

Technical Workshop - Engineering:

Construction/Transport/Grid/Storage



Presentation Overview

1. Project Overview
2. Construction Process
3. Construction Traffic
4. Turbine Transport
5. Grid Connection
6. Energy Storage

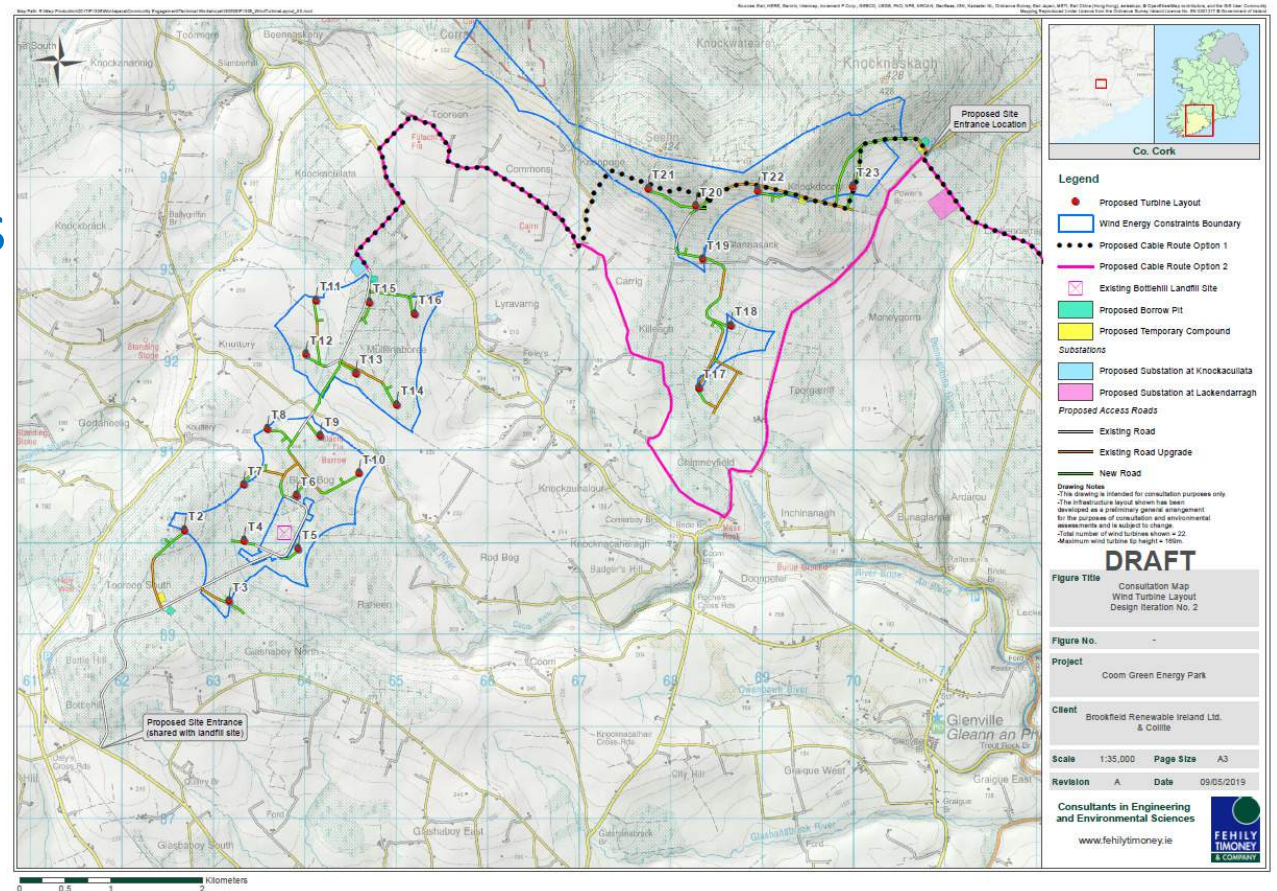
Components of a Wind Farm

- New Access Tracks
- Hardstanding/Cranepad at each turbine
- New substation
- Grid connection
- Turbine Foundations
- Turbines



Project Overview

- 22 Turbines
- New access roads
- Grid connection
- Energy Storage

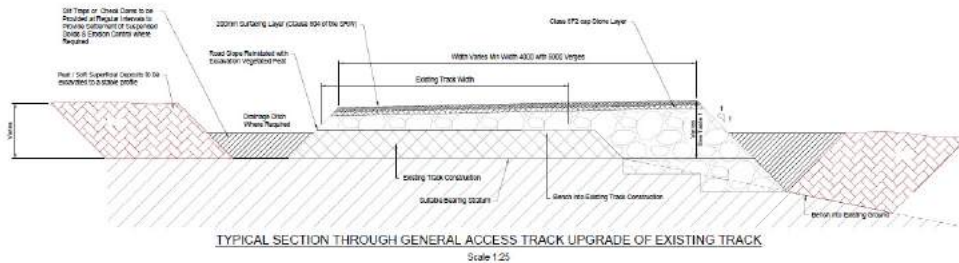


Construction Process

- Roads and turbine hardstandings:
 - 12.4km of new access roads
 - 6.2km of upgraded track
 - 7.2km of existing track
- Drainage associated with new infrastructure
- Foundations – 22 foundations
- Substation – 2 new substations
- Landscaping – blend the civil works into the landscape

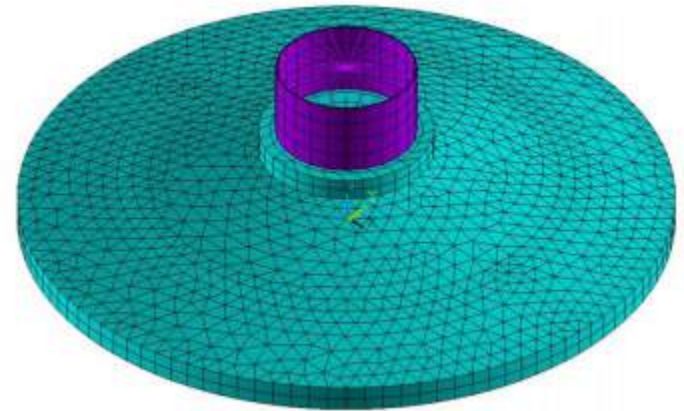
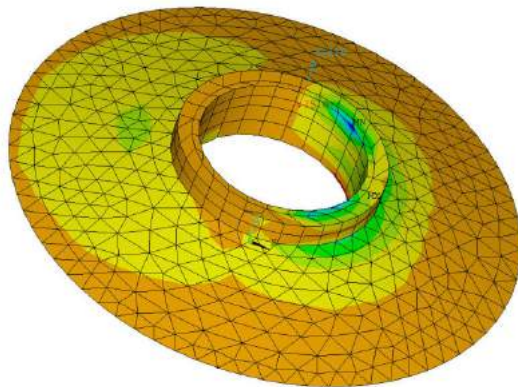
Wind Farm Roads

- Roads – 5m wide, wider on bends
- Maximise use of existing access roads
- Turbine hardstandings – approx. 50m x 30m



Wind Turbine Foundations

- Between 16 and 20m diameter
- 400-600m³ of concrete
- 50-75t steel per base



Wind Turbine Foundations



Turbine foundation reinforcement

Wind Turbine Foundations



Concrete Poured



Foundation base backfilled



Backfilled Turbine Foundations



Traffic and Transport

TRAFFIC IMPACT ASSESSMENT

- Traffic impacts on the road network for:
 - Construction activities; and
 - Operation period
- The assessment will include:
 - Supply of materials;
 - Plant and equipment;
 - Turbine elements; and
 - Components of the substation.
- Traffic arising from the construction and operations workforce will also be addressed.

Outline Traffic Management Plan submitted with planning application

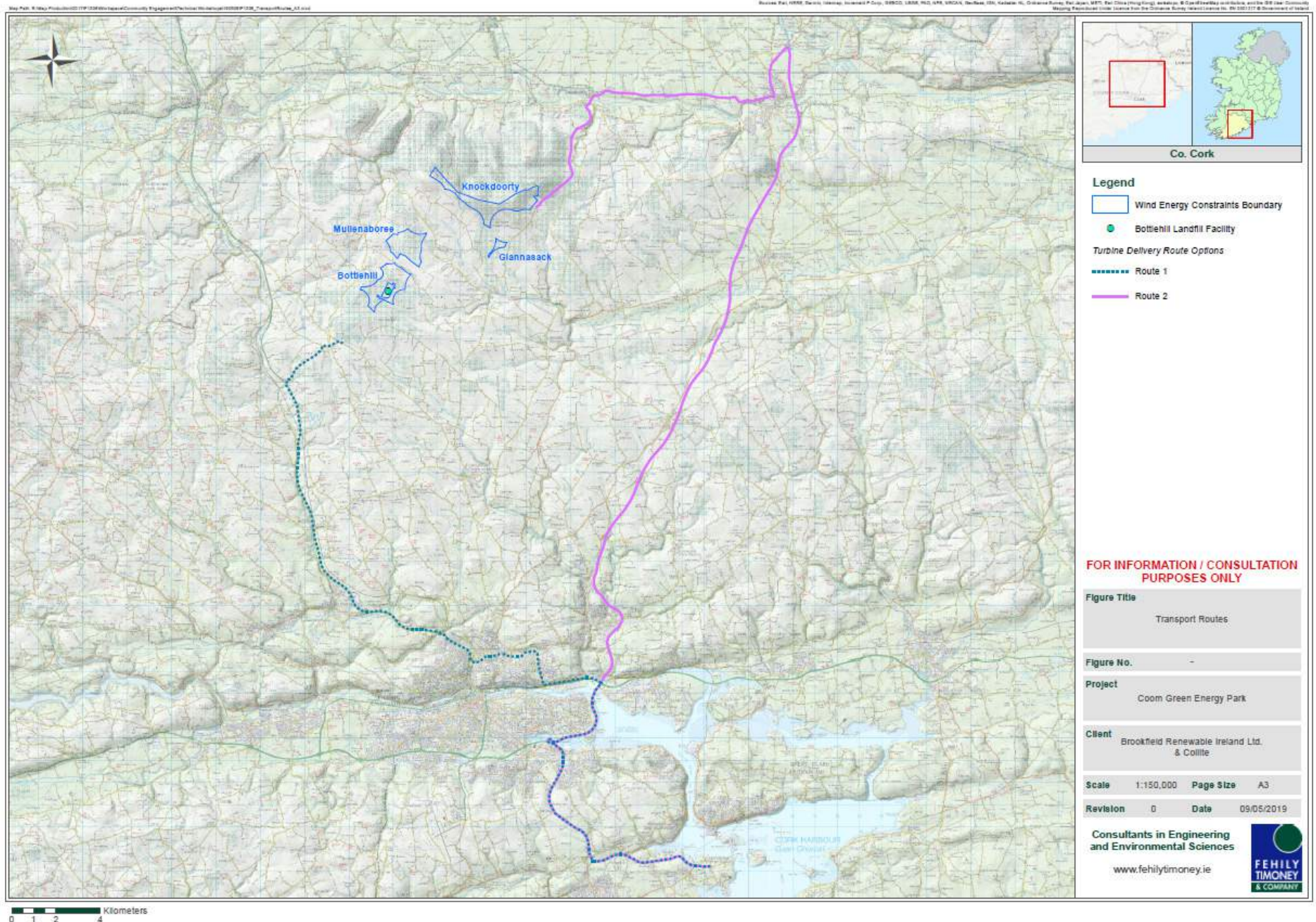
- Consultation with residences

Traffic and Transport

TRAFFIC GENERATED FROM WIND FARM

- Stone – will be reduced should a suitable borrow pit be found on site
- Concrete – up to 600m³ over 8 hours
 - One day per turbine
- Staff – staff traffic to site compound AM & PM
- Building Materials – ad-hoc deliveries
- Electrical Cables – as required

Turbine Transport Route



Turbine Transport

ROUTE SURVEYS

- Route surveys will identify potential pinch points.
- The haul routes will be identified and assessed to reduce the impact as much as possible.
- Swept path analysis will be carried out at pinch point locations
 - Towers – delivered on clamps
 - Blades – extended collapsible trailer
 - Other components – low-loader deliveries
- Deliveries will be at night under Garda escort

Transport Vehicles

ABNORMAL LOAD DELIVERIES



Typical Trial Run

Prior to delivery of components to the wind farm site, a dummy run would be completed with an empty trailer.



Blade Delivery

Blades will be delivered on extended trailers. The rear axles can steer to reduce the areas of widening on the public roads.



Turbine tower delivery

Turbine tower sections will be delivered in batches and will be 20-35m long.



Nacelle Delivery

The wind turbine nacelle delivery will be made on a low loader.



Stone Deliveries



Concrete Deliveries

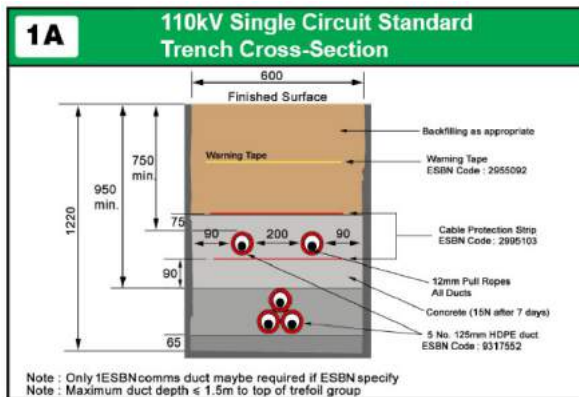
Construction traffic to and from the site during the works will mainly consist of stone and concrete deliveries. The onsite plant will remain on site after being delivered during site establishment and removed on completion.

Grid Connection

110kV Option: Barrymore – Lackendarragh

220kV Option: Glannakip - Lackendarragh

- Trenches – grid cable will be installed within the road corridor or in the verge where possible
- Forms part of the Environmental Impact Assessment –
 - Traffic Impact Assessment
 - Traffic Management Plan
 - Consultation with residences



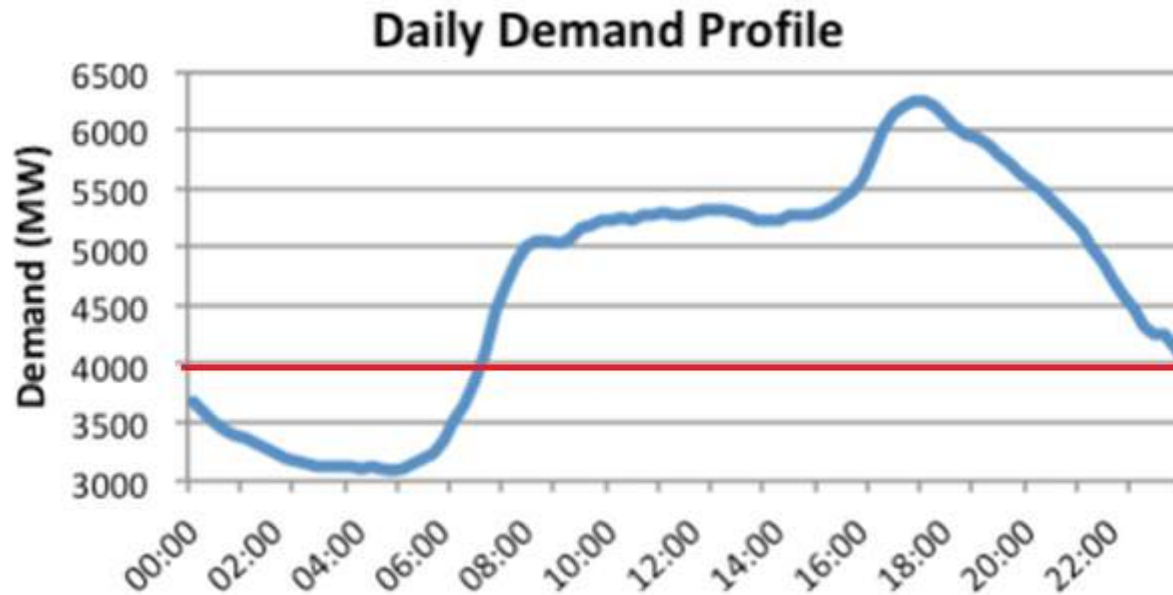
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Substation



Battery Storage



- Currently 3.9GW installed wind (end 2017)
- Charge at night, discharge at peak

Battery Storage

- Containerised energy storage
- Within substation boundary
- Self-contained units
- Roof mounted solar



Thank You

Any questions?





