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25th March 2020

Re: Pre-Application Scoping Request: Proposed Wind Farm Development in County Westmeath

To whom it may concern,

Bracklyn Wind Farm Ltd. is proposing to develop an 11 no. turbine wind farm, including a connection to the national grid, on lands south of Delvin, Co. Westmeath. The proposed development, with a total output of approximately 60.5MW, is to be known as the 'Bracklyn Wind Farm'.

The proposed wind farm and ancillary infrastructure will be located in the townland of Bracklin. The project will also comprise the development of an electricity line and 110kV substation to facilitate the export of electricity to the national grid. Three grid connection and substation options are currently under consideration. A Site Location Map is provided at **Annex 1**.

Galetech Energy Services (GES) is currently carrying out a detailed Environmental Impact Assessment (EIA) scoping assessment on behalf of Bracklyn Wind Farm Ltd, in order to assess and confirm the suitability of the site for this development. An Outline Scoping Report is enclosed in **Annex 2**.

As part of this scoping assessment, and in accordance with the Environmental Impact Assessment (EIA) Directive, GES endeavours to engage all stakeholders at an early stage of project design in order to allow for a more focused consideration of any likely significant environmental impacts. Should you have any comments on the proposed development in respect of your specific area of competence, we would be grateful if you could send them to us by 8th May 2020. Feedback can be sent by post to the above address (Cavan Office) or by email to: conor@galetechenergy.com.

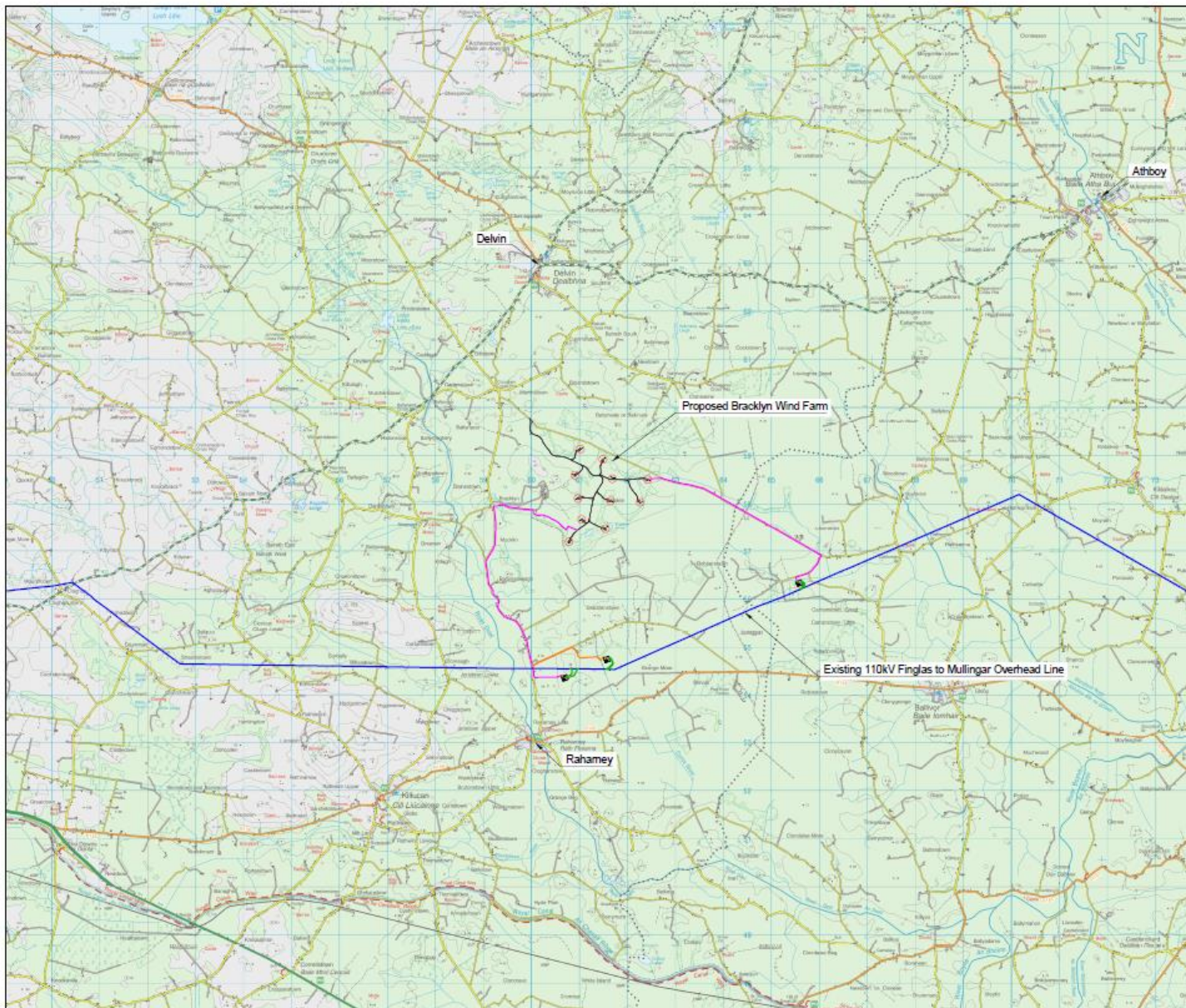
We wish to highlight that the current project design may be subject to further change resulting from ongoing consultation and assessment throughout the EIA process.

Should you have any queries relating to the proposed development, please do not hesitate to contact this office.

Galetech Energy Services

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**Annex 1 –
Project Layout**



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Legend

Internal Wind Farm Cable Route	
Existing 110kV Overhead Line	
Proposed 110kV Loop Station	
Proposed Underground 110kV Connection Between Loop Station & Existing 110kV Overhead Line	
Wind Farm Access Tracks & Crane Hardstanding Areas	
Turbine Locations	
Proposed Strain Tower Locations	



Date	Rev	Description	Drawn By

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Client: **Bracklyn Wind Farm Ltd.**

JOB Title: **Bracklyn Wind Farm**

Drawing Title: **Figure 1 - Overall Site Location**

Drawing No. BRK001_SIDPRE_LOC-0.01	Revision No. Rev00
Scale (A1) 1:40,000	Date 25/03/2020
Drawn By: J.B.	Checked By: S.C.
	Confirmed By: S.C.



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Legend

- Internal Wind Farm Cable Route —
- Existing 110kV Overhead Line —
- Proposed 110kV Loop Station
- Proposed Underground 110kV Connection Between Loop Station & Existing 110kV Overhead Line —
- Wind Farm Access Tracks & Crane Hardstanding Areas
- Turbine Locations
- Proposed Strain Tower Locations

Date	Rev	Description	Drawn By

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Client:	Bracklyn Wind Farm Ltd.
Job Title:	Bracklyn Wind Farm
Drawing Title:	Figure 2 - Overall Site Location
Drawing No:	BRK001_SIDPRE_LOC-0.02
Revision No:	Rev00
Scale:	(A1) 1:12,500
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Confirmed By:	B.C.

**Annex 2 –
Outline Scoping Report**



Bracklyn Wind Farm

Outline Scoping Report

Bracklyn Wind Farm Ltd

Galetech Energy Services

Clondargan, Stradone, Co. Cavan Ireland

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DOCUMENT CONTROL

	Function	Name
Content	Planning Team	Various
Approval	Senior Planner	Simon Carleton

RECORD OF CHANGES

Revision Number	Issue Date	Summary of change	Approved
0	24/03/2020	Content	Various
1	25/03/2020	Comments	Simon Carleton

DISTRIBUTION LIST

#	Function Title	Company	Name (optional)
1	For Scoping	Various	Various
2			
3			

Notes:



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1.0 INTRODUCTION

Bracklyn Wind Farm Limited (BWFL) intends to apply for planning permission to construct and operate a wind energy development, to be known as the Bracklyn Wind Farm. The proposed Bracklyn Wind Farm is located in east County Westmeath, c. 16km east of Mullingar, c. 4km south of Delvin and c. 5km north of Raharney. The location of the proposed wind farm is provided at **Figure 1** below.

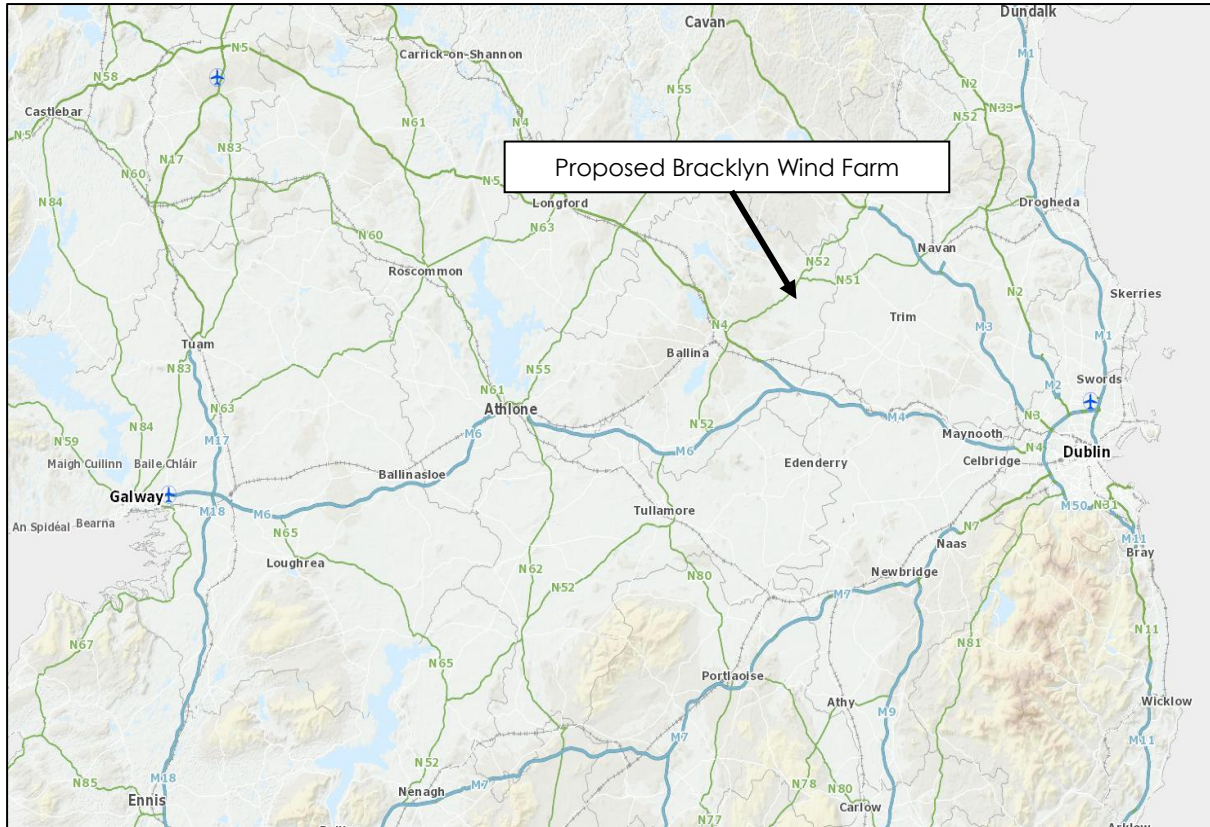


Figure 1: Site Location

1.1 The Applicant

BWFL is a renewable energy development company with substantial experience in the renewable industry; the company principals owning and operating a number of permitted and operational wind farms both within Ireland and internationally.

1.1.1 The Agent

Galetech Energy Services (GES) has been commissioned by BWFL to coordinate the preparation of an Environmental Impact Assessment Report (EIAR) including the scoping process. GES is an Irish multi-disciplinary renewable energy consultancy that specialises in the delivery of advisory, project management and technical engineering services from project feasibility through to delivery and operation.

1.2 Purpose of this Report

This Outline Scoping Report has been prepared to provide a high level overview of the proposed development, to allow consultees inform themselves of the scope of the project and provide comments on information which should be included in the EIAR. The Report also sets out to provide an overview of the EIAR scoping process undertaken by the applicant to date.

A Scoping Report, detailing the entire scoping process including environmental scoping by appointed consultants, consultation with local communities and the general public and consultation with statutory consultees, will accompany a planning application for the project in an annex to the EIAR.

2.0 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

2.1 EIA Screening

In accordance with the provisions of the Planning & Development Act 2000 (as amended), EIA is mandatory when certain classes of projects exceed specific sizes and thresholds. Planning applications for such projects must be accompanied by an Environmental Impact Assessment Report (EIAR). Schedule 5 of the Planning and Development Regulations 2001 (as amended) provides that the following class of development proposal shall be subject to EIA:

“Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts”

The proposed development consists of 11 no. 5.5MW turbines with a total output of 60.5MW and is therefore of a scale which exceeds the mandatory threshold for EIA and, consequently, an EIAR will be prepared and submitted with the planning application.

2.1 Environmental Impact Assessment Report (EIAR)

The EIAR will be prepared in accordance with the provisions contained within Schedule 6 of the Planning and Development Regulations 2001, as amended, which sets out the information to be contained in an EIAR. In addition, the EIAR will take account of the contents of Directive 2014/52/EU (the 2014 EIA Directive), which was adopted in the EU on 16th April 2014, amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. The 2014 EIA Directive was transposed into Irish planning law from the 1 September 2018 via the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

2.1.1 Purpose of the EIAR

The purpose of the EIAR is to protect the environment and informs decision making. The EIAR provides for a system of sharing information about the environment, within which a proposed development sits, and enables effects to be foreseen and prevented during the design and consent stages. The purpose of the EIAR is to:-

- Anticipate, avoid and reduce significant effects;
- Assess and mitigate effects;
- Maintain objectivity;
- Ensure clarity and quality;
- Provide relevant information to decision makers; and
- Facilitate better consultation.

It is a statutory requirement that the EIAR pays particular regard to the:-

- Key alternatives;
- Proposed project;
- Receiving environment;
- Likely significant effects;
- Mitigation and monitoring measures; and
- Residual effects.

A non-technical summary must also be provided.

2.1.2 EIA Methodology

The EPA have published a set of revised 'Guidelines on the Information to be contained within an EIA' and these guidelines have been updated to reflect the 2014 EIA Directive and the provisions contained therein. The guidelines have been published in draft form (August 2017) and provide an update on the previous guidelines which were initially published in 2002. The guidelines are a statutory document and provide guidance on the role of the EIA in the EIA process, the key activities involved in the EIA process, and guidance on the presentation of the information contained in the EIA. The EIA team will have regard to these guidelines in the preparation of the EIA documents; additionally the team will also have regard to best practice guidance for each individual environmental topic covered by the EIA.

2.2 Content of the EIA

The EPA Guidelines include a 7 No. stage approach (sequence) in the production of the EIA. This includes Screening, Scoping, Consideration of Alternatives, Project Description, Baseline Description, Assessment of likely significant Impacts and Mitigation/Monitoring. The guidelines outline that adherence to this sequence ensures an objective and systematic approach is achieved. Using this sequence, the environment is described using a number of specific headings and this provides for a separate section for each topic. The description of the existing environment, the likely significant impacts (Positive, Negative, & Cumulative), mitigation and monitoring measures, and residual impacts are then grouped together in each section, covering each topic. This format allows for ease of investigation into each topic and for specialist studies/input to be integrated seamlessly. The structure of this EIA is set out below.

- Introduction;
- Description of the Proposed Development;
- Project Alternatives;
- Population and Human Health;
- Biodiversity;
- Land & Soil;
- Water;
- Air & Climate;
- Landscape;
- Cultural Heritage;
- Noise & Vibration;
- Radiation;
- Shadow Flicker;
- Material Assets; and
- Interaction of the Foregoing.

Each chapter of the EIA will be structured using the following format:

- Introduction;
- Description of the Existing Environment;
- Description of Likely Significant Impacts;
- Mitigation & Monitoring Measures;
- Residual Impacts; and
- Conclusion.

3.0 PROPOSED DEVELOPMENT

The proposed development includes the construction and operation of a wind farm, comprising infrastructure including 11 no. wind turbines, hardstandings, access tracks, site entrances, meteorological mast and internal wind farm underground cabling. The project will also include a range of off-site or secondary developments including the wind farm's grid connection, turbine component haul routes, construction material haul routes and the importation of materials.

The table below outlines the location of key project infrastructure.

ID	Easting	Northing	Altitude (mAOD)
T1	660944	759149	85
T2	660828	758606	89
T3	660894	758120	94
T4	660972	757682	85
T5	660707	757218	84
T6	661412	758933	81
T7	661611	758532	81
T8	661575	758072	89
T9	661466	757489	78
T10	662349	758514	83
T11	662192	758040	82
Anemometer	660630	757846	89

Coordinates provided in Irish Transverse Mercator (ITM)

It should be noted that, given the early stage of project development, it cannot be definitively stated precisely where the wind farm will connect to the national grid. As such, the EIAR will assess 3 no. alternative grid connection options, which are detailed in **Section 3.8**.

The proposed development will be predominately located on lands within Co. Westmeath which will form the core study area; however, the assessment of likely significant effects will also extend into Co. Meath, Co. Kildare and Co. Offaly.

While it is not possible to determine the precise routing of the proposed grid connection options, 3 no. indicative routes have been identified. Given the proximity of the proposed development to the 110kV overhead electricity line which runs between Mullingar, Co. Westmeath and Fingal, Co. Dublin, it is assessed that connection to this existing electricity line is the optimum means of connection.

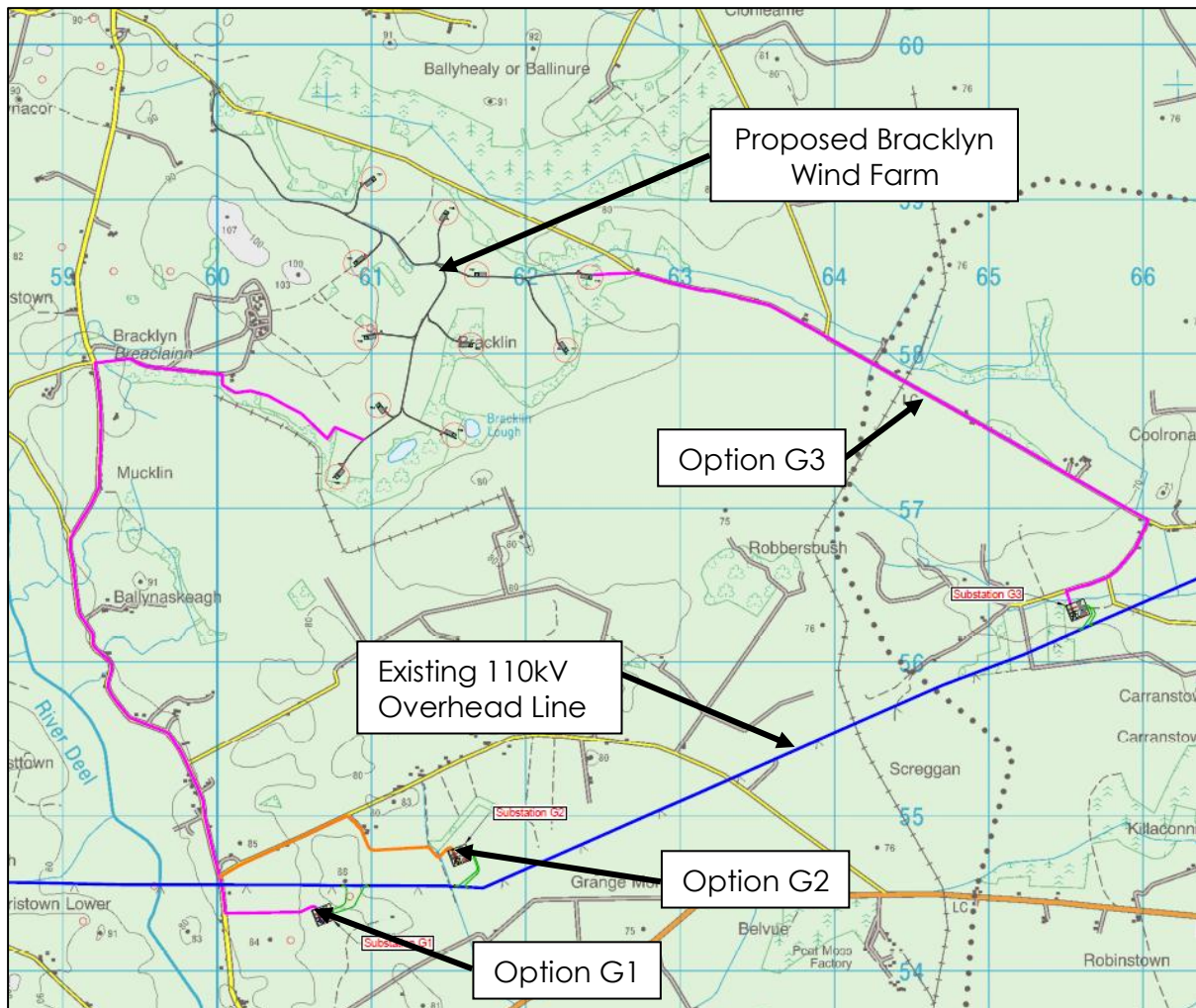


Figure 2: Proposed Site Layout & 110kV Grid Connection Options

3.1 Wind Turbines

The proposed turbines will each consist of a three-bladed rotor attached to a nacelle (hub) which contains the mechanical drive train and electrical generation mechanisms. The blades will be constructed of glass reinforced plastic and lightning protection conduits are integral to their construction. The nacelle is supported on a steel tower of tubular construction. The colour of the proposed turbines and blades will be white, off-white or light grey in accordance with the *Wind Energy Development Guidelines for Planning Authorities 2006* and as determined by the Planning Authority.

Given the available wind resource and relatively low terrain of the proposed site, a General Electric GE 5.5-158 turbine with an overall height of up to 180 metres is presently considered to be the most suitable wind turbine currently available in the market for the subject site. The turbine being assessed has a typical hub height of 101 metres and a typical rotor diameter of 158 metres. The turbine has a cut-in wind speed of 3 m/s and a cut-out speed of 25 m/s. At the cut-out speed the turbines will automatically shut down.

It is important to stress that the exact model and manufacturer of the turbine has not yet been chosen and options will remain open until the construction tender stage. A number of other turbine models with various hub height/rotor diameter combinations could be suitable for the subject site. Turbine technology changes

rapidly and the final turbine model to be installed will be subject to a competitive tendering process prior to the commencement of construction. It may also be the case that the turbine discussed above will not be available at the time of competitive tendering due to the rapid obsolescence of individual models. A turbine with an overall tip height of 180m has therefore been used as a template for the basis of the assessments in this EIA as it is currently the turbine available in the Irish market that best fits the required profile for the subject site.

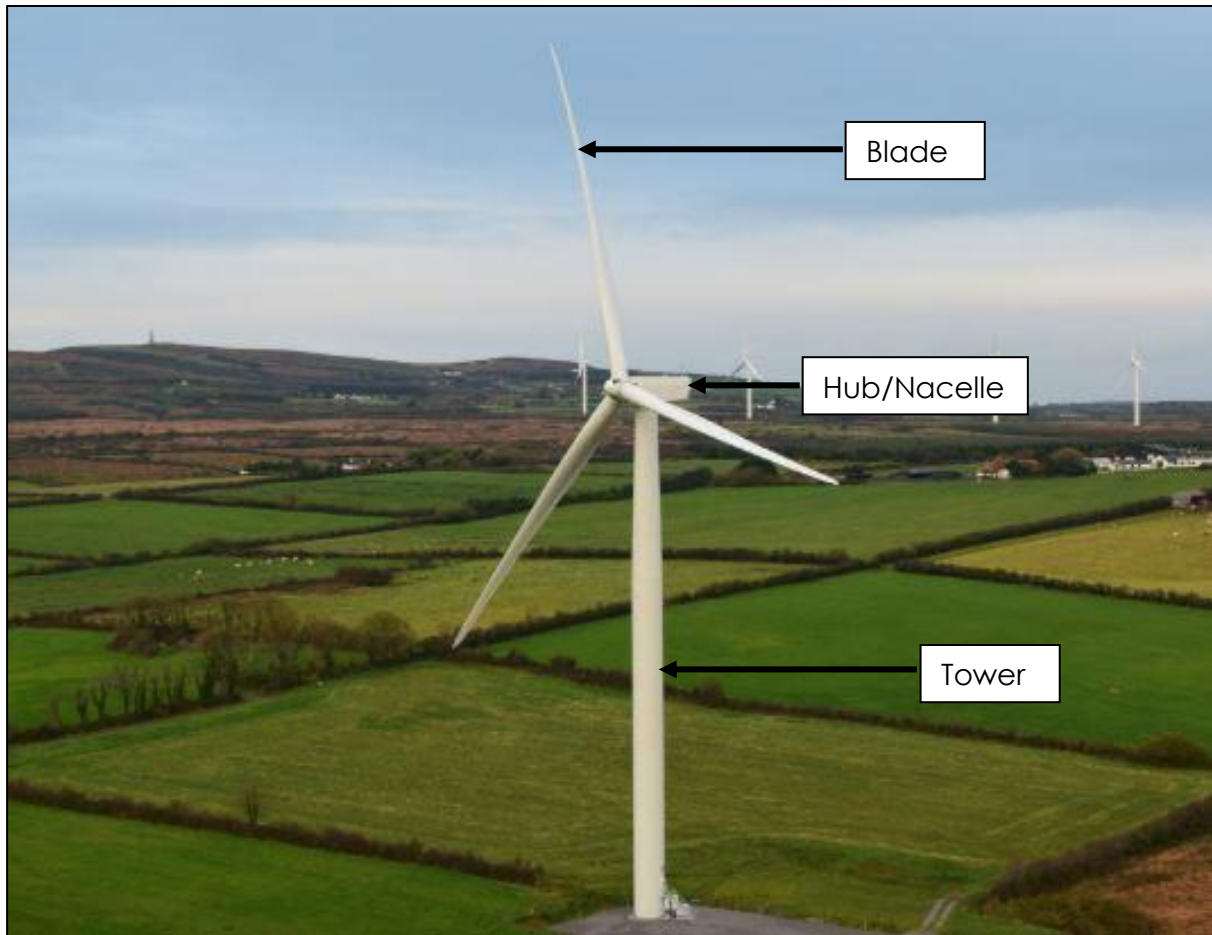


Figure 5: Typical Wind Turbine

3.2 Turbine Foundations

Each turbine tower is bolted down to a steel ring foundation which can comprise either a reinforced concrete raft foundation or a piled foundation. The type of foundation used for each turbine will depend upon the specific ground conditions at each location. This shall be established through detailed technical design and post-consent geotechnical investigations prior to construction, as is normal best-practice in all construction projects.

The typical foundation depth for each turbine will be c. 3 metres, including granular fill area. This depth may immaterially vary depending on the depth to bedrock at each turbine location. The area of each turbine base will occupy approximately 20m x 20m. Excavations will be undertaken by conventional mechanical methods and no blasting shall be required. Rock, topsoil and vegetation removed during construction of turbine foundation bases will be appropriately stockpiled and, in so far as is practicable, reused onsite to form access tracks and site reinstatement, or removed from site to an appropriate licensed facility where excess material arises.

3.3 Hardstandings

Hardstanding areas shall be established adjacent to each turbine to facilitate crane operations for erection and occasionally for maintenance and decommissioning. Each hardstanding area shall typically be 50m x 30m for the construction phase and will consist of levelled and compacted (unsealed) hardcore. However, the precise size, arrangement and position of the hardstanding area will be determined by the chosen turbine supplier and, as such, cannot be confirmed until a turbine model has been chosen.

Temporary set-down areas will be located adjacent to each hardstanding area during the construction phase to accommodate turbine components following delivery to site. Following the erection of turbines, these set-down areas will be reinstated to their pre-construction condition.

3.4 On-Site Access Tracks

A total of c. 5km of on-site access tracks will be required for construction purposes and for site access during the operational phase. The access tracks proposed shall be similar to normal agricultural tracks but with a slightly wider typical running width of approximately 5 metres. Some good quality agricultural access tracks already exist within the site and these existing tracks will be upgraded and new tracks constructed, where necessary, to provide access to the proposed turbine locations. 1 no. site entrance will be required to facilitate access, this will be a new access of an unnamed tertiary local road which bounds the site to the northeast.

Additional excavated strips will be required alongside the tracks to accommodate drainage and cable trenches. Track variations shall be made to accommodate turning of long loads and passing traffic, as required.

3.5 Internal Wind Farm Cabling

Wind farm cabling will be required to connect each turbine to the electrical system. The cables will be located underground, installed in trenches of 1m in depth, and will generally follow the alignment of on-site access tracks.

3.6 Meteorological Mast

A permanent meteorological mast will remain on-site during the operational phase of the development (permanent as per the life span of the wind farm). The proposed permanent mast is 101m in height and will consist of a steel lattice structure to which various measurement instruments will be attached. Some ground works, including the construction of concrete foundations and hardstanding area, will be required to erect the mast.

3.7 Turbine Component Haul Route

It is envisaged that the turbines will be transported from Dublin Port using the M50, M4, N4, N52, L1504 and an unnamed tertiary road which is c.775m from the L1504. Some temporary upgrade works are proposed at the junction of the N52 and L1504 and also to facilitate a temporary off-road connection (temporary access) between the L1504 and the unnamed tertiary road to facilitate the movement of abnormal oversized loads south towards the proposed access.

Upgrade works will also be required to the tertiary road. Upgrade works will comprise the widening of the carriageway running width up to 5m to accommodate construction traffic and abnormal loads. The carriageway structure will be formed, and subsequently paved, using materials approved by the local authority and carried out to the required specification.

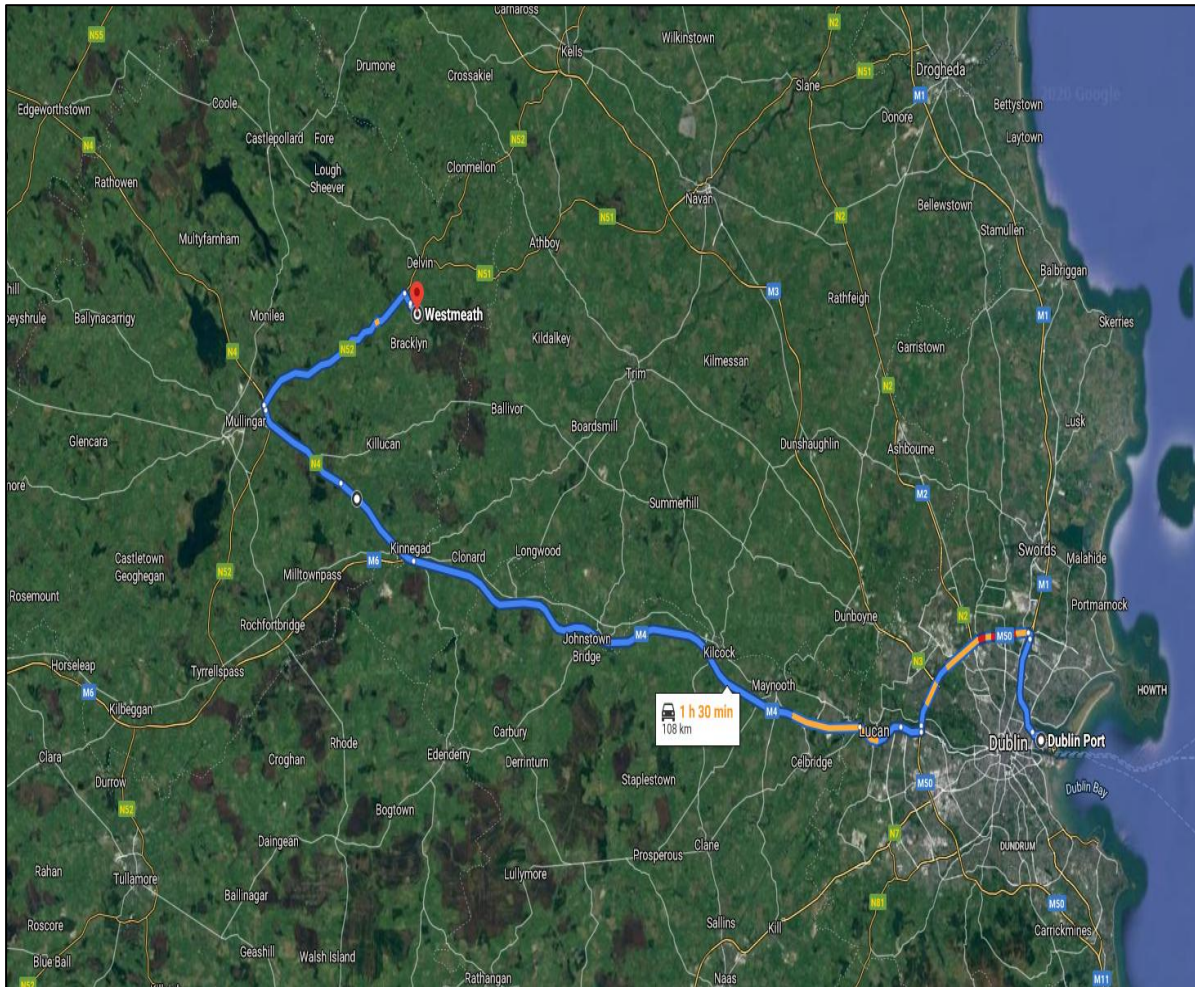


Figure 4: Proposed Haul Route

3.8 Grid Connection

The point of connection of the project to the national grid will ultimately be decided by ESB Networks and is beyond the control of BWFL. As such, it is not currently possible to confirm the nature or routing of the grid connection infrastructure. However, on the basis of detailed analysis by BWFL including an assessment of the existing grid network and grid capacity in County Westmeath and County Meath, it is predicted that the electricity generated will be exported to a new 110kV 'loop-in, loop-out' substation. Three no. alternative grid connection route and substation locations (Options G1 – G3) have been identified and are illustrated at **Annex 1** of the consultation request which accompanies this report.

Each of the options comprise underground electricity cabling from the proposed wind farm to the selected substation location. The underground cabling will be predominately located within the carriageways of local public roads, with short section of cabling located within private lands to facilitate connection to the respective substations.

Options G1 (c. 6.5km in length) and G2 (c. 7.4km) share predominantly the same route which is located within a local road to the west of the wind farm site

Underground cabling associated with Option G3 will be located within an unnamed tertiary local road to the east of the site for c. 7.2km, crossing the boundary between Co. Westmeath and Co. Meath to a possible substation location.

4.0 SCOPE OF THE EIAR

The EIAR will provide an assessment of effects during the construction, operation and decommissioning of the proposed development for each the environmental topics described in this section.

This section provides a brief overview of the level of scoping which has taken place to date, as well as the potential effects which have been identified and the proposed methodology for further assessment going forward into the EIAR document.

4.1 Project Alternatives

Prior to the selection of the development under consideration, BWFL undertook an extensive iterative process to assess a range of alternatives at both the macro-level and micro-level. The assessment of alternatives ranged from alternative site locations, site layouts and designs, technologies, grid connection options and haul route options. This process has so far determined that the development as proposed represents the most environmentally sensitive project having regard to all reasonable available alternatives.

However, the proposed development in its current layout and design remains subject to further revision in line with continued project scoping and ongoing statutory and non-statutory consultation,

4.2 Population & Human Health

As part the scoping process, a desk based review of existing conditions in the area has been undertaken. It is anticipated that, during the construction phase, effects on community, recreation and tourism receptors will primarily be associated with traffic, noise, air quality and water impacts arising from the proposed development. Once the proposed development becomes operational likely effects will primarily be associated with visual impact and noise impact.

In terms of human health, it is noted that impacts here will be closely linked with other environmental aspects associated with the proposed development which are relevant to human health, namely soils, water, air quality, noise, shadow flicker, and radiation (grid connection). Other potential effects include employment effects and impacts on local economy.

The potential likely effects identified above along with potential cumulative effects with other wind farms and infrastructure projects, will be considered within the 'Population and Human Health' chapter of the EIAR. Effects which are not considered 'likely' or 'significant' have been scoped out from further assessment and include;

- Safety issues connected with the operation of wind turbines;
- Health effects of wind turbine syndrome;
- Effects of wind farms on property values as being a matter that is not relevant to the proper planning and sustainable development of the area; and
- Decommissioning phase effects (as these are considered to be similar to construction).

The EIAR chapter will also take into consideration the results of other assessments in the EIAR which have relevance to health, as identified above. Recognised health evaluation criteria will be used and accurate baseline data provided. The findings of these assessments will be cross referenced in order to avoid duplication of findings.

Employment effects and direct expenditure will be quantified using data provided by BWFL and, where necessary using standard industry data. Direct, indirect and induced effects on the local economy will be assessed using an economic model. Opportunities for local business and the local labour market to be involved in supply chain activities will be identified and where possible quantified.

4.3 Biodiversity

Early stage biodiversity scoping has been undertaken on the site in order to inform this pre-planning scoping report. This scoping process has included both desk based and field based research. The desk based research has included a review of available data sources and this has been supplemented by on-site walkovers and field surveys. These surveys have been ongoing for the past number of years and include bird surveys which have been undertaken to Scottish Natural Heritage (SNH) standards, mammal surveys, and habitat surveys, including the identification and classification of habitats within the site.

The proposed wind farm is not located within any designated nature conservation areas; however due to the unique characteristics of the River Boyne And River Blackwater Special Area of Conservation (SAC) and Special Protection Area (SPA), the proposed site is effectively surrounded by the SPA and SAC.

Further to this designation, Mount Hevey Bog SAC and proposed Natural Heritage Area (pNHA) are located c. 8km south of the proposal, Molerick Bog (NHA) is located c. 11km south-east, Milltownpass Bog (NHA) is located c. 14.6km south, while numerous other designated sites in relation to water bodies including Lough Derravaragh (NHA & SPA), Shesk (pNHA) and Lene (SAC) are located within 15km's of the proposed site.

This early stage scoping work has identified a number of potential significant likely effects, including:-

- Direct loss of habitat from the construction of the proposed development;
- Direct/Indirect damage to adjacent habitats during construction;
- Impacts during construction on the hydrology of water dependant habitats;
- Impacts on water quality both at a local level and regional level due to pollution run-off during both the construction and operation phases;
- Impacts on aquatic species during construction or due to pollution events;
- Disturbance to local wildlife, including loss of habitat, disturbance and displacement;
- Collision risk to bats and birds;
- Damage to or habitat loss of important wildlife corridors during construction;
- Displacement of bird species from limited breeding areas;
- Displacement or disturbance to breeding waders from areas within the proposed development;
- Impact on migrating birds, whereby dispersal or migration routes are affected by the placement of turbines; and
- Impacts on the conservation status or constituent parts of designated sites.

The planning application will also be accompanied by a separate Natura Impact Statement (NIS) which will provide an assessment of the potential for likely significant effects on the Natura 2000 network, in accordance with the Habitats Directive.

The EIAR chapter will address the nationally designated sites, terrestrial and freshwater (aquatic) habits and species, including those of conservation concern on and in close proximity to the proposed development site, including the prospective

grid connection route(s). The ecological evaluation of the site and its biodiversity will be assessed according to NRA (2009)¹. Once a value has been assigned to identified ecological receptors, the potential impact and proposed effect of the proposed development will be fully assessed. This will be done using the criteria outlined in various/up to date guidelines including NRA (2009) and CIEEM (2016)². The impacts will be assessed under a number of parameters such as magnitude, extent, timing, frequency, duration, and reversibility. The impact significance criteria outlined by the EPA (2002)³ will be used where applicable.

4.4 Land & Soil

As part of the initial scoping process, a desk based review of the existing environment in the area has been undertaken. This has been completed using a series of available desktop resources including mapping and guidance. It is anticipated that, during the construction phase, effects on Land and Soil will primarily be associated with impacts on peat, subsoil, and bedrock resulting from excavation activities, potential contamination of soil associated with any leakages or spillages, erosion of exposed subsoils and/or peat, and potential for peat instability and failure. It is anticipated that any effects associated with decommissioning may be similar but of a reduced magnitude.

In terms of operational phase effects, leaks and spillages from both vehicular traffic and from oils and hydrocarbons have been identified as potential effects. Cumulative effects with nearby wind farm developments and infrastructure projects will also be considered during the EIAR process.

The baseline data gathered during the scoping assessment, identified above, will be supplemented by gathering data on receptors within study area.

4.5 Water

As part of the initial scoping process, a desk based review of existing conditions in the area has been undertaken. This has been completed using a series of available desktop resources including mapping and guidance. It is anticipated that, during the construction phase, effects on the water environment could include impacts on:-

- ground water levels during excavation;
- surface water quality;
- accidental spillage which could result in the release of hydrocarbons during construction and storage;
- groundwater and surface water contamination;
- release of cement based products and the associated impact of alkaline in the water supply;
- morphological changes to surface watercourses and drainage patterns; and
- potential impact on hydrologically connected sites.

The potential impacts associated with decommissioning of the proposed development will be similar to those associated with construction but of reduced magnitude

In terms of operational phase effects, it is likely that progressive replacement of the vegetated surface with impermeable surfaces could potentially result in an increase

¹ NRA (2009) – Environmental Assessment and Construction Guidelines. National Roads Authority.

² CIEEM, Guidelines for Ecological Impact Assessment in the UK and Ireland, January 2016.

³ Environmental Protection Agency – Guidelines on information to be contained in Environmental Impact Statements, 2002.

in the proportion of surface water runoff reaching the surface water drainage network. The footprint comprises turbine foundations, hardstandings, access roads, substation and compound. During rainfall events, additional runoff coupled with increased velocity of flow could increase hydraulic loading, resulting in erosion of watercourses and impact on aquatic ecosystems.

It is noted that some of the potential significant likely effects associated with the Water environment may be assessed in other chapters of the EIAR e.g. 'Land and Soil'. The EIAR will consider such interactions to ensure that effects are cross-referenced between topics but that duplication of assessment does not take place.

4.6 Air & Climate

A desktop review of available baseline air quality data within the study area has been undertaken using the following data sources:

- Environmental Protection Agency – National Ambient Air Quality Monitoring Data Archive;
- Environmental Protection Agency – Air Quality in Ireland 2016 Report and previous reports (1997 – 2015);
- Dublin Regional Air Quality Management Plan 2009-2012;
- National Parks and Wildlife Service Maps; and
- Environmental Protection Agency – Integrated Pollution Control Licences.

Potential significant likely effects during the construction and operational phases of the proposed development have been established. Potential construction phase effects include:

- Potential for construction dust emissions and nuisance dust;
- Emissions from Heavy Goods Vehicles (HGVs) and on site construction plant and equipment which may give rise to emissions; and
- GHG emissions from construction traffic and embodied energy from construction materials will increase Ireland's GHG emissions potentially causing climate change.

Operational phase effects on air quality and climate are likely to be limited to impacts created by emissions from maintenance related vehicular traffic. It is also noted that the generation of electricity due to the installation of the wind farm will lead to a net saving in terms of emissions.

Overall the impact assessment process will involve assigning the receptor sensitivity, identifying and characterising the magnitude of impact, and assessing the significance of any residual effects (after mitigation). A series of mitigation measures to minimise any foreseen impacts for the construction, operational and decommissioning phases of the project will be proposed, as required, in the EIAR.

4.7 Landscape

Landscape and visual impact assessment has two separate but closely linked aspects. The first is landscape character impact or landscape impact i.e. the effects of the proposed development on the fabric or structure of the landscape as perceived by people. The second is visual impact i.e. the extent to which the wind turbines can be seen in the context of the surrounding landscape within which they sit.

The proposed development includes wind turbines which have the potential to have likely significant landscape and visual impacts. Potential effects include:

- Direct effects on landscape features, views, routes, and areas described in the County Development Plan and landscape character assessments;
- Potential changes to landscape and townscape character;
- Effects on designated landscape, views/prospects, conservation sites, and other special areas of interest; and
- Effects during construction and decommissioning.

In order to assess the magnitude of impact associated with the proposed development, a Landscape and Visual Impact Assessment (LVIA) will be carried out, in accordance with Guidelines to LVIA, 2013⁴. The significance of landscape and visual impact will be assessed in accordance with a significance matrix which is based on the sensitivity of the landscape or visual resource versus the magnitude of impact.

Zone of Theoretical Visibility Mapping (ZTVs) will be prepared based on the latest Wind Farm Planning Guidelines. The ZTVs will illustrate the study area, extending to 20km around the site, and highlight the areas where the proposed development will theoretically be seen as well as highlighting the cumulative visual impact arising from any surrounding or nearby wind farms. Viewpoint photomontage images will also be prepared from a selected range of viewshed locations which are deemed to present a critical view of the proposed development.

4.8 Cultural Heritage

The proposed development has the potential to have both construction and operational significant likely effects on Cultural Heritage. Potential construction effects include impacts on recorded monuments, impacts on previously unrecorded archaeological remains which may exist within the area of land take, and visual or noise impacts during construction.

Potential operational phase effects include visual impact on the recorded monuments located within the boundary of the proposed development. It is also noted that potential operational cumulative effects on archaeological, architectural or cultural heritage remains could occur between the proposed development and any proposed, existing or permitted developments.

In addition, the visual impact assessment (see **Section 4.7**) will incorporate the potential for effects on archaeological or architectural features in the vicinity.

4.9 Noise & Vibration

The proposed development includes the erection and operation of wind turbines, the development of associated substation and grid connection infrastructure, as well as access routes and hard standings. The construction of each of these individual facets of development has the potential to result in noise and vibration. The operation of wind turbines also has the potential to cause noise and as such this early stage scoping has been produced to determine the potential likely significant effects and the methodology for further assessment of these effects within/during the EIAR process.

Potential construction effects include general construction noise from plant/machinery operating on the site and vibration from construction activities. Potential operational phase effects include noise impacts on noise sensitive locations (e.g. dwellings) emanating from the operational wind turbines and noise emanating from the operational substation.

⁴ Landscape Institute Publication

The EIAR will be accompanied by a Noise Impact Assessment which will identify representative baseline noise levels, includes predictive modelling of noise exposure, clearly outlines the predicted changes to the noise environment and each Noise Sensitive Receptor (NSR), evaluates the exposure level against the most recent noise guidelines, and identifies any mitigation measures which are applicable/necessary.

4.10 Radiation

The proposed development includes the construction and operation of grid connection infrastructure including electricity lines and substation development. The provision of electricity lines, both overhead and underground, of the capacity outlined, is common practice on similar projects across the Ireland. The proposed development includes the provision of substation infrastructure which also has the capacity to emit radiation. The type of radiation emitted from this type of electrical infrastructure is commonly known as electromagnetic fields (EMF) which has the potential to impact on human health where high levels are experienced.

The proposed development has the potential to exhibit operational phase radiation in the form of electromagnetic fields emanating from the electricity lines and electrical components included in the substation development. Potential operational effects are limited to EMF radiation impacts on properties (residential or other uses) within close proximity to the electricity lines or substation compounds. The assessment of EMF in the EIAR will focus on the predicted level of the EMF and an evaluation of the predicted level against health protection standards.

4.11 Shadow Flicker

The EIAR will also assess the potential effects on human health from shadow flicker, i.e. the moving shadows cast by the turbine blades in times of direct sunlight and the resultant effect that can have on nearby properties.

In times of direct sunshine, wind turbine blades could occasionally cast moving shadows on residences in close proximity to the turbines. At certain times of the year, the moving shadows of the turbines blades can periodically reduce light to a room causing the light to appear to flicker. Shadow flicker has the potential to be a likely significant effect.

The 'Shadow Flicker' chapter of the EIAR will comprise a detailed assessment of the potential for shadow flicker to affect local receptors during the operation of the proposed development. The assessment will be based on detailed shadow flicker prediction modelling for each dwelling within a specified distance of a turbine. An assessment will be made to establish if the proposed development will comply with shadow flicker limits prescribed within the Wind Energy Development Guidelines for Planning Authorities (2006) or any superseding guidelines. Technological mitigation will be introduced where necessary and appropriate.

4.12 Material Assets

4.12.1 Transport & Access

The assessment of traffic and roads will include an examination of the existing road network surrounding the site, as well as reviewing the likely haul route for the delivery of the wind turbine components and construction materials to the proposed development site.

The proposal is likely to have both construction and operational effects in terms of transport and access. Potential construction effects include increased traffic flows, changes to the traffic composition, traffic disruption, reduction in safety and

degradation of road surfaces. Operational stage impacts on traffic are likely to be much less than that associated with the construction stage, however the level of impact will be examined in line with the operational life span of the proposed development.

The 'Transport & Access' section will undertake a range of assessments including the capacity of the turbine component haul route to accommodate abnormal loads, an identification of 'pinch-points' where temporary off-site works may be required, an appraisal of any damage to road structures or surfaces, and a Traffic Impact Assessment to determine the effects of construction and operational phase traffic movements. The capacity of the site access to accommodate and serve the proposed development will also be assessed.

4.12.2 Telecommunications

The Telecommunications section will undertake an assessment to determine if the proposed development will result in any impacts on existing telecommunication links. This assessment will be based on a desktop appraisal of existing telecommunication masts in the wider area and consultation with service providers in the Midlands region.

5.0 CONSULTATION

5.1 Statutory Consultation

A variety of statutory and non-statutory organisations have been and will continue to be consulted during the scoping process to gather their views on the likelihood of significant environmental impacts arising from the construction and operation of the proposed development.

5.2 Public Consultation

Public consultation has been carried out from an early stage in the project. Public consultation will be continuously carried out throughout the pre-planning stage as a means of identifying public opinion and guiding the design of the proposal.

