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APPENDIX 15-2

TRAFFIC MANAGEMENT PLAN FOR BRISKALAGH RENEWABLE ENERGY DEVELOPMENT

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APPENDICES

1 INTRODUCTION

1.1 Purpose of note

The purpose of this Traffic Management Plan (TMP) is to set out traffic management measures that the Applicant will commit to provide during the construction stage of the proposed Briskalagh Renewable Energy Development (Proposed Project). The successful completion of the Proposed Project will require significant coordination and planning, and a comprehensive set of mitigation measures will be put in place before and during the construction stage, in order to minimise the effects of the additional traffic generated on the surrounding road network. The measures are discussed under the following headings;

- Section 2 – Delivery of abnormally sized loads transporting turbine components
- Section 3 – Management of standard HGVs to and from the site
- Section 4 – Traffic management measures during construction of the Grid Connection underground cabling route.
- Section 5 – General traffic management measures that will be implemented before, during and on completion of the construction of the Proposed Project.

It is confirmed that details for the Traffic Management Plan for the Proposed Project will be agreed with the Road Section of Kilkenny County Council prior to construction.

On the occasions where reference is made to figures, these are included in Section 15.2 of the EIAR.

2 DELVERY OF ABNORMALLY SIZED LOADS TRANSPORTING TURBINE COMPONENTS

2.1 Proposed delivery route for abnormally sized loads

The proposed port of entry for the large wind turbine components is the Belview Port in Waterford City. The Turbine Delivery Route (TDR) commences at the port and travels towards the Proposed Wind Farm site on the national, regional and local road network, as shown in Figure 15-1a of the EIAR. The proposed TDR is as follows;

- From Belview Port the route travels north on the N29 for approximately 4km before heading west on the N25 for approximately 6 km.
- The route the turns off the N25 at the Grannagh Roundabout to access the N9 heading west for a further 0.8 km to the Quarry Roundabout that connects with the M9.
- From the Quarry Roundabout the route heads north on the M9 for approximately 35 km exiting at Junction 9 onto the N10.
- From this point the route travels north on the N10 for approximately 7.2 km to the Waterford Roundabout on the southern section of the Kilkenny City ring road.
- The route then heads northwest on the N76 Kilkenny City ring road for approximately 1.2 km to the Callan Road roundabout.
- From the Callan Road roundabout the TDR travels southwest on the N76 for approximately 14.2 km to the junction with the R695 just north of the town of Callan.
- At this point the route turns right off the N76 and heads north on the R695 for approximately 9.4 km to the priority junction with the local L1009 in Kilmanagh.
- At this junction the TDR turns left to head west for approximately 0.2 km to a point where the abnormally sized loads will turn right off the L-1009 to access the Proposed Wind Farm site at a temporary access junction.

An assessment of the turning requirements of the abnormally large vehicles transporting the turbine components was undertaken at the various pinch points along the TDR from the N76 / R695 junction to the site, as identified in Figure 15-2a. It is noted that all potential pinch points at locations between Belview Port and the N76 were also assessed and are included in Appendix 15-3 of the EIAR. The swept path assessment for the entire route is discussed in Section 15.1.9 of the EIAR.

2.2 Traffic management measures for abnormally sized loads

The transport of large components is challenging and can only be done following extensive route selection, route proofing and consultation with An Garda Síochána, the local authority and its road section and roads authorities. Turbine components are usually transported in convoys of 3 vehicles (sometimes up to 5 vehicles subject to approval) at night when traffic is lightest. This will be undertaken in consultation with the roads authorities, An Garda Síochána Traffic Corp and special permits are generally required.

A swept path analysis was undertaken at all locations using Autotrack in order to establish the locations where the wind turbine transporter vehicles will be accommodated, and the locations where some form of remedial measure may be required. While transient traffic management measures will be implemented by An Garda Síochána as each convoy travels along the delivery route, it is not anticipated that any sections of the local road network will be closed.

A dry run involving a vehicle adapted to replicate the geometry of the extended transport vehicles will be undertaken over the entire turbine delivery route prior to the delivery of turbine components.

3 MANAGEMENT OF STANDARD HGVS TO AND FROM THE SITE

3.1 General

All concrete required for each turbine foundation will be delivered to the Proposed Wind Farm site in one day per foundation for a total of 7 days. The concrete (and some crushed stone) required for the turbine foundations will be sourced from local, appropriately authorised quarries as discussed in Chapter 4 of the EIAR. All concrete deliveries provided by local quarries will access the Proposed Wind Farm site via the temporary access off the L1009 located at the southern end of the site, as shown in Figure 15-1b.

It is proposed that all other materials will be accessed via the proposed new permanent access junction off the L5024 located at the northern end of the Proposed Wind Farm site, also shown in Figure 15-1b.

While the access routes for all other materials will be agreed with Kilkenny County Council prior to construction, it is confirmed that these routes will avoid the settlement of Kilmanagh. For the purpose of this assessment it is assumed that the proposed delivery routes for all other materials required for the construction of the Proposed Wind Farm and the Proposed Grid Connection are to and from the direction of Kilkenny, with a different route designated for deliveries accessing the site from those exiting the site, in order to minimise the impact on the local road network and to ensure that HGV trips generated by the Proposed Project do not meet travelling in opposing directions. The proposed routes, for the purpose of this assessment between Kilkenny and the Site are as follows;

To the Proposed Wind Farm site (shown as light blue in Figure 15-1a) – Travels westbound on the L1007 for approximately 13km before turning left and heading south on the L1008 and L5023 for approximately 1.7km. The route them heads east for approximately 0.8 km on the L5024 to turn right into the Proposed Wind Farm site at the proposed site access junction.

From the Proposed Wind Farm site (shown as magenta in Figure 15-1a) – A right turn out of the Proposed Wind Farm site exit onto the L5024. The route travels east on the L5024 for approximately 2.5km before turning right onto the L1010 heading south for approximately 4.4 km. The route then turns left onto the R695 to head eastbound for approximately 7.6 km in the direction of Kilkenny.

3.2 Temporary traffic management for temporary access on the L1009

As set out in Section 2, the abnormally sized loads will be delivered via the temporary access junction on the L1009 during night-time hours accompanied by an escort provided by An Garda Síochána.

For the 7 days that it is proposed that concrete deliveries are made via the temporary access junction on the L1009 it is proposed that the junction will be controlled by the following temporary traffic management measures;

- Introduction of signage warning of roadworks ahead on eastbound and westbound approaches to the temporary access on the L1009 (TMS Traffic Signs WK001).
- Signage on the L1009 eastbound approach indicating the temporary construction access approaching on the left (TMS traffic Sign WK052) and similar on the westbound approach to the temporary access approaching on the right (TMS Traffic Signs WK053).
- Signage on the L1009 eastbound and westbound approaches to temporary access of Flagmen (TMS traffic Sign WK061).
- The presence of a Flagman at the proposed temporary access on the L1009 during hours of operation.
- Closure by means of a gate at all times outside of operation and permanent closure on completion of the construction of the Proposed Project.

The various traffic signs from the Traffic Signs Manual are included for information below.

Table 8.2.1 – Warning Signs for Use at Roadworks

Sign No.	Sign Face	Description
WK 001	 	**Roadworks Ahead:** this sign shall be the first temporary sign visible to the road user on the approach to any roadworks. It may be supplemented with a Supplementary Plate P 082 indicating the nature of the works. At some sites, it is necessary to provide additional Signs WK 001 well in advance of the start of the roadworks. Where this is the case, the signs shall have a Supplementary Plate P 001 indicating the distance to the start of the works. **End of Roadworks**: the 'Roadworks Ahead' sign shall be erected together with a Supplementary Plate P 010, End, as the last temporary sign visible to the road user leaving any roadworks. This 'End' plate marks the finish of all other roadworks warning signs used within the site. **Cautionary Speed:** the 'Roadworks Ahead' sign may also be used at intervals through the roadworks together with Supplementary Plate P 011, Cautionary Speed (see Section 8.3.3).

WK 052		**Site Access on Left:** this sign should be used to indicate the position of a site entrance and/or exit to the left. On roads with a speed limit of >80km/h., an additional sign WK 052 should be positioned 100m in advance of the entrance, with a Supplementary Plate P001 stating the distance. At sites with several entrances, a supplementary colour code or numbering system may be used with this sign.
WK 053		**Site Access on Right:** this sign should be used to indicate the position of a site entrance and/or exit to the right. On roads with a speed limit of >80km/h., an additional sign WK 053 should be positioned 100m in advance of the entrance, with a Supplementary Plate P 001 stating the distance. At sites with several entrances, a supplementary colour code or numbering system may be used with this sign.

WK 061		**Flagman Ahead:** this sign should be used to indicate the presence ahead of manual or automated traffic control by means of Stop & Go/Téigh discs. This sign may be used with a Supplementary Plate P 001 stating the distance if forward visibility is poor and on roads with speed limits of >80km/h.

Sign No.	Sign Face	Description
RUS 014	 	**No Overtaking:** No Overtaking sign prohibits overtaking at locations where it is considered dangerous to do so (see Chapter 5). At the point where the overtaking restriction ends, Sign RUS 014 shall be erected together with a Supplementary Plate P 010, End.

3.3 General construction and operational access on L5024

It is proposed that access for general construction traffic will be provided to and from the Proposed Wind Farm site via an improved access junction off the L-5024. The proposed junction has a radii of 13m to provide for standard HGVs turning right into the site and right out of the site, in accordance

with TII guidelines Geometric Design of Junctions (DN-GEO-03060). Visibility splays of 90m taken from a setback of 2.4m are provided as requested by Kilkenny County Council.

4 TRAFFIC MANAGEMENT MEASURES DURING CONSTRUCTION OF PROPOSED GRID CONNECTION UNDERGROUND CABLING ROUTE

In addition to traffic management measures required for additional traffic movements generated during the construction of the Proposed Wind Farm site, traffic arrangements and diversion routes identified for the Proposed Grid Connection underground cabling route works are included in Section 15.1.7 of the EIAR. Sections along the Proposed Grid Connection underground cabling route where there will be road and pedestrian footpath closures, diverted traffic, and Stop/Go traffic control are identified.

The proposed 38kV onsite electrical substation will be connected by 38kV underground cabling to the existing 110kV Ballyragget Substation. The underground cabling route measures approximately 23km of which approx. 22.1km is located within the public road corridor.

For the extent of the underground cabling route that will impact on the public road network, this is considered in the following 8 sections, as indicated in Figure 15-4a of the EIAR. All EIAR Figures 15-4a to 15-4h, which are referred to in the following text, are included in Appendix A.

The 8 sections of the route on the public road network, and the 3 off road sections are as follows;

Off road at Proposed Wind Farm site – (length 0.26 kms) – The underground cabling route commences at the proposed onsite 38kV substation located within the Proposed Wind Farm site and continues northwest for approximately 0.26kms to link into the L-5023. It is estimated that the construction of this section will take approximately 3 days. As this section is within the Proposed Wind Farm site no delays will be incurred by local traffic.

Section 1 – (length 1.0 km) – The underground cabling route then continues north along the L-5023 for approximately 1.0 km. During the 10 days required to construct this section of the underground cabling route, traffic will be required to divert onto the route shown in Figure 15-4b which will result in a diversion of 5.8km. The location of the construction will be transient with the extent of the section of road closed kept to a minimum.

Section 2 – (length 4.8 km) – The route then continues north on the L-5023 and the L-1008 for approximately 4.8 km. During the 48 days construction period for this section, traffic will require to divert onto the route shown in Figure 15-4c which will result in a diversion of 1.5km.

Section 3 – (length 6.2 km) – From this point the route continues north for approximately 6.2 km on the local road network on the L-1003 and L-1002 to the Chapel Road at the southern end of Freshford. During the estimated 62 days construction period for this section traffic will require to

divert onto the route shown in Figure 15-4d which will result in an increase in trip length for local traffic of 6.9km.

Section 4 – (length 0.6 km) – From this point the route continues north through the village of Freshford on the L-1003 / R693 and R694 from the Chapel Road in the south to the junction with the Ard Lachtain residential estate on the east side of the R694. This section is approximately 0.6km and will take an estimated 6 days to construct.. It is estimated that a Stop & Go arrangement will be possible for this section of the route.

Section 5 – (length 2.6 km) – From the junction with the Ard Lachtain residential estate the route continues north on the R694 for approximately 2.6 km. During the 26 day construction period for this section, traffic will require to divert onto the route shown in Figure 15-4e which will result in a diversion of 3.3km.

Section 6 – (length 5.5 km) – The route continues northeast on the R694 for approximately 5.5 km to the point where the route links into the N77 national secondary road. During the 55 days construction period for this section, traffic will require to divert onto the route shown in Figure 15-4f which will result in a diversion of 2.1km.

Section 7 – (length 1.1kms) – From this point the route continues north on the N77 on the west side of the River Nore for approximately 1.1kms to a point where the route heads east off road. This section of the carriageway has sufficient width for the construction of the underground cabling to take place while operating a "stop-go" arrangement in order to retain 2-way traffic flow on the National Secondary Road. This section of the grid connection will take approximately 11 days to construct.

River Nore crossing and off road section – (length 0.7kms) – This section of the Proposed Grid Connection underground cabling route turns right off the N77 before crossing the River Nore via directional drilling. On the eastern side of the River Nore the cable route passes through agricultural fields and a private access track before linking into the R432. It is proposed that all construction plant, materials and construction staff will access this off road section via the R432 and not via the N77. Appropriate traffic management will be put in place at the junction with the local access road onto the R432 during this period, including temporary signs and a flagman. While minimal disruption to local traffic on the R432 will be incurred during the delivery of plant and materials via the R432, as this section is off road there will be no delays incurred by local traffic during the 7 days required to construct this section.

Section 8 – (length 0.1km) – From the access onto the R432 the route continues south for approximately 135 m to the existing site access to the 110kV Ballyragget Substation. During the 1 day construction period for this section, traffic will be managed using a Stop & Go type arrangement.

Off-road at Ballyragget Substation – (length 0.1kms) – The final short section of the Proposed Grid Connection underground cabling route turns off the R432 into the site of the existing 110kV Ballyragget substation. No delays will be incurred by local traffic during the 1 day required to construct this section.

In summary, the route will take a total of approximately 230 days to construct during which a road closure will be required at one point on the network on approximately 201 of these days. The diversions incurred will be a maximum of 6.9kms. It is noted that the diversions will be incurred by relatively few trips on the sections of the route on the local road network (approximately 12km of 23km route) as it is relatively lightly trafficked. For a further 11 days a stop & go facility will require to be operated on the N77.

5 GENERAL TRAFFIC MANAGEMENT MEASURES

A detailed **Traffic Management Plan (TMP)** will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the Roads Authority and An Garda Síochána prior to construction works commencing on site.

The detailed TMP will include the following:

Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the construction of the Proposed Project and this person will be the main point of contact for all matters relating to traffic management.

Delivery Programme – a programme of deliveries will be submitted to Kilkenny County Council and other relevant authorities in advance of deliveries of turbine components to the Proposed Wind Farm site. For general construction traffic, routes to and from the site avoiding the settlement of Kilmanagh will be agreed with Kilkenny County Council and strictly adhered to by all suppliers.

Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.

A Pre and Post Construction Condition Survey – A pre-condition survey of roads associated with the Proposed Project will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority.

Liaison with the relevant local authorities - Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse, and An Garda Siochana, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required.

Implementation of temporary alterations to road network at critical junctions – At locations where required highlighted in Section 15.1.9.

Identification of delivery routes – These routes will be agreed and adhered to by all contractors.

Travel plan for construction workers to Site– A travel plan for construction staff, which will include the identification of a routes to / from the Site and identification of parking areas will be implemented by the main contractor.

Temporary traffic signs – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including the proposed access junctions on the L1009 and L5024.All measures will be in accordance with the *"Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). Construction staff (flagman) will be present at key junctions during peak delivery times.

Delivery times of large turbine components - The management plan will include the delivery of large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.

Diversion routes during the construction of the Proposed Grid Connection Underground Cabling Route – As set out in Section 15.1.7 of this EIAR.

Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including sweeping / cleaning of local roads as required.

Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.

It is confirmed that details for the Traffic Management Plan for the subject development will be agreed with Kilkenny County Council prior to construction and contact will be maintained with the Road and Traffic Section throughout the construction phase.