



# Pinewoods Wind Farm Substation & Grid Connection

## Non-Technical Summary

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## 1.0 Introduction

Pinewood Wind Limited (PWL) is applying for planning permission for the construction of a 110kV substation comprising a switchroom, control building and substation compound enclosing 110kV electrical equipment plant including two single circuit strain towers which will connect to the adjacent (permitted) 110kV Laois-Kilkenny Grid Reinforcement Project electricity transmission line.

The proposed development will form part of a wind farm development (known as the 'Pinewoods Wind Farm'); located in both counties Laois and Kilkenny, which has previously been permitted by An Bord Pleanála; and will allow for electricity generated by the wind farm to be exported to the national electricity grid. Given that the proposed development and Pinewoods Wind Farm are inter-related; both projects are likely to be constructed simultaneously.

The proposed development is located in south County Laois approximately 17km south of Portlaoise, 25km north of Kilkenny City, 8km southeast of Abbeyleix and c. 4km north east of the village of Ballinakill.

Planning legislation requires that that planning applications for such projects be accompanied by an Environmental Impact Assessment Report (EIAR). An EIAR is a statement of the effects, if any, which the proposed development, if carried out, would have on the environment. It provides information which a planning authority, in this case An Bord Pleanála, can use in undertaking a formal Environmental Impact Assessment (EIA) and in informing their decision making process. The EIAR can also be used by third parties to evaluate the proposed development and its likely effects.

Galetech Energy Services (GES) has been appointed by PWL to manage and co-ordinate the management and preparation of this EIAR. The content of the EIAR has been prepared by individual specialist and technical consultants who were appointed in order to undertake assessments and prepare chapters on specific environmental topics.

**Volume I** of the EIAR is arranged in 14 no. separate chapters which describe the proposed development and addresses each component of the environment likely to be affected and their likely interactions. **Volume II** includes technical information and annexes associated with the EIAR. **Volume III** comprises the EIAR prepared for the Pinewoods Wind Farm.

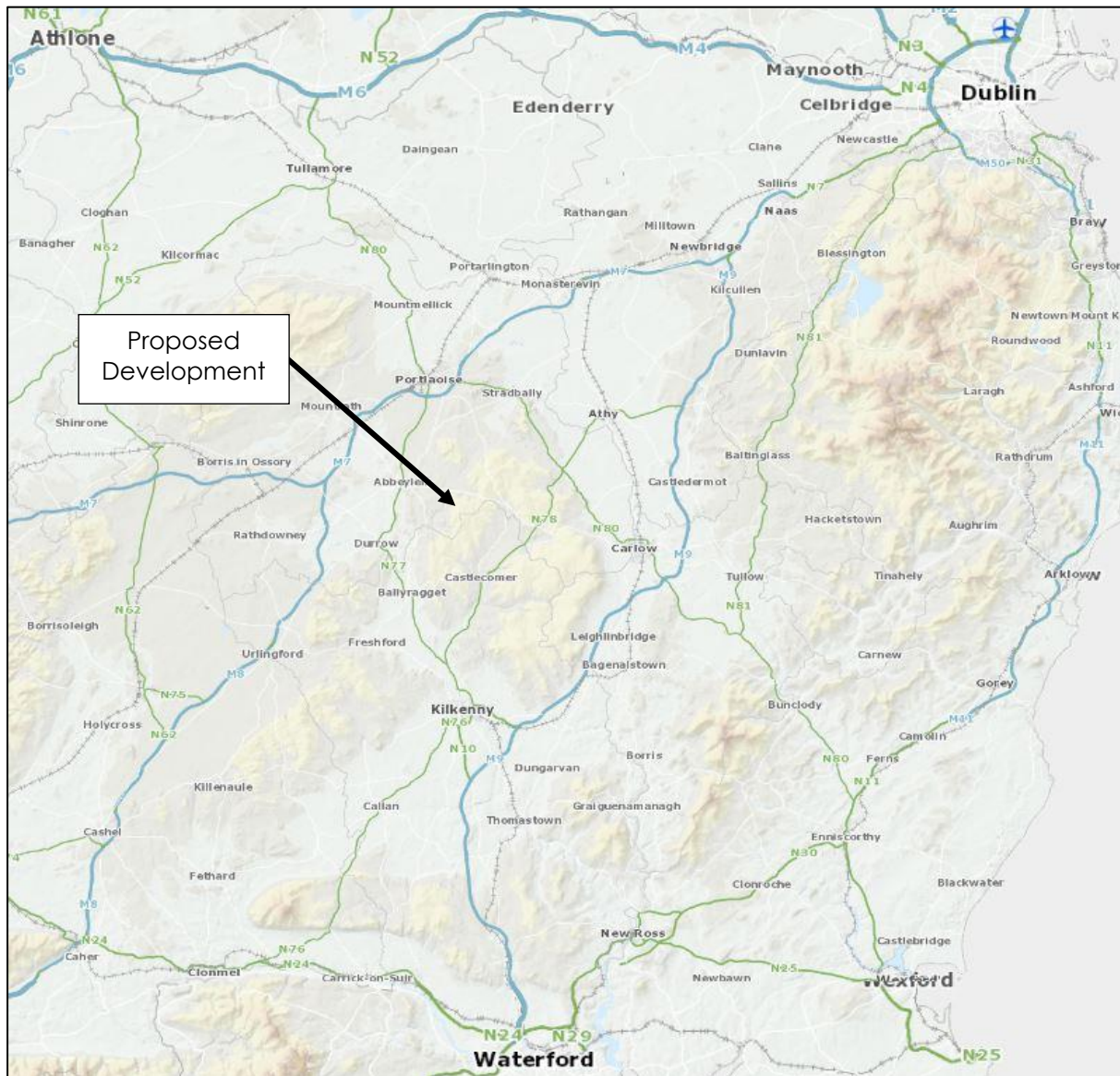
**The EIAR may be inspected, or purchased at the public offices of An Bord Pleanála or Laois County Council during public opening hours. The EIAR may also be inspected at the dedicated project website [www.pinewoodwindfarmsubstationsid.ie](http://www.pinewoodwindfarmsubstationsid.ie) and through the Department of Housing, Local Government and Heritage [EIA Portal](#).**

**A submission or observation in respect of the EIAR and the planning application may be made in writing only to An Bord Pleanála on payment of the €50 prescribed fee within the period of seven weeks and such submissions or observations will be considered by An Bord Pleanála in making the decision on the planning application.**

## 2.0 Site Location

The proposed development site is located c. 1.2km north of the county boundary between County Laois and County Kilkenny in the townland of Knockardugar, County Laois; approximately 17km south-west of Portlaoise and 25km north of Kilkenny City. The nearest towns are Abbeyleix, approximately 8km north-west, and Castlecomer, approximately 8km south-east. The village of Ballinakill is c.4km south-

west of the subject site. The location of the proposed development, in a regional context, is illustrated in **Figure 1** below.



**Figure 1: Proposed Development Site Location**

The topography in the wider environs of the subject site is dominated by the upland area known as the Castlecomer Plateau, characterised by undulating hills and steep escarpments at its fringes. Dissecting the lowlands on either side of the plateau are the rivers Barrow and Nore, which lie to the east and west respectively. The lowlands are a mixture of pasture and tillage with fields typically bordered by mature broadleaf tree lines and hedgerows. Agricultural land-uses extend into the upland areas in the form of more marginal grazing with scrubby hedgerow field boundaries.

Extensive commercial conifer plantations emerge on higher slopes and throughout the Castlecomer Plateau. There are also occasional small patches of woodland associated with demesne landscapes within lowlands as well as narrow strips of riparian vegetation at the margins of streams and rivers. A number of quarries are also present in the wider area.

### 3.0 Description of the Proposed Development

The proposed development assessed within this EIAR comprises a 110kV electricity substation, including all associated development works to accommodate its construction, operation, maintenance and the export of electrical power generated by the permitted Pinewoods Wind Farm to the national grid. This will include:-

- 1 no. 110kV 'loop in-loop out' air-insulated switchroom (AIS) substation including control buildings, transformers and all associated electrical equipment, security fencing and lighting;
- 2 no. lattice-type strain towers with a maximum height of up to 21m;
- c. 70m of 110kV overhead electricity lines to facilitate connection of the proposed substation to the permitted Laois-Kilkenny Grid Reinforcement Project;
- c. 0.65km of on-site access track with associated site entrance from local public road; and
- All associated site development, landscaping and reinstatement works including provision of drainage infrastructure.

Due to the sloping nature of the proposed development site, and in order to minimise the volume of material to be excavated to provide the substation footing, the design of the proposed development has incorporated a split-level approach to ensure an optimum cut and fill balance, and to reduce impacts during construction. There will be a requirement to modify and redistribute subsoil material around the site to facilitate the achievement of the required levels for the buildings, structures and electrical substation equipment. In addition to reducing the volume of excavated material, the split-level design assists, from a visual perspective, in ensuring that the proposed development can set into the landscape thus fully exploiting the screening effects of the surrounding topography and of the mature vegetation which surrounds the proposed substation.

The proposed site layout is shown at **Figure 2**, below while a typical 110kV substation is illustrated at **Figure 3**.



**Figure 2: Proposed Development Layout**



**Figure 3: Typical 110kV AIS Substation**

#### 4.0 Assessment of Project Alternatives

A description of the reasonable alternatives to this project has been provided detailing the assessment, evaluation and analysis undertaken. A range of alternate development options have been assessed through an iterative and recursive project design and environmental assessment process, including alternative grid connections; alternative siting; and alternative design technologies. The objective of this process was to arrive at a proposed development, which has inherent design characteristics, which has the least likely adverse environmental effects.

The final proposed development evaluated in this EIA has been selected as it strikes the best balance between the avoidance of any significant adverse environmental effects and achieving the objectives of the project.

#### 5.0 Population & Human Health

The majority of effects on population and human health are assessed as likely to be experienced during the construction phase. These are likely to include positive effects on the local economy, including employment opportunities and increased spend on local services, as well as possible negative effects, such as possible disruptions to farming operations, neighbouring businesses or general disruption to the amenity of the local area as a result of construction traffic etc., which may indirectly impact on recreation or tourism value. These effects will be temporary and unlikely to be significant.

The assessment finds that the likelihood of effects during the construction phase are limited to effects on population sustainability and residential amenity, general amenity and wellbeing, economic and employment effects, effects on tourism, and the possibility of accidents. The assessment concludes that the proposed development will result in both negative and positive effects in respect of the above factors; however, the overall effects are unlikely to be significant.

For example, local population/residential amenity is likely to experience some negative effects for the temporary duration of the construction phase. While these effects may be significant at a subjective personal or local level, they are not assessed to be significant in EIA terms, particularly given their short-term and temporary duration.

Construction contracts for the supply of services and materials will be available for tender by local companies and the construction phase is likely to involve the employment of up to approximately 100 people over a construction period of 15-18 months. Additionally, plant and materials will be sourced locally. The socio-economic benefits accruing from the construction of the proposed development are therefore likely to have a significant positive effect on the local economy, through direct and indirect employment, and providing increased local incomes.

The operational phase of the proposed development is not assessed as likely to result in any significant negative effects on population and human health in terms of population sustainability and residential amenity, general amenity and wellbeing, employment and tourism.

The proposed development, in combination with the permitted Pinewoods Wind Farm, will yield community benefits including an annual (for up to 15 no. years) community fund of €220,000 to provide financial support to local community and social groups. In addition to the community fund, the overall development will contribute €500 per annum towards the electrical/energy costs of all non-involved

dwelling located within 1,030 metres (m) of a permitted wind turbine.

The proposed development has been sited on privately owned land and there will be no unauthorised public access to the site. During the construction phase, potential health and safety impacts will be limited to those working personnel and the landowners and will be governed by the relevant legal requirements. During the operational phase, the proposed development will generally be unmanned but there will be no public access. Operational monitoring activities will be carried out, remotely and on an ongoing basis. Regular visits to the site will be undertaken for routine inspections and maintenance.

Overall, no likely significant negative effects during the construction and operational phases have been identified regarding population and human health and as a result, no additional mitigation measures are considered necessary, other than the implementation of standard health and safety legislation, and the restriction of public access. The proposed development is assessed as likely to have a substantial positive effect during the construction and operational phases through stimulating local economic activity and the community benefit fund proposed as part of the proposed development.

## **6.0 Biodiversity**

A desk study of the proposed development site and its zone of influence (i.e. within a 2km radius) was carried out to collate the available existing ecological information. A field survey was also undertaken to further understand the importance of the site for biodiversity. Sightings or evidence of birds, mammals and amphibians, or suitable habitat to support such species, were noted during the survey and these were cross-referenced with the results of the desk study to provide an overall evaluation of the importance of the site.

The River Barrow and River Nore Special Area of Conservation (Site Code: 002162), designated as a Natura 2000 site pursuant to the EU Habitats Directive, is within 2km of the proposed development site. This SAC is designated for freshwater pearl mussel and is considered to be within the zone of influence due to its proximity and the discharge of surface water from the proposed development site to the Knockardagur stream, which drains to the River Barrow and River Nore SAC. This designated site can be considered very sensitive in terms of water quality effects. However, comprehensive surface water mitigation and controls are proposed to ensure protection of all downstream receiving waters. Any introduced drainage works at the site will mimic the existing drainage regime thereby avoiding changes to flow volumes leaving the site.

The likelihood of significant effects on the River Barrow and River Nore SAC is also addressed in the Appropriate Assessment Screening Report and Natura Impact Statement (NIS) prepared for the proposed development and provided as a separate volume.

There are no Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs) within the zone of influence, and therefore were scoped out of any further detailed assessment.

The dominant habitat type within the proposed development site and its environs is improved agricultural grassland (GA1) used for cattle grazing. This habitat is species poor and commonly occurring. Improved agricultural grassland within the site is evaluated as not important and is scoped out of any further detailed assessment.



There is approximately 712m of hedgerows within the site. Hedgerows border the western and southern boundaries and are present along the Knockardagur stream, bisecting the site from east to west. Hedgerows within the site are evaluated as important at the Local level.

The Knockardagur stream is classified as an Eroding/Upland River (FW1). The stream rises approximately 10m south of the substation footprint and flows in a westerly direction to meet the Owenbeg (Owveg) River, approximately 1.4km east of the Site. The stream is evaluated as important at the Local level.

The search of the National Biodiversity Data Centre (NBDC) database for records of rare and/or protected species within the 2km of grid square S58B, within which the site is located, returned a single record. The record is for little egret, a bird species listed on Annex I of the EU Birds Directive. This species was not recorded during field surveys carried out at the proposed development site and habitats within the site are unsuitable for this wetland species.

There was no evidence of amphibians and no habitat suitable for breeding amphibians was noted. Therefore, it is considered that the proposed development will not result in any likely effect on the amphibian populations. Amphibians can therefore be scoped out of any further assessment.

The bird species recorded during the field visit are commonly occurring, widespread in Ireland and are all Green-listed (least concern) species on *Birds of Conservation Concern in Ireland 2014-2019*. The bird population of the site is evaluated as important at the Site level.

Potential Roost Features (PRFs) for bats, evaluated as being of moderate suitability, were noted in mature ash trees within the hedgerow immediately south of the proposed substation footprint. Hedgerow habitats within the site are considered have high suitability for foraging and commuting bats. The bat population using the site was evaluated as important at the Local level.

The Knockardagur stream and drainage ditches within the site were inspected for signs of otter *Lutra lutra* and no evidence of otter was present. The drainage ditches and stream are not suitable to support foraging, commuting or breeding otter.

There was no evidence of the presence of other mammals, such as badger *Meles meles*, using the Site. There was also no evidence of any invasive species recorded during the survey of the site.

The design process applied to the proposed development has incorporated a series of design principles, good practice environmental and pollution control measures in line with current industry good practice guidance and 'designed-in' mitigation measures. In the absence of the proposed development, it is likely that current agricultural activities within the site will continue and the 'Do-Nothing' Impact will result in no significant change in the ecological interest of the site.

Taking the 'designed-in' mitigation into account, the principal potential effects of the proposed development are assessed as follows:-

- Discharge of polluted and/or sediment laden surface water the Knockardagur stream during construction and operation.
- Loss of hedgerow during construction.
- Loss of PRF, commuting and foraging habitats for bats.

The effect of the discharge of polluted and/or sediment laden water on Natura 2000

sites would, if it were to occur, be significant at International (European) level. There will be no significant effect on the water quality of the Knockardagur stream during the construction and operation phases of the proposed development due to the implementation of water quality protection measures in advance of commencement of site clearance.

The Surface Water Management Plan (SWMP) and detailed drainage design for the proposed development incorporates a large number of tried, tested and trusted measures that are commonly used as standard by industry for the effective protection of water quality, and to prevent sediment release to surface water features. The SWMP standard measures also include regulation of flow to prevent scouring and to allow settlement of sediment to occur. Additional specific measures to protect water quality within freshwater pearl mussel catchments have also been adapted and are incorporated in the SWMP.

The effect of the loss of hedgerow habitat would be significant at the Site level. The effect on the bat population of the loss of short sections of some hedgerows and the loss of trees with PRFs would be significant at the townland level; however, not significant in overall terms. This will be mitigated by replanting and, where appropriate, gapping up of existing hedgerows which will result in an overall improvement to hedgerows at the site and will create additional and improve existing bat foraging corridors.

The proposed hedgerow planting will, in the medium term, once established provide replacement foraging and commuting habitat for bats. Artificial lighting as part of the proposed development has also been designed to incorporate measures to avoid light spill in to surrounding vegetation.

In the event that bats are present in a tree to be removed, or it is clear that the tree is used by roosting bats, a derogation licence will be obtained from the NPWS prior to tree removal. The licence application would be supported by a Method Statement detailing appropriate measures to ensure no bat is harmed during the felling of the trees. Mitigation measures for the loss of the roost would also be provided. All of the trees will be visually inspected again within 48 hours of tree removal and removal will be carried out under the supervision of the ecologist named on the derogation licence.

Furthermore, all other existing, permitted and proposed developments in the vicinity of the proposed development have been assessed to determine their likelihood to act in combination with the proposed development; however, it is concluded that there is no likelihood of significant cumulative effects.

Overall, it is assessed that the proposed development will not result in any significant residual effects on any habitats or species. With 'designed-in' measures in place and with the implementation of the mitigation measures provided, it is not considered likely that the proposed development will result in cumulative effects on biodiversity.

## **7.0 Land & Soils**

The geology of the proposed development predominately comprises glacial tills (mineral soil overburden) over shale bedrock. Depth to bedrock ranged from 1.3m to 6.6m. Rock is shallowest at the north-eastern corner of the substation footprint and appears to deepen to the west/southwest which is consistent with the topography of the site.

The proposed development will typically involve removal of soil (where present), subsoils and bedrock to facilitate the construction of the proposed substation, access track and ancillary infrastructure. The proposed development incorporates a bespoke 3-step 'split level design' to reduce the volume of material to be excavated to provide the substation footing and, in turn, reduce effects on land and soil.

Removal of soil and subsoils represents a permanent direct impact on the land and geology of the site. Excess subsoil material that remains after landscaping and reinstatement and which cannot be accommodated within the site will be removed off-site and transported to the Pinewoods Wind Farm for use in the construction of access tracks and hardstanding areas. Other likely effects such as soil erosion and compaction are assessed as likely to be negligible.

During the construction phase, sources of contaminants (such as oil based substances or other hazardous chemicals) will not be stored on site but will be stored within the Pinewoods Wind Farm temporary construction compound within safely bunded areas that safely contain all spillages and prevent the migration of contaminants into soil and subsoil. Refueling will be done with a double skinned bowser with spill kits readily available in case of accidental spillages.

No likely significant effects on the land, soils and geology environment are envisaged during the operational stage of the proposed development.

Due to the geographically spread out nature of the permitted Pinewoods Wind Farm infrastructure, the proposed development will not result in a significant cumulative effect with the wind farm development. Furthermore, all other existing, permitted and proposed developments in the vicinity of the proposed development have been assessed to determine their likelihood to act in combination with the proposed development; however, it is concluded that there is no likelihood of significant cumulative effects.

Overall, it has been assessed that there is no likelihood of significant effects on land & soil arising as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

## **8.0 Water**

Regionally, the proposed development site is located in the Nore River surface water catchment within Hydrometric Area 15 of the South Eastern River Basin District (SERBD). In terms of local hydrology, the proposed development site is situated within the Owenbeg River sub-catchment (also named the Owveg River). The Owenbeg River flows in a southerly direction approximately 2km west of the proposed development site. The site itself is drained by two streams and several field drains, and is not mapped in any flood zone.

The bedrock underlying the site is classified as mainly poor in terms of well water yield potential. The bedrock has little or no open cracks which means groundwater movement within the aquifer is very localised. Groundwater at the site can be classed as sensitive in terms of likely effects from the proposed development. However, due to the relatively shallow nature of the works, impacts on groundwater levels will not occur.

Due to the nature of the proposed development, being near surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor. The primary risk to groundwater at the site

would be from hydrocarbon spillage and leakages during refueling. These are common likely effects from all construction sites (such as road works and industrial sites). These likely contamination sources are to be carefully managed at the site during the construction and operational phases of the proposed development and mitigation measures are proposed within the EIA to address these potential minor local impacts.

Two methods will be employed to control drainage water within the site during construction, thereby protecting downstream surface water quality and aquatic habitats. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations and construction areas. The second method involves collecting any drainage waters from works areas within the site that might carry silt to allow settlement and cleaning prior to its release. During the construction phase, all runoff will be treated to a high quality prior to being released. There will be no risk of increased flooding down-gradient of the site as a result of the proposed development due to these drainage measures as the discharge of water will be designed to mimic natural discharge rates. Effects on water quality during the construction phase will be imperceptible to none. A surface water monitoring programme will also be put in place during the construction phase.

Preventative measures also include fuel and concrete management and the preparation of a final SWMP which will be incorporated into the detailed Construction Environmental Management Plan (CEMP) to be finalised prior to the commencement of development.

Downstream designated Natura 2000 sites that receive surface water runoff from the proposed development include River Barrow and River Nore SAC. This designated site can be considered very sensitive in terms of water quality effects. However, comprehensive surface water mitigation and controls are proposed to ensure protection of all downstream receiving waters. Any introduced drainage works at the site will mimic the existing drainage regime thereby avoiding changes to flow volumes leaving the site.

During the operational phase, drainage control measures will ensure that surface runoff from the proposed development site will continue to be of good quality and will therefore not adversely affect the quality of down-stream water features. The present drainage regime of the site will not be altered in any way. No effects on surface water quality are likely during the operational phase.

In terms of likely health effects and water quality, electrical substations are not a recognised source of pollution and so the likelihood for effects during the construction and operational phases are negligible.

In consideration of the relatively small footprint of the proposed development, the localised nature of the works and the proposed drainage mitigation, there is no likelihood for the proposed development to act in combination with other existing, permitted or proposed developments, including the permitted Pinewoods Wind Farm, to contribute to or result in significant hydrological/water quality effects.

Overall, it has been assessed that there is no likelihood of significant effects on water arising as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

## 9.0 Air Quality & Climate

The assessment of baseline air quality in the region of the proposed development has shown that current levels of key pollutants are significantly lower than appropriate limits. Due to the size, nature and location of the proposed development, increased road traffic emissions during the construction phase are expected to have a negligible effect on air quality.

The export of renewable electricity during the operational phase will lead to a net saving for the development in terms of greenhouse gas emissions. The exportation of 110 GWh of electricity generated by the permitted Pinewoods Wind Farm will off-set approximately 50,000 tonnes (annually) of CO<sub>2</sub> equivalent which would have otherwise been emitted by generating this electricity from fossil fuels, and will contribute substantially to Ireland's legally binding climate change targets.

A dust minimisation plan has been formulated for the construction phase as construction activities are likely to generate some dust emissions. The likelihood of dust being emitted depends on the type of construction activity being carried out in conjunction with environmental factors, including levels of rainfall, wind speeds and wind direction. The likelihood of effects from dust depends on the distance to sensitive locations and whether the wind can carry the dust to these locations. Due to the rural location of the proposed development, there are very few sensitive receptors in the vicinity, therefore reducing the likelihood of effects greatly. The majority of any dust produced will be deposited close to the source and any effects from dust deposition will typically be within a few hundred metres of the construction area.

Overall, it has been assessed that there is no likelihood of significant adverse effects on air quality and climate arising as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments. The operation of the proposed development will bring about a long term positive effects on both air quality and climate through the export of renewable energy, generated by the Pinewoods Wind Farm, to the national electricity grid.

## 10.0 Landscape

Although closely linked, landscape and visual impacts are assessed separately. Landscape Impact Assessment (LIA) relates to changes in the physical landscape brought about by the proposed development, which may alter its character and how the landscape is experienced. Visual Impact Assessment (VIA) relates to assessing effects on specific views and on the general visual amenity experienced by people.

The production of the landscape and visual impact assessment involved desktop studies to understand the existing baseline environment; fieldwork recording the elements and characteristics of the landscape and the selection and capture of images from selected Viewshed Reference Points (VRPs) to allow the preparation of photomontages; and the professional evaluation of the baseline environment and the effects which may occur as a result of the proposed development with the aid of the accompanying photomontages.

The study area selected for this assessment is a 2km radius around the proposed development site as it is considered that significant effects from this proposed development, in this landscape, are unlikely beyond this distance. The study area is situated in a transitional area at the north-western fringe of the Castlecomer Plateau, between a low lying rolling landscape to the west and more distinct

undulating upland hills to the east. Three lower order watercourses; Keelagh, Knockardagur and Aghnacross; flow from east to west in the study area into the larger Owenbeg River. The study area is primarily agricultural farmland mainly consisting of good quality pasture and arable crops with a few areas of transitional scrub. The more elevated areas to the east also contain commercial forests.

Judgements were made regarding the sensitivity of the receiving landscape and of each of the selected VRPs. These judgements were later used as part of the two-sided assessment, along with the judgements of the magnitude of effect, to determine the significance of the impacts.

It is assessed that this is a diverse and productive rural setting; with relatively high integrity in parts, which contributes to the rural subsistence and amenity of the surrounding dispersed rural population. Notwithstanding the scenic qualities along Cooper's Hill Walk in the elevated areas in the eastern portion of the study area, and the naturalistic values associated with the Owenbeg River; overall, this is a landscape with robust productive landscape values. On balance for these reasons, the landscape sensitivity is deemed to be Medium-low.

Five Viewshed Reference Points were chosen to represent the key visual receptors and to help assess the proposed development from different distances, different angles and different contexts. Based on a variety of considerations, the sensitivity of visual receptors at the selected Viewshed Reference Points ranges from Medium-low to High-medium.

Physical landscape impacts will occur at the proposed development site. This will result from disturbance to the landform and land cover of the proposed substation footprint and its associated access track and site entrance. Excavations are required to create level foundations for the substation. Short sections of the east-west running hedgerow along the southern perimeter of the proposed substation will be removed to facilitate construction of the proposed access track. Similarly, a short section of hedgerow will also require removal to accommodate the construction of the proposed site entrance.

The main effect of the proposed development will be an increased sense of industrialisation and intensity of built development within this predominantly rural setting. However, electrical substations are relatively familiar features throughout the Irish countryside so there will not be a sense of ambiguity associated with its location in this setting, particularly in the context of the adjacent permitted Pinewoods Wind Farm to which the proposed development is directly related.

The significance of landscape impacts were assessed on the basis of landscape sensitivity weighed against the magnitude of physical landscape effects within the proposed development site and effects on landscape character in the wider landscape setting.

On balance of these two factors, it is assessed that the proposed development will not result in any significant impacts on the landscape during the construction and operational phases nor will it result in any significant cumulative effects.

The greatest level of visual effects are likely occur during the construction phase after the excavation works are complete and the strain towers have emerged; and simultaneously, construction vehicles and associated traffic is moving within as well as to and from the site. Construction phase visual effects were deemed to be no greater than Medium, even at the closest receptor locations where clear views towards the proposed development site are afforded.

The magnitude of visual effect during the operational phase is determined with reference to the verified photomontages produced (pre- and post-mitigation). The greatest visual effect magnitude was Medium-low at one Viewshed Reference Point, while the remaining four were deemed to be no greater than Low-negligible.

A set of photomontages have also been prepared to represent the two nearby associated developments for potential cumulative effects; namely the permitted Pinewoods Wind Farm and Laois-Kilkenny Grid Reinforcement Project overhead electricity line. It is assessed that the proposed development will contribute to the intensity of built development and particularly electrical infrastructure in this area, but in a very localised way and only to a degree that is consistent with a Low magnitude of impact.

The magnitude of visual effects was considered in conjunction with the sensitivity of each VRP and on balance of these two factors, the assessment of visual impacts determined that there will be no significant visual effects as result of the proposed development.

Whilst mitigation screen planting and replacement planting will help assimilate the proposed development within the immediate landscape setting, it is not considered that the wider level effects on landscape character and landscape fabric will be noticeably altered. For these reasons, it is assessed that the mitigation measures will not result in a marked reduction to the assessed pre-mitigation landscape and visual impacts, but these are not significant in any event.

Overall, it has been assessed that there is no likelihood of significant landscape effects arising as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

## 11.0 Cultural Heritage

The cultural heritage assessment has been prepared to assess and define any likely significant effects which the construction and operational of the proposed development may have on the archaeological, architectural and cultural heritage resource. The assessment includes an identification of likely significant impacts or effects which may arise and outlines mitigation measures, based on current information, which may be used to avoid, reduce or offset any likely adverse effects.

Construction phase effects may arise as a result of the construction of the proposed substation, access track, underground cabling and associated activities; each of which will involve the mechanical excavation of all topsoil and overburden down to and through geologically deposited strata at their identified locations. Operational phase effects may arise as a result of the visual effects resulting from the presence of the proposed substation in the landscape.

As a result of carrying out this assessment, the following likely archaeological, architectural and cultural heritage direct, indirect, construction, operational, cumulative and residual effects have been assessed.

There will be no direct construction phase effect on the recorded archaeological, architectural or cultural heritage resource. It is assessed that there will be a likely permanent, direct and imperceptible construction phase effect on any previously unrecorded archaeological remains that may exist within the development site and which may be discovered during the construction phase.

There are two Recorded Monuments listed on the Record of Monuments and Places

(RMP) within 1km of the proposed development. It is assessed that there will be no direct construction phase effect on these Recorded Monuments. Given the proximity of RMP LA030-016 (enclosure) to the proposed development site, it is likely that construction phase noise will be experienced at this feature. However, as this feature does not survive above-ground and given the temporary duration of the construction phase, it is assessed that there will be no significant adverse noise effects on this archaeological monument.

Other features are considered to be sufficiently distant such that they will not experience any likely significant noise effects. Similarly, as a result of construction activities, RMP LA030-016 (enclosure) may also experience adverse visual effects. However, given that this feature does not survive above-ground, the short-term temporary nature of the construction phase, the landscaping of the proposed development site and the reinstatement of the site following the completion of construction; any such effects are assessed as not likely to be significant. RMP LA030-015 (enclosure) is considered to be sufficiently distant from the proposed development such that it will not experience any likely significant adverse construction phase effects.

Archaeological monitoring of all excavations associated with the construction of the proposed development shall be carried out. 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.

Following implementation of the above-mentioned mitigation measure, it is concluded that there will be no likely residual effects during the construction phase of the proposed development. It is assessed that there will be a likely residual, long-term, reversible and imperceptible operational phase visual effect on Recorded Monument RMP LA030-015 (enclosure). It is also assessed that there will be a likely residual, long-term, reversible and imperceptible operational phase noise effect on Recorded Monument RMP LA030-016 (enclosure). It is assessed that there will be a likely residual, long-term, reversible and imperceptible operational phase visual effect on two Protected Structures (one of which is also recorded on the National Inventory of Architectural Heritage).

Given that the EIAR/EIS prepared for the permitted Pinewoods Wind Farm and An Bord Pleanála concluded that Pinewoods Wind Farm would not result in any likely significant effects on the historical built environment, the fact that there have been no changes to the existing environment or policy context, and that effects resulting from the proposed development are unlikely to be significant; it follows that cumulative effects between the Pinewoods Wind Farm, the proposed development, and other existing, permitted and proposed developments are unlikely to occur. In the event that any effects do arise, they are highly unlikely to be significant.

Overall, it has been assessed that there is no likelihood of significant effects on cultural heritage which could arise as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

## 12.0 Noise & Vibration

The methodology adopted for assessing the likely significant noise effects of the proposed development is based on the guidance in the document BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* which describes



criteria for maximum intrusive indoor noise levels.

The background noise environment has been established by a noise monitoring survey undertaken at a location within the proposed development site, where measured noise levels in the quietest conditions, that is, night-time periods in calm conditions, are considered representative of the noise environment at the dwellings closest to the proposed development. In general, prevailing noise levels are primarily attributable to wind noise in foliage, birdsong, local road traffic noise and other agricultural and anthropogenic sources in the area.

When considering a development of this nature, the likely noise and vibration effects on the surroundings must be considered for two stages: the short-term construction phase and the long-term operational phase.

The assessment of construction phase noise and vibration and has been conducted in accordance best practice guidance contained in the *Code of Practice for Noise and Vibration Control on Construction and Open sites – Noise* and the *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Vibration*. Subject to good working practice as recommended in the EIAR, noise and vibration associated with the construction phase is not expected to exceed the recommended limit values and is not assessed as likely to result in significant effects.

The predicted operational phase noise levels associated with the proposed development will be within the relevant thresholds and therefore it is assessed that no likely significant noise effects will be experienced. No significant vibration effects are predicted from the operation of the proposed development.

Overall, it has been assessed that there is no likelihood of significant noise and vibration effects which could arise as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

### 13.0 Shadow Flicker

Due to the absence of tall structures or moving parts, there is no possibility for the proposed development to generate shadow flicker.

The permitted Pinewoods Wind Farm has, however, been re-evaluated to determine whether there have been any changes to the baseline environment which could conflict with the shadow flicker assessment undertaken previously.

Shadow flicker from wind turbines can occur when a particular combination of weather conditions coincide in specific locations at particular times of the day and year. It usually occurs when the sun is low in the sky and shines on a building or location from behind a turning rotor. This can cause the shadow of the turbine blades to flicker on and off as the turbine blades rotate.

This EIAR assesses the number of hours per year likely to be experienced under exceptional 'worst case' shadow flicker on properties within 1,030m (10-times rotor diameter) of the permitted wind turbines. The 'worst case' results, which are highly conservative and not representative of likely occurrences, indicate that 22 no. dwellings, out of 36 dwellings within 1,030m, exceed 30 minutes per day. However, based on the more realistic 'expected' model predictions, none of the 36 dwellings surveyed are predicted to experience shadow flicker in excess of 30 hours per annum.

Where shadow flicker levels are proven to be in excess of the recommended limits

(i.e. in the 'worst case' scenario above), the turbines can be simply programmed to automatically shut down where excessive shadow flicker levels occur. The implementation of such mitigation is required by Condition 20 of the permitted Pinewoods Wind Farm planning permission (PL11.248518). These measures will ensure that no dwelling experiences shadow flicker levels in excess of either of the 30-minutes per day or 30-hours per year criterion. Therefore, it is concluded that the proposed development will not result in any likely significant shadow flicker effects, either individually or in combination with other existing, permitted or proposed developments including the permitted Pinewoods Wind Farm.

Overall, it has been assessed that there is no likelihood of significant shadow flicker effects arising as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

## 14.0 Material Assets

### 13.1 Transport & Access

The EIAR details the number and size of vehicles associated with the construction and operational phases of the development. The effect of increased construction traffic on the local road network has also been assessed.

During the construction phase there will be a temporary increase in traffic flows on the local road network due to vehicles carrying construction materials. Once materials are delivered, traffic entering the site will be substantially reduced, with maintenance vehicles visiting the site only intermittently. The haulage route and traffic assessment concluded that the local transport network will be able to accommodate the additional temporary traffic volumes associated with the construction of the proposed development. A traffic management plan, to be agreed with the Local Authority, will also help to minimise the effect on local roads and traffic and to ensure the safety of all road users.

A series of mitigation measures has been proposed in order to reduce the level of likely effect associated with the proposed development on Transport and Access. The proposed development has generally been assessed as likely to result in negative, slight/moderate, direct, short-term, and high probability effects. Following the implementation of mitigation measures, the residual effects have been assessed as imperceptible/slight, negative and short-term in nature.

Overall, it has been assessed that there is no likelihood of significant effects on transport and access arising as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

### 13.2 Aviation

The proposed development is not, due to the absence of tall structures, a type of development which is likely to give rise to effects on or interactions with aviation. However, given that the proposed development is associated with the Pinewoods Wind Farm, which comprises 11 no. permitted wind turbines, it has been considered appropriate to re-evaluate the likelihood of significant aviation effects arising as a result of the project as a whole.

Consultation was undertaken with the Irish Aviation Authority (IAA) and Department of Defence at the scoping stage to establish if any effects on aviation were likely. The Department of Defence responded, stating that it had no observations to make

on the proposed development.

There are no major airports in the vicinity of the proposed development and the site is therefore assessed as being unconstrained. The proposed development is located c. 90km southwest of Dublin Airport and c. 110km east of Shannon International Airport.

According to the IAA, there are no aerodromes or airstrips in the immediate vicinity of the proposed development or indeed within county Laois. The nearest licensed aerodrome is 'Kilkenny Airport' in County Kilkenny at an approximate distance of 25km. At a local level, the Midlands Heliport is located c. 1km southwest of the proposed development site. The heliport is not licensed by the IAA but may, on occasion, be used as a training facility to microlights.

The proposed development site is not located within any low flying areas, restricted areas, danger areas or low level routes identified within the Air Corps Wind Farm/Tall Structures Position Paper. While the proposed development (and permitted Pinewoods Wind Farm) is located within a 'Military Operating' area; given the consultation responses received from the Department of Defence in respect of both the proposed and permitted developments, significant effects are not assessed as likely.

The assessment carried out concludes that the proposed development is unlikely to result in any significant effect on aviation. Accordingly, with the installation of appropriate aviation warning lighting on the permitted wind turbines, no significant effects are assessed as likely to occur. As a result, it is assessed that significant effects on aviation are unlikely to occur as a result of the proposed development, either individually or in combination with other existing, permitted or proposed developments.

### 13.3 Telecommunications

Given the nature of the proposed development and the absence of tall structures or moving parts, interference with or adverse effects on telecommunications are unlikely. Through consultations during the initial scoping stage, it is assessed that the proposed development would not result in interference with radio and TV broadcast equipment.

The adjacent Pinewoods Wind Farm was also assessed as unlikely to result in significant effects on telecommunications, following a separate consultation process with service providers, and, as a result, no likely significant cumulative effects are likely.

Overall, it has been assessed that there is no likelihood of significant effects on telecommunications arising as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

### 13.4 Resources & Utility Infrastructure

Within the wider environs of the proposed development site there is evidence of the extraction and use of resources; particularly in relation to quarrying activities and commercial forestry.

There is also the presence of utility infrastructure, with overhead electricity lines connecting to the majority of dwellings in the wider area while medium voltage electricity lines traverse the landscape and telecommunication lines are located

adjacent to the majority of local roads.

There are no operational wind energy developments in the vicinity of the proposed development site. The nearest operational development is the Gortahile Wind Farm/ located c. 14km southeast of the proposed development. The permitted Pinewoods Wind Farm, which the proposed development will serve, is located immediately southeast of the proposed development site while the permitted Cullenagh Wind Farm is located c. 5km to the north. A number of existing/permitted domestic scale wind and solar energy projects are also evident in the wider landscape.

There are a number of extant quarrying activities within counties Laois, Kilkenny and Carlow. There are no quarries located within the proposed development site or in its immediate vicinity with the nearest quarry, Kilsaran Concrete, located c. 1.5km to the west.

The existing electricity transmission network in south County Laois/north County Kilkenny largely comprises 110kV and 38kV electricity transmission lines while lower voltage networks distribute electricity to customers. The network in this part of the Midlands Region is, however, considered to be 'weak' and, as a result, Eirgrid received planning permission for the Laois-Kilkenny Grid Reinforcement Project. The proposed substation will be connected to this overhead line and electricity being transmitted along the line will pass through the proposed substation.

The construction phase of the proposed development is not likely to have any significant effects on existing renewable or non-renewable resources, or utilities infrastructure. The construction phase will not restrict the export of energy generated from other sources nor will it impact upon existing utility services. While there is a possibility interaction with utility services (e.g. accidental collision with overhead wires during the construction phase), this will be mitigated through good construction practices. The construction phase will require in the extraction of non-renewable resources in the form of stone and gravel for the construction of access tracks and areas of hardstanding. However, stone and gravel will only be sourced from quarries with full planning permission and therefore the effects of this extraction have already been fully assessed.

The operational phase of the proposed development will not result in any likely effect on existing utility infrastructure or renewable or non-renewable resources. The connection of the proposed development to the national grid will strengthen the electricity network infrastructure in the wider region.

Overall, it has been assessed that there is no likelihood of significant effects on renewable and non-renewable resources arising as a result of the construction and operation of the proposed development either individually or in combination with other existing, permitted or proposed developments.

### **15.0 Interactions of the Foregoing**

All environmental factors are interrelated to some degree. The assessment of these interactions is an important requirement of the environmental impact assessment process. Having assessed the interaction of likely effects during the construction and operational phases, the likely interactions are not assessed as likely to result in any effects that could magnify effects through the interaction or accumulation of effects.

### **16.0 Summary of Effects**

This Non-Technical Summary has outlined, in summary format, the findings of the EIAR

for the proposed development. Full details are set out in the EIAR and its accompanying technical appendices.

The EIAR has assessed that any likely adverse effects of the proposed development, and their interactions, can be managed and mitigated and that there are lasting social and environmental benefits as a result of the proposed development. Whilst the proposed development will have some minor residual effects on the local environment, these will be addressed through mitigation measures, good management and proposed construction techniques and are not assessed as likely to be significant.

The proposed development, in combination with the permitted Pinewoods Wind Farm, will make a positive contribution to sustainable energy generation in Ireland and will also help diversify and sustain the rural economy through construction, as well as operation and maintenance activities. Overall, the combined effects which have been assessed within this EIAR demonstrate that the proposed development will not result in a likely significant adverse effect on the environment.

