> 1 week on completion	5-20%
Medium	3	>4 weeks: < 1 week on completion	2-5%
Low	2	1-4 weeks: none on completion	0.5-2%
Very Low	1	< 1 week to activity: none on completion	<0.5%

		I	I	I	I	I
		5	4	3	2	1
P	5	25	20	15	10	5
P	4	20	16	12	8	4
P	3	15	12	9	6	3
P	2	10	8	6	4	2
P	1	5	4	3	2	1

Risk ratings	
1 to 4	***Trivial***, but no action required
5 to 8	***Tolerable***, but must consider solutions or improvements
9 to 12	***Substantial*** and work must not start until risk has been reduced
13+	***Intolerable*** and work must not start until risk has been reduced

Geotechnical Risk Assessment

		Construction Stage					Following Mitigation Stage		
Hazard / Risk	**Cause**	**Probability**	**Impact**	**Risk Rating**	**Consequences**	**Mitigation**	**Probability**	**Impact**	**Risk Rating**
Peat slide event	High rainfall and rainstorms	4	4	16	Instability	Construction during spring and summer months Monitoring of rainfall and weather forecasts Contingency plans for wet weather working Robust drainage plans	1	3	3
Peat slide event	Flooding	2	2	4	Localised instability,	Construction during spring and summer months Use of granular fill and drainage ditches Monitor weather forecasts Contingency plans for wet weather working	1	1	1
Peat slide event	Concentrated loads placed at top of slope or on marginally stable ground	2	5	10	Rapid ground movements	Avoidance during geotechnical design stage Storage site selection by geotechnical engineer Geotechnical site supervision Monitoring of excavated materials	1	3	3
Peat slide event	Uncontrolled water flows	2	3	6	Rapid ground movements	Addressed in drainage plans Geotechnical supervision of dewatering operations Construction during spring and summer months	1	2	2
Peat slide event	Unstable excavations	4	2	8	Localised instability,	Appropriate geotechnical design Routine geotechnical inspection Contingency plans for slope stabilisation measures	2	2	4
Peat slide event	Removal of toe support to slopes	3	2	6	Slow ground movements	Avoidance action during geotechnical design stage Routine geotechnical inspection Contingency plans for slope stabilisation measures	2	2	4
Peat slide event	Steep slopes	3	5	15	Instability	Appropriate geotechnical design Routine geotechnical inspection Avoidance action during layout design stage	1	4	4
Peat slide event	Surface water erosion	3	1	3	Localised instability	Establish vegetation cover on slopes Suitable temporary surface water management Addressed in drainage plans	2	1	2
Peat slide event	Subterranean pipes	3	2	6	Localised instability	Blockage prevention using free draining fill Geotechnical supervision during construction	2	2	4
Peat slide event	Pockets of soft wet ground	5	2	10	Localised instability	Construction during spring and summer months Geotechnical supervision during construction Programme and cost contingency	4	1	4
Peat slide event	Construction of cable trenches in road verge	2	3	6	Instability	Appropriate geotechnical design Geotechnical site supervision Geotechnical monitoring of verges post-construction	1	1	1
Peat slide event	Tear in reinforcing geotextile fabric	2	3	6	Instability. Local settlements	Addressed in material specification Addressed in construction supervision	1	1	1

Peat slide event	Mobilised temporary storage mounds	3	2	6	Localised instability,	Storage site selection by geotechnical engineer Routine maintenance of peat storage mounds	2	2	4
Ultimate limit state failure (bearing capacity)	Construction loading and poor ground conditions	3	2	6	Bearing capacity failure. Ground deformation. Need to rebuild	Appropriate geotechnical design Excavation of shallow peat along tracks Expose competent formation at turbine sites Adopt floating road construction over deep peat	1	1	1
Serviceability limit state failure (settlement)	Construction loading and poor ground conditions	5	2	10	Excessive settlement Construction delayed Additional fill required	Ground improved with addition of rock fill Adopt geotechnical monitoring of tracks Contingency to re-level tracks on completion Quantities contingency	3	1	3
Unexpected ground conditions	Ground conditions differ from those indicted in the project ground investigations	3	3	9	Construction delayed. Design review required	Monitor works in progress Use experienced staff on site Geotechnical supervision during construction Programme and cost contingencies	1	1	1
Creep, long term settlement of tracks	Poor and variable foundation soils	5	1	5	Ongoing settlement	Contingency for routine maintenance	3	1	3
Slope instability	Use of unsuitable fill materials	2	3	6	Instability	Addressed in material specification Geotechnical site supervision	1	1	1
Erosion	Site clearance operations	4	3	12	Damage to root mat	Use low pressure construction plant Preserve root mat wherever possible Geotechnical supervision during construction	1	1	1
Variation from design assumptions	Unexpected ground conditions	2	3	6	Settlement and / or slope failure	Appropriate geotechnical design Geotechnical monitoring during construction Programme contingency	1	1	1
Uncertainty of construction technique	Variable foundation soils	2	3	6	Delay	Programme contingency Geotechnical supervision during construction	2	1	2
Uncertainty at transition zones and stream crossing points	Variable ground conditions	3	3	9	Variation in quantities and programme	Programme contingency Cost contingency.	2	2	4
Uncertain duration and degree of primary consolidation	Variable ground conditions	2	3	6	Delay. Additional fill requirement	Avoidance of areas of deep peat Programme contingency Cost contingency	2	2	4
Design changes during construction	Change in loading, bearing and settlement characteristics	3	2	6	Various but could include slope failure, bearing failure or settlement	Design changes to be reviewed by geotechnical specialist	1	1	1

Notes: 1. A 'Hazard' is a condition or physical situation with a potential for an undesirable event.
2. A 'Risk' is an uncertain event or set of circumstances that should it occur would have an effect on achieving the project objectives
3. Mitigation Measures include:

- Avoid the risk – by eliminating the uncertainty or using an alternative approach.
- Transfer the risk – by transferring the liability of the risk to another party.
- Mitigate the risk – by reducing the risk to an acceptable level by making it less likely that the risk event will occur.
- Accept and manage the risk – by assuming the risk as reasonable given the cost or effect on time or quality and even life.

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