Environmental Impact Assessment Report
Volume 1 of 3 – Non-Technical Summary

For

BLACK LOUGH WIND FARM
INTERNAL ELECTRICAL CONNECTION

TAWNAMORE to CLOONKEELAUN
COUNTY SLIGO

Prepared for:
John Hallinan
Tawnamore
County Sligo

Prepared by:
Keohane Geological & Environmental Consultancy
Ivy House
Clash
Carrigrohane
County Cork

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1. INTRODUCTION

1.1. The Applicant

John Hallinan is the applicant for the proposed internal wind farm electrical connection between turbines at Black Lough and the control building at Cloonkeelaun. Mr. Hallinan is the owner of the land in Tawnamore in which the four consent turbines of Black Lough Wind Farm and much of the proposed connection route is located. Rouse Project Developments is the owner of the lands in Cloonkeelaun in which the two consented Cloonkeelaun turbines and the consented control building are located. Mr. Hallinan's lands are used for turf cutting and sheep grazing. A large portion of his lands are within the Ox Mountains Bogs Special Area of Conservation.

1.2. The Development

The proposed development is an internal wind farm electrical connection between the turbines at Black Lough and the control building at Cloonkeelaun. The connection is approximately 2.64km long in total, with 2.3km of overhead line and 340m of underground cabling. Approximately 2km of the overhead line section traverses the Ox Mountains Bogs Special Area of Conservation.

In December 2015, Tapbury Management Ltd applied for permission for 2 No, turbines at Cloonkeelaun – planning number PL 15/466 refers. Sligo County Council made a decision to grant permission on 21 December 2016, with a final grant issued on 21 January 2017.

In March 2017, John Hallinan applied for permission for 4 No. turbines at Black Lough – planning number PL 17/93 refers. This development would replace the wind farm permitted under PL 11/379. Sligo County Council granted permission for the alternative development in June 2017.

In advance of the wind farm application, planning applications for the grid connection were made to Sligo County Council and Mayo County Council in November 2016; planning numbers PL16/422 and P16/822 refer, respectively. In August 2017, Mayo County Council granted permission for the southern section of the grid route and Sligo County Council granted permission for the northern section. This permitted grid connection could serve the 6 No. wind turbines at Black Lough and Cloonkeelaun.

Due to difficulties with landowner leases along the permitted route between Black Lough and Cloonkeelaun, an alternative electric connection is required on this northern section. The permitted underground section is no longer an option. The proposal is for a more direct route, using mostly overhead line mounted on single wooden poles. This alternative connection would reduce the distance between Black Lough and Cloonkeelaun from 6.92km to approximately 2.64km. The purpose of this Environmental Impact Assessment (EIA) is to consider this alternative internal wind farm route between Black Lough and Cloonkeenlaun.

1.3. The Consultants

Keohane Geological & Environmental Consultancy (KGEC) is a Cork-based consultancy specialising in geological and environmental sciences. In recent years, KGEC has prepared planning applications and/or EISs for a number of wind farm developments in counties Cork, Mayo, Donegal, Sligo and Roscommon. Jennings O'Donovan & Partners, Consulting Engineers prepared the Landscape & Visual Impact Assessment chapter of the EIAR. They also prepared the planning drawings. Will Woodrow, of Woodrow Sustainable Solutions Ltd prepared the ecology chapter and Natura Impact Assessment for the proposed development. Tyrone Nelson, of Nelson Ecology Ltd, carried out the bird assessments for the site. Dermot Nelis Archaeology conducted the archaeological impact assessment for the proposed development. Iain Mac Phee of AV acoustics undertook the noise impact assessment for the proposed development.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1. The Site

The site for the proposed development is located in the townlands of Tawnamore and Cloonkeelaun, County Sligo. The Hallinan's own approximately 429ha through which the majority of the connection route will pass; the land at the southern end of the grid route, in Cloonkeelaun, is owned by Rouse Project Developments Ltd, covering approximately 96ha.

The nearest villages are Bunnyconnellan in County Mayo, approximately 7km to the southwest and Dromore West, approximately 8.8km to the northeast. Enniscrone is the nearest town to the site at approximately 11km to the northwest. Ballina is the main population centre in the area at approximately 13km to the southwest. Figure 2-1 shows the site location map (Discovery Series Map No. 24). The site can be accessed from the N59 (Sligo – Ballina road) via a number of local country roads which generally run north-south between the N59 and the R294. The most direct routes to the site are the local road (L6707) which heads south to Black Lough from the N59 at Camcuill, local road L2601-13 which heads south to Cloonkeelaun from Tullylin and local road L2604 which heads southeast to Cloonkeelaun from Ballymoghany.

The site lies within a large expanse of peatland that extends from the western foothills of the Ox Mountains. These peatlands slope gently to the west and northwest from approximately 200mOD near Lough Easky to approximately 100mOD approaching the N59. The peatlands are cut by a number of rivers with narrow V-shaped valleys. The proposed electrical connection runs from farmland at Black Lough, crossing the Gowlan River and through an expanse of blanket bog.

Much of the peatlands in the wider area form the Ox Mountains Bogs SAC (site code 002006). The proposed electrical connection passes through the SAC for a distance of approximately 2km. A section of the Easky River between the N59 and R297, approximately 9km to the north and downstream of the site, is a proposed Natural Heritage Area (site code 001665).

There are no third-party dwellings within 500m of the proposed electrical connection route. The nearest inhabited residence is located approximately 950m to the north of the northern-most part of the route. The settlement pattern in the vicinity of the wind farm is discussed in Chapter 4.

2.2. Need for the Proposed Development

The proposed development will facilitate the export of green electricity from the Black Lough Wind Farm to Cloonkeelaun control building and from there to the National Grid at Glenree. This will assist with government commitments to limit greenhouse gas emissions under international agreements to address climate change and national renewable energy targets.

This alternative connection is needed due to difficulties with landowner leases along the permitted route between Black Lough and Cloonkeelaun. Landowners have refused to enter the long-term leases required for the installation on cabling along the permitted route, so the permitted route is no longer available to the developers. The proposed route is across lands owned by the Applicant and developer, so are within their control – third-party agreements or leases are not required.

2.3. Selection and Alternatives Considered

Use of the permitted route is no longer an alternative for the reasons outlined in Section 2.2 above. The routes considered were therefore through lands owned by the Applicant and project developer. Following a number of detailed ecological surveys, a route was selected that minimised potential impacts on habitats on the bog.

The design of the connection took account of minimising impacts on ecology and providing overhead line offsets from the turbines. The route therefore was placed underground from turbine T2 which followed an existing farm track. The ecologist recommended overhead line across the more sensitive habitats to minimise impacts. An overhead line mounted on single wooden poles across the Ox Mountains Bogs SAC is therefore proposed – pole locations were selected to avoid the most sensitive habitats. The southern section approaching the control building at Cloonkeelaun is underground to provide the minimum overhead line safety offset from turbine T5.

The construction approach is to use airlift of poles and materials to each pole location rather than the alternative of tracking materials into the bog.

2.4. Development Description

The proposed development will consist of a medium voltage (20 kilovolts) connection between the permitted Black Lough Wind Farm and the control building at the permitted Cloonkeelaun Wind Farm. This proposed electrical connection will replace a 6.92km section of the permitted grid connection between Black Lough Wind Farm and the Glenree substation in County Mayo. The proposed electrical connection between the two wind farms and the permitted grid route are shown on Figure 2-2. Figure 2-3 shows the proposed connection to Glenree substation, along with the permitted route.

The proposed route will consist of:

1. Approximately 2.3km of overhead line and 340m of underground cabling. The underground sections consist of:
    a. 240m of underground cabling will extend from turbine T2 at Black Lough to the first wooden pole. This underground section is needed to provide sufficient setback of the overhead line from the turbine in accordance with ESB specifications.
    b. 100m of underground cabling from the southern-most pole to the control building at Cloonkeelaun
2. The underground section at Black Lough will follow the alignment of an existing farm track that passes turbine T2 and extends in a southerly direction. The underground section at Cloonkeelaun will cross blank bog.
3. Approximately 18 No single wooden poles with stays at the 2 No. end poles, 4 No angle poles and where required for line stability. This overhead line will be similar in appearance and capacity as the overhead lines servicing most houses across the country.
4. Of the total route length, approximately 2km of the overhead line will pass through the Ox Mountains Bogs SAC. This compares to approximately 1.4km of cabling that would follow roads through the SAC in the permitted route.

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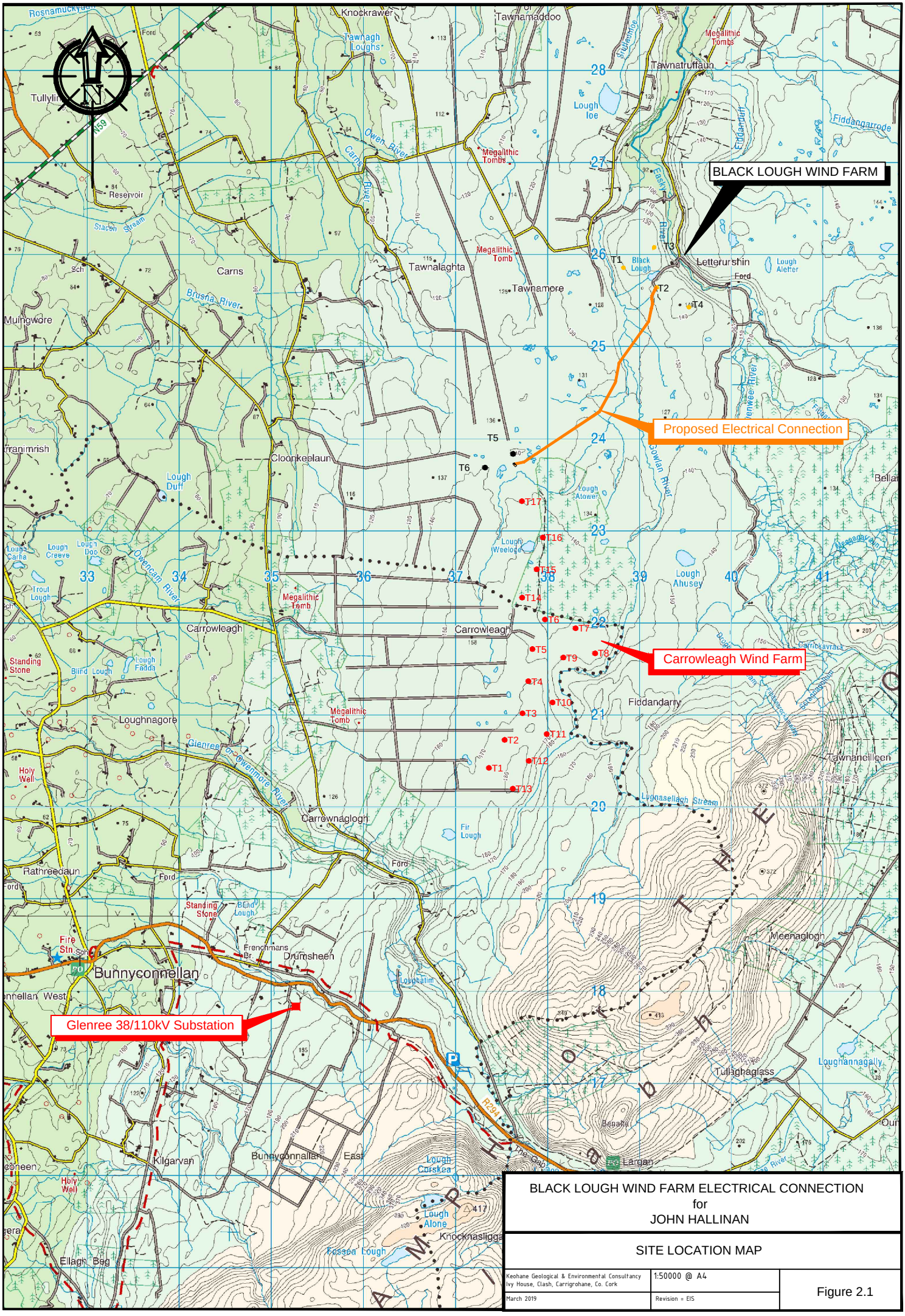
OS LICENCE No. AR 0090317



BLACK LOUGH WIND FARM ELECTRICAL CONNECTION
for
JOHN HALLINAN

SITE LOCATION MAP

Keohane Geological & Environmental Consultancy Ivy House, Clash, Carrigrohane, Co. Cork	1:50000 @ A4	Figure 2.1
March 2019	Revision = EIS	

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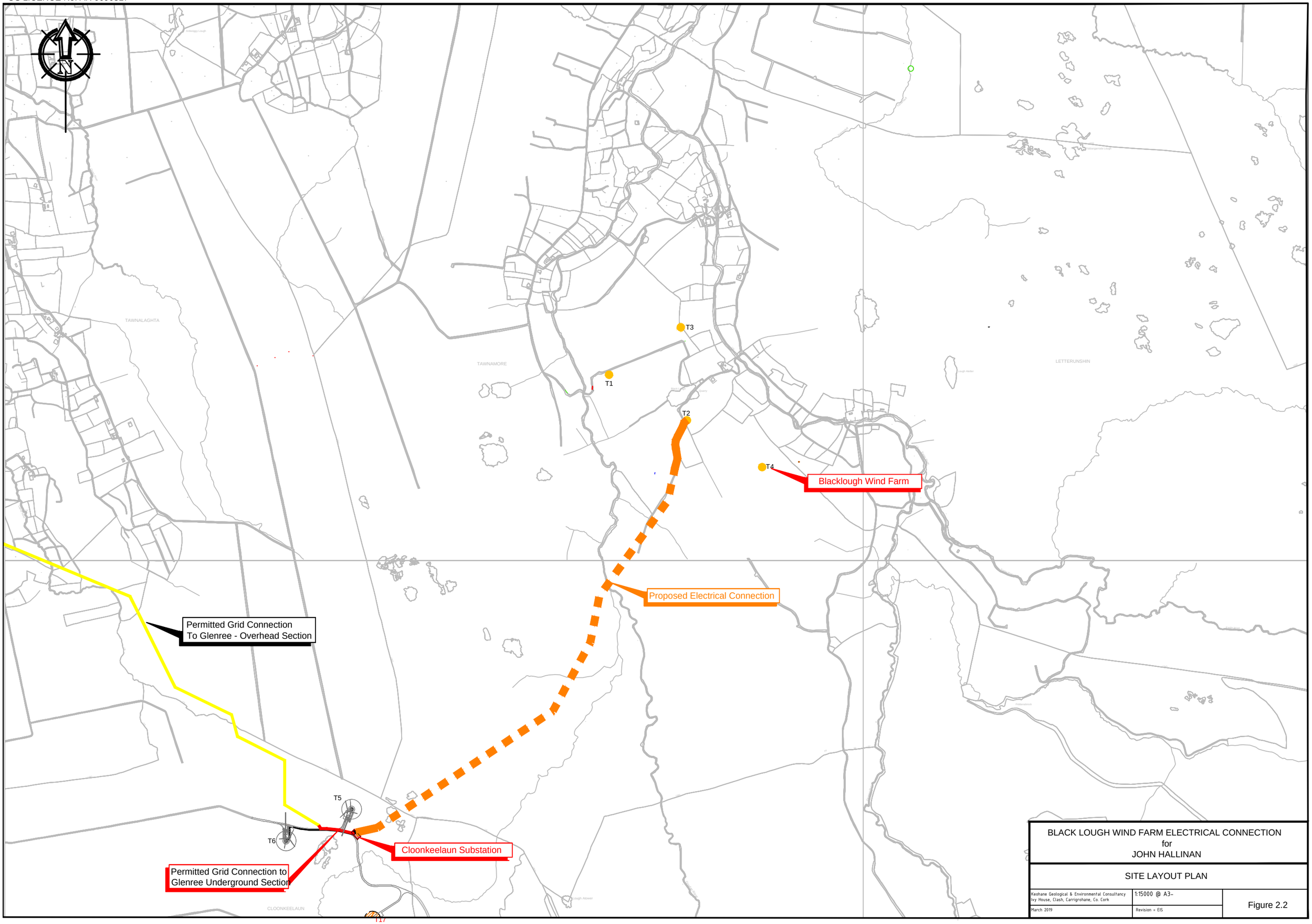

BLACK LOUGH WIND FARM ELECTRICAL CONNECTION
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SITE LAYOUT PLAN

Keohane Geological & Environmental Consultancy Ivy House, Clash, Carrigrohane, Co. Cork	1:15000 @ A3-	Figure 2.2
March 2019	Revision = EIS	

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BLACK LOUGH WIND FARM

Proposed Electrical Connection

Cloonkeelaun Substation

Carrowleagh Wind Farm

Carrowleagh Substation

Glenree 38/110kV Substation

LEGEND

- PERMITTED CLOONKEENLAUN TURBINES (15/466)
- OPERATIONAL CARROWLEAGH WIND FARM
- PERMITTED BLACK LOUGH WIND FARM (17/93)
- EXISTING CARROWLEAGH 38kV GRID CONNECTION
- PERMITTED 20kV UNDERGROUND CABLE ROUTE
- PERMITTED 20kV OVERHEAD LINE ROUTE

BLACK LOUGH WIND FARM ELECTRICAL CONNECTION
for
JOHN HALLINAN

PROPOSED CONNECTION ROUTE

Keohane Geological & Environmental Consultancy Ivy House, Clash, Carrigrohane, Co. Cork	1:35000 @ A3	Figure 2.3
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3. LANDSCAPE – IMPACTS AND MITIGATION

3.1. Landscape Impacts

A landscape and visual assessment was prepared by Jennings O'Donovan & Partners Ltd., Consulting Engineers, having regard to the relevant guidelines and the Sligo County Development Plan 2017-2023.

The baseline condition for the assessment included the presence of the 6 No turbines at Black Lough and Cloonkeelaun. The viewpoints used in the Black Lough Wind Farm landscape assessment were used to assess the proposed overhead line.

In was determined that the overhead line would not be seen from most viewpoints due to distance, topography and / or screening by forestry. It was concluded that the addition of the proposed overhead line will not significantly add to the impact on the landscape given its relatively small scale in comparison with the wind turbines and the distance from the viewpoints. The remote location, undulating topography and forestry will screen views of the overhead line from most public roads. The use of single wooden poles rather than steel lattice masts will further reduce visual impact of the line.

4. POPULATION & HUMAN HEALTH – IMPACTS AND MITIGATION

4.1. Impacts and Mitigation Dwellings

There are no houses within 500 metres of the proposed connection route. The owners of the closest houses have a financial interest in the project. The closest third-party house is approximately 980 metres from the closest point of the connection route.

4.2. Impacts and Mitigation - Noise

The main sources of noise in the countryside include wind, flowing water, bird song and agricultural activities. Background noise monitoring was conducted as part of the noise impact assessment in accordance with best practice. It was conducted at four locations near the Black Lough Wind Farm, corresponding to the nearest houses to the development.

No significant operational noise emissions from the proposed electrical connection are envisaged.

During the construction period of the connection, the principal sources of noise will be excavation machinery, construction traffic and the helicopter doing airlifts of poles and materials. However, the overall impact from noise emissions associated with the construction phase will be minimal and of short duration. There will be a short-term cumulative noise impact at the nearest houses during construction of the wind farm.

4.3. Impacts and Mitigation – Electromagnetic Fields

Electricity powerlines have an associated electro-magnetic field (EMF), the strength of which is dependent on the voltage, current flows and distance from the powerline. EMF are also naturally occurring (e.g. earth's magnetic field) and also associated with many everyday household appliances (e.g. microwaves, TVs and hair driers). Electrical power at 50Hz operates at extremely low frequency (ELF). The ESB has published an information booklet on this topic – EMF and You.

Since the 1970's, studies have been carried out on the health effects of EMF associated with high voltage powerlines – 110kV up to 400kV; there are no known studies for 20kV powerlines. Following reviews of the available research, international health agencies have not found a causative link between childhood illnesses and high voltage powerlines. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has recommended an ELF-EMF exposure limit of 5kV/M and 100μT, respectively, for the general public. These were adopted by the Council of the European Union in 1999. In 2010, ICNIRP revised its EMF exposure limit to 200μT, but as yet, this has not been adopted by the European Union. The reading below the high voltage lines are an order of magnitude below these limits.

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4.4. Impacts and Mitigation - Land

The site (redline planning boundary) covers an area of approximately 15.4ha of peatland in a landholding of 525ha (of which 429ha is owned by the Hallinan's), which has a very low potential for forestry or agriculture. The surrounding land use supports a mixture of commercial coniferous forestry, peat cutting and low-intensity agriculture in the wider area.

A very small percentage of the land ownership area will be developed through the construction of electrical connection. The landowner has undertaken to reduce stocking number on the SAC and to block man-made drains to enhance bog habitats on the SAC.

4.5. Impacts and Mitigation -Tourism

While the site is not itself an important area for tourists, it is located near designed routes and walks, including the Wild Atlantic Way to the north and the Sligo Way to the east. The assessment carried out on the potential impacts of the wind farms on tourist attractions in the area finds that there is no significant additional impact.

The electrical connection will have no impact on tourism in the area.

4.6. Impacts and Mitigation – Traffic

The traffic route to the site will be along the N59 and the local road network to Black Lough and Cloonkeelaun. The materials required for the construction of the electrical connection will be delivered to site with rigid-body trucks. The traffic volumes will be relatively small compared to the construction traffic of the associated wind farm. These deliveries will be timed to avoid peak construction at the wind farms – for example during concrete pours for turbine foundations. The construction phase of the connection is anticipated to be less than 3 weeks. The proposed route will avoid works along the public road as required for the permitted route between Black Lough and Cloonkeelaun.

Once commissioned the traffic impact during the operational phase will be negligible.

4.7. Impacts and Mitigation – Cultural Heritage

There are no Recorded Monuments, National Monuments, sites with Preservation Orders or Temporary Preservation Orders, World Heritage Sites, sites included in the Tentative List as consideration for nomination to the World Heritage List, Protected Structures, Architectural Conservation Areas, NIAH structures or NIAH historic gardens within the proposed development area or the 1km study area. As a result, there will be no direct construction impacts on any protected archaeological, architectural or cultural heritage features.

There are seven Recorded Monuments within 2km of the proposed development area. The proposed development will have an indeterminable direct construction impact on any previously unrecorded archaeological remains that may exist within the area of land take.

Due to the presence of seven Recorded Monuments within 2km of the proposed development area, and the known potential of bogs to contain previously unrecorded archaeological remains, it is recommended that archaeological monitoring be carried out during groundworks associated with construction of the underground cabling. In addition, it is recommended that intermittent archaeological monitoring be carried out during groundworks associated with construction of the overhead line. Monitoring will be carried out under Licence to the Department of Culture, Heritage and the Gaeltacht and the National Museum of Ireland. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring.

5. ENVIRONMENTAL ASPECTS – IMPACTS AND MITIGATION

5.1. Impacts and Mitigation – Flora, Fauna and Mammals

The potential impacts (direct, indirect and cumulative) of the proposed development on the flora, fauna and fisheries present within the site and in the immediate surroundings have been qualitatively assessed. Consultation with relevant organisations was undertaken. The habitats, flora and fauna of the site were assessed by means of a desk study of literature pertinent to the site and surrounding area and by field surveys of the site including a survey of habitats and flora, general observations, and specialist surveys (under licence where appropriate).

The main part of the Proposed Development Site lies 9km south-southwest of Dromore West, Co Sligo. The Proposed Development Site occupies a linear route of approximately 2.64km and comprises a proposed underground and overhead line electrical connection between the four turbines at Black Lough and the control building at Cloonkeelaun. The Proposed Development Site can be found at approximate ITM coordinates 538768 824946.

The site is located in a rural peatland landscape largely managed by sheep grazing, and mainly comprising blanket bog. The main habitats surveyed were cutover bog (past turf cutting and now abandoned), upland blanket bog (including active blanket bog), wet heath, acid oligotrophic lake, and eroding / upland river.

The proposed electrical connection route is bisected by the Gowlan River, a tributary of the Easky River), which is a high-quality salmonid water with freshwater pearl mussel recorded within it. A linear distance of 2km of the proposal is located within the Ox Mountains Bogs SAC and the Ox Mountains Bogs pNHA.

Detailed surveys were undertaken in the vicinity of the proposed route, including for protected species and important habitats, and with a high emphasis on SAC Qualifying Interest features and pNHA interest. This included mapping of Annex I habitats as well as surveys for marsh saxifrage and Geyer's whorl snail and the habitats that they depend on. In addition, surveys for species such as freshwater pearl mussel and protected mammals were undertaken in the wider area.

A number of peatland Annex I habitats, marsh saxifrage, Geyer's whorl snail and freshwater pearl mussel were recorded as occurring within the wider area.

A proposal has been put forward that includes embedded mitigation (route selection and an approach largely comprising overhead line) and also specific mitigation (including minimisation of excavation, delivery of components by helicopter, specific controlled access during construction, specific construction approach, and the employment of buffer zones and no-go areas).

Following the complete application of the required mitigation measures, it is considered that the proposal will not result in significant residual impact on ecological features in general terms and will not result in an adverse impact on the integrity of the Ox Mountains Bogs SAC or pNHA or any other designated conservation area.

5.2. Impacts and Mitigation – Birds

An assessment of potential impacts on birds was undertaken for the proposed electrical connection. A combination of desktop studies and field surveys were undertaken to determine the use of the site and its surroundings by birds throughout the year, paying particular attention to bird species of conservation concern. Surveys carried out followed best practice guidelines. Survey data from the adjacent Carrowleagh Wind Farm was also used in this assessment.

Potential impacts during construction include habitat loss, displacement / disturbance and damage to nests. The construction period will however be of relatively short duration. No significant impact during the operational phase is envisaged. No significant cumulative impact is envisaged during the construction or operation of the wind farms.

The conclusion of the birds' assessment is that no impacts on sites designated for the protection of bird species are foreseen. The impacts of the construction and operation of the proposed electrical connection on bird species are likely to be low provided construction, management and re-instatement on decommissioning follow best practice procedures, and the proposed mitigation measures are adopted.

5.3. Impacts and Mitigation – Surface Water

The electrical connection is located within the catchment of the Gowlan River. The overhead section of the connection crosses the Gowlan River.

While very little earthworks are associated with this development, the construction phase has the highest potential for negative impacts. Siltation and nutrient enrichment of streams may occur as a result of these earthworks activities. No instream works are proposed; crossing of the Gowlan River will be by temporary bridge or use of existing crossing points. Part of the Black Lough Wind Farm, Cloonkeelaun Wind Farm and a small section of the grid connection to Glenree is within the same river catchment, so there will be a potential cumulative impact during the construction phase on water quality. However, monitoring carried out to date indicates that the construction activity has not impacted on surface water quality.

Suitable mitigation will be undertaken in accordance with best practice, so impacts to watercourses will not be significant. These are detailed on the Main Report. No water quality impacts are envisaged during operation of the connection. Assuming implementation of the detailed programme of mitigation measures outlined in the Main Report and implementation of best operating practices, the proposed electrical connection will not result in an adverse negative impact on surface water on site or the immediate environs.

5.4. Impacts and Mitigation – Geology & Groundwater

The geology of the site consists of recent peat deposits overlaying thick deposits of glacial tills. The peat is worked commercially for turf in the wider area, but not along the proposed route. The glacial tills contain pockets of sand / gravel which is excavated locally for bog track construction; two small gravel pits are located within the Black Lough site. The bedrock underlying the site at depth (estimated at >30m) is limestone. This limestone bedrock is classified as being an important groundwater resource.

There are no sites of geological importance at the site or in the wider area. Furthermore, there is low potential for aggregate or mineral resources at the site.

Potential impacts on geology are associated largely with the construction phase when earthworks operations are ongoing. However, earthworks are minimal, so the risk of a construction-related peat landslide is very low. Mitigation to minimise impacts are provided in the Main Report. Once followed, no significant impacts on geology or groundwater is envisaged.

Cumulative impacts of the wind farms construction include additional earthworks and the use of natural resources. The construction of the wind farms will not interfere with any sites of geological interest, nor will it increase the risk of peat landslide risk along the connection route.

5.5. Impacts and Mitigation –Air, Climate & Climate Change

The long-term weather patterns at the site reflect regional conditions affecting north-western Ireland. These patterns are predominantly low fronts from the west and southwest in winter months and more settled conditions during the summer months.

The development of the electrical connection (and associated wind farm) is not expected to have any negative impact on the climate of the area. The wind farm will generate electricity that would otherwise be generated by fossil fuel burning power stations and the proposed connection will facilitate its export to the National Grid. There are no atmospheric emissions (greenhouse gases and other pollutants) from wind energy generation. The excavation of peat for the construction of the connection will release carbon if that peat decomposed. The volumes involved are very small; $<100m^3$. Any excavated peat will be reused as backfill in trenches and around poles.

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6. CONCLUSION – INTERACTIVE IMPACTS AND CONCLUSION

The installation of the proposed electrical connection will facilitate the export of electricity from the wind farm at Black Lough, County Sligo. The proposed development will have positive and negative impacts on the receiving environment. The interactions between impacts associated with each aspect of the environment with the other aspects of the environment is discussed in the main EIAR report, along with appropriate avoidance, reduction and mitigation measures. The interactions of all environmental factors indicate an overall positive development capable of supporting a clean, renewable and sustainable energy source for the region. The construction of the electrical connection will have no significant impacts on the environment in isolation or in combination with the associated wind farm. The overall conclusion of this EIAR is that the proposed electrical connection is the most viable for the overall wind farm project.