

## **KEMAR LTD**

# **Proposed Wind Farm Development at Kill Hill Co. Tipperary**

## **Environmental Impact Statement**

### **Notice**

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## Non – Technical Summary

### Introduction

Atkins was engaged by KEMAR Ltd to prepare this Environmental Impact Statement (EIS) in association with the planning application for the proposed wind farm development at Kill Hill, Cashel, Co. Tipperary.

It is proposed to develop a wind farm comprising of the installation and operation of 19 wind turbines in Kill Hill, southeast Co. Tipperary. The site is located north-east of Cashel and to the north-west of Fethard Co. Tipperary, just off the R691 as shown on **Figure 1.1 Location Plan**. A proposed internal site access road will link all turbines within the development. This access road crosses the existing local road and forms part of the Kill Hill windfarm development.

### Project Description

The site is centred in Kill Hill and extends over 5km. It is served by the R691 to the north and the R692 to the south. The village of Cashel is 7 km west from the centre of the Kill Hill wind farm site. The predominant land use within the study area is agriculture i.e. improved grasslands for dairy farming. The landscape type is classified as hilly to flat farmland and the ground level varies in height from 140 – 241m OD. The site is on Kill Hill and covers an area of 5 kilometres i.e. between the two furthest points of the site. The study area (outlined in red in **Figure 2.1**) covers approximately 800,000 sq. metres. The total area of land owned by the landowners (outline in blue) which covers approximately 3,300,000 sq. metres.

All 19 turbines under consideration for this project have a three bladed rotor. The rotor is linked to the main shaft, which drives the gearbox and generator. In the generator the mechanical energy is converted to electrical energy, which is then fed into the grid. Each turbine is linked by under ground cables to a metering point where the electricity is exported to the national grid.

Specifications for proposed wind turbines at Kill Hill:

- Rated generator power between 2.0MW and 2.5MW per wind turbine;
- Rotor diameter 71m to 82.4 m;
- Hub height 78m to 86m; and
- Wind turbines are normally grey/white in colour.

The distribution of the turbines within the site is shown on **Figure 2.1 Site Context and location of Proposed Turbines**.

## **Planning & Human Beings**

The proposed Kill Hill Wind farm has been assessed against planning policy documents at national, regional and local level. These documents include the National Development Plan 2000-2006, Sustainable Development: A Strategy for Ireland (1997), Green Paper on Sustainable Energy (September, 1999), National Climate Change Strategy (2000), Department of the Environment, Heritage and Local Government (DoEHLG) Planning Guidelines for Wind Energy Development (2006), South Tipperary County Council Development Plan (2003), and Cashel and Environs Development Plan (2003).

The wind farm proposal is in accordance with planning policies, which seek to promote renewable wind energy, and encourage the reduction of greenhouse gas emissions. Whilst the proposal would result in a certain level of visual intrusion, the number of properties so affected would be comparatively small; this is discussed in greater detail in the Landscape and Visual Assessment Chapter 7 within this report. On the other hand, the 38MW - 47.5MW of electricity produced by the 19 turbines will further reduce reliance on fossil fuels, assist in achieving the necessary reduction in greenhouse gas emissions and help towards Ireland's compliance with the Kyoto Protocol.

The location of the turbines would not interfere with the implementation of any significant planning consents currently in force.

The predominant land use surrounding the study area is agriculture with scattered residential properties. Community facilities in the village of Dualla are approximately 1.5km from the proposed study area. These include the National Primary School, Tennis Courts, Church, Local Shop and a cluster of residential properties. The impact on the community from the operation of the development was assessed to be low. The impact on residential amenity from the 19 turbines during the construction and operational phases from traffic, landscape & visual and noise is discussed in more detail in chapters 4, 7 and 10 respectively. After mitigation the residual impact to residential amenity will be moderate to low. No other residential amenity will be affected, e.g. smell, microclimate and sunlight.

## **Traffic**

Developments of this type (when operational) result in only a slight increase in traffic volumes on the surrounding area. It is however during the construction phase, that such traffic and in particular abnormal load traffic will have the greatest impact on all road users including motorists, cyclists and pedestrians. Nevertheless, the level of standard construction traffic to and from the wind farm development can be accommodated by the surrounding National and Regional road network. The lower order roads in and adjacent to the development site will, however, require upgrading to accommodate standard construction traffic and abnormal load traffic. There are a number of pinch points on the Regional / National roads that will also require temporary works to accommodate abnormal load traffic. On site access tracks will have to be provided in order to gain access to the various wind turbine locations.

Mitigation measures will be implemented in full during the construction phase and there will be an imperceptible negative impact, which will not have any significant effect on other road users. During the operational phase the impacts will be imperceptible and mitigating measures will not be required.

## Flora and Fauna

No designated sites or other sites of significant ecological value will be impacted by the proposed development.

Apart from the oak-ash-hazel woodland, which is considered to be of *high local importance*, none of the other habitats recorded on site are deemed to be of more than *local importance*. The development site not known to support any rare or scarce plant species, and has a range of typical habitats that are generally of relatively low species diversity. Looking at the habitats in isolation can reduce the overall ecological value of a continuous complex of habitats. For example, the south-western corner of the site contains an area of interconnected mixed broadleaved woodland, tree lines and scrub; while scrub, oak-ash-hazel woodland and conifers are located in a mosaic in the northwest of the site.

The mammal population is to be of *local value*, as of as setts were recorded within the site. In all, four bat species were recorded on site; Common Pipistrelle, Soprano Pipistrelle, Brown long-eared Bat and Natterer's Bat. It would not appear from available evidence that the operation of a wind farm will be detrimental to the maintenance of bat populations at a favourable conservation status in their natural range. There is the potential for the death of individual bats that must be minimised by means of mitigation.

No bird species of conservation concern were noted within the study area. The avian community is of *Local Value to Local Importance*.

The principal direct impact of the proposed wind farm development is habitat loss during construction, including the areas lost to the turbines, access tracks, material storage and cable laying. Indirect impacts include negative hydrological impacts, including de-watering during construction; noise; disturbance and dust deposition. The magnitude of the impact varies with the conservation value of the habitat and the size of habitat to be lost.

The impact of the proposed development on flora will be an *Imperceptible negative impact* (i.e. a change in the ecology of the affected site, the consequences of which are strictly limited to within the development boundaries). Following mitigation proposals and adherence to best practice construction techniques to mitigate losses and prevent hydrological impacts the residual impact on habitat will be *Imperceptible to positive impact*.

An assessment of the risk to birds from habitat loss, disturbance and collision is presented in the context of species recorded on site. No rare raptors, such as Hen Harrier, have been recorded from the site. The proposed development could have a *Slight to Moderate negative impact* on a bird community of *Local Value to Local Importance*.

The predicted impact on Badgers will be *imperceptible* with some loss of feeding areas but no continued disruption of habitual movements. The proposed development is likely to be a temporary *imperceptible to slight negative impact* on other mammals including Irish Hare, during the construction phase. Operational development will not have a significant negative impact on terrestrial mammals, which are likely to adapt to the new development.

Operational Impacts are considered to be *Imperceptible Negative Impacts*.

## Water Quality

The Clashawley Stream and a number of its tributaries bisect the study area; these are illustrated on Figures 6.1 & 6.2. The Clashawley is a tributary of the River Anner, which in turn is a tributary of the River Suir. The Clashawley Stream and lower sections of its tributaries which are located within the study area are described as salmonid nursery grounds by the Southern Regional Fisheries Board; however the upper sections of these streams are not suitable for salmonid fish due to type of substrata, habitat and flow levels recorded.

Watercourses within the site are generally classified as of low to moderate ecological value, local importance with the exception of the Clashawley Stream itself, which is of moderate to high ecological value, local importance. Of the Annex II (Habitats Directive) species recorded in the River Suir CSAC, lamprey (undefined species) and white-clawed crayfish are likely to be present within the Clashawley Stream itself, although none were observed during a site survey undertaken in May 2006. Water quality within the Clashawley Stream downstream of the site is classified as unpolluted (Q4).

Culverting will be required at 10 locations. Proposed access routes will cross the Garraun Stream at two points and the Ballaghboy Stream at one location. The proposed access routes will also cross drainage ditches at 7 locations. All crossing points will require culverts at least 6m long to accommodate access routes. The lower crossing of the Garraun Stream is considered salmonid and will require a fish passable culvert, which must be designed in consultation with the Southern Regional Fisheries Board. Access routes will also impact on river corridors along the Ballaghboy Stream and Kilballyherberry Stream. Impacts on watercourses pre-mitigation range between not significant to moderately significant-negative. Turbines will have a construction zone of impact of approximately 50m x 50m. Turbines are generally not located within the vicinity of watercourses with the exception of turbine 2, which is located 40m from the Garraun Stream.

Proposed mitigation measures include fencing off buffer zones around watercourses (15m around major watercourses and 5m around minor watercourses and drainage ditches), silt prevention measures, culverting in accordance with SRFB guidelines and good site management practice. These will ensure that residual impacts are not significant.

## Landscape and Visual

The detailed study area for the proposed wind farm does not include any designated landscapes or protected views. The closest protected views occur to the west V006 and northwest V052 (South Tipperary County Council Development Plan 2003). V006 is a protected view from the R691 located in Georges Land townland looking towards the Rock of Cashel and not towards the development. The view towards the Rock of Cashel will not be impacted by the proposed development. V052 is a scenic road to the northeast of the development. The wind farm will have a low visual impact on southwest facing views from the road.

The wind farm will cause a high visual impact on 77 properties. These properties generally have clear, uninterrupted views to the wind farm. Planting on the wind farm site will not be effective in screening the turbines from these properties due to the size of the turbines. However, planting and mounding adjacent to these properties will help screen the wind farm from these locations and reduce the visual impact.

Visual impacts will be greatest during the construction period due to increased vehicular traffic and the presence of cranes, required to assemble the turbines. Construction impacts are temporary and are anticipated to last only 12-15 months.

### **Archaeology and Cultural Heritage**

The primary aim of the cultural heritage section is to assess what likely impact the proposed development will have on the receiving cultural heritage environment. Following a desktop survey and field inspections, it was established that there are ten archaeological sites listed in the Record of Monuments and Places situated within the proposed development area. The proposed development will not directly impact on the ten listed sites within the proposed development area. However, the Zone of Archaeological Potential (ZAP) of two recorded archaeological sites, a ringfort (TI053-078) and an enclosure (TI061-048) will be impacted by the proposed development.

No archaeological/potential archaeological features were identified during field inspections. Field walking identified five fields; F4, F5, F33, F35 and F36, that are considered to be possible locations for fulachta fiadh. These fields have been identified as Areas of Archaeological Potential (AAP).

A comprehensive inspection of three fields (F21, F22 & F23) where access roads are to be located could not be carried out due to the presence of overgrowth and forestry.

There are no protected structures listed in the Tipperary County Development Plan (2003) within the proposed development site.

The following proposals are made to mitigate the impact of the development on any potential cultural heritage sites. A programme of licensed archaeological testing will be carried out in advance of construction to ascertain if any archaeological remains exist below ground level. Particular attention will be paid to fields and areas identified as being AAP. This programme of testing will be agreed with the National Monuments Service of the DoEHLG. In the event of archaeological material being uncovered, the development element (turbine, access road, cable run or tail station) will be relocated or the archaeological material will be resolved to professional standards of archaeological practice (Policy Guidelines on Archaeological Excavation – Department of Arts, Heritage, Gaeltacht and the Islands). This work will be funded by the developer.

### **Geology and Hydrogeology**

No significant impact on the ground or groundwater is expected during the operational life of the turbines. Impact on the geology and hydrogeology beneath the study area will be greatest during the construction stage. This could occur by the increased surface area of hard standing and earthworks and by turbine foundations. The provision of adequate drainage during the construction phase will mitigate this impact. Suspended solids may also enter watercourses during the construction stage. In order to mitigate the impacts on surface and ground water turbines will be located at the recommended distance away from the watercourses, with barriers to prevent surface run off. The design of turbine foundations, drainage for access roads and the tail station will be based on the findings of a detailed ground investigation across the site area and at each specific turbine location.

Negligible impact on the ground or groundwater is expected provided mitigation methods are adhered to.

### **Noise & Vibration**

Measured ambient daytime and night-time noise levels in the vicinity of the site are low and representative of a rural location. Noise resulting from the operation of the wind turbines was predicted using Atkins Site Noise Model. Sensitive receptors within the study area include residential properties. There are no hospitals or schools within the immediate area. However the village of Dualla is located approximately 1.5 km west of the site, within which there is a local primary school, shop/post office and Dualla Catholic Church. These are not considered to be sensitive noise receivers in relation to this development.

It was concluded that all the relevant noise criteria would be met at 4 m/s wind speed. At a wind speed of 8 m/s, with air absorption all except Receptor 56 (R56) meet the night-time criterion value. During the night-time period, because of the exceedance at R56, mitigation is considered necessary at this property, in order to meet the relevant criterion value. The use of a lower power configuration, when and where necessary, of 102.5 dB for turbines 5 and 8 will result in a predicted noise level of 42.8 dB L<sub>A90</sub> at R56, thereby satisfying the criteria.

### **Shadow Flicker**

The shadow flicker report assesses the interruption in sunlight resulting from the shadows created by the moving turbines in between residential properties and the sun. WindPRO Version 2.4 software program was used to calculate the shadow flicker within the study area. The assessment criteria was based on the on the Irish Guidelines for Wind Energy Development (Department of Environment, Heritage and Local Government, 2006). There will be no exceedance of the relevant criteria for shadow flicker on sensitive receptors, as specified by the Planning Guidelines for Wind Energy Development (DoEHLG 2006), for either the 30 hours per year criterion; or for the 30 minute per day criterion, following mitigation as outlined in the shadow flicker chapter.

### **Material Assets**

The material assets chapter identified any potential impacts from the proposed wind farm development on existing or proposed material assets within the study area. The development will have a neutral impact on air navigation, electricity supply, tourism and forestry. There are no quarries operating within the study area.

The proposed development will have a negative effect on the TV coverage to viewers in the area. In order to mitigate the impact on television signals detailed consultation has taken place between RTÉ and KEMAR Ltd. The provision of an additional transmission mast within the development site will ensure that after mitigation the impact for television signals will be low.

## Air Quality

During construction, minor localised air emissions can occur from operating construction equipment and machinery. Any impact on air quality will be localised and minimal.

Climate change in Ireland has been identified as one of the most serious environmental problems facing Ireland at the present time. The release of greenhouse gases such as carbon dioxide from the burning of fossil fuels is a known contributor to global warming. Avoided emissions of nitrogen oxides, sulphur oxides and carbon dioxide using wind energy as a clean energy source will have a positive impact on our climate and the air we breathe.

The development of the proposed wind farm is expected to have a positive impact on the global climate by reducing the emission of greenhouse gases (mainly carbon dioxide) and emissions contributing to acid rain (sulphur dioxide and oxides of nitrogen) that would otherwise be released to the atmosphere through the burning of fossil fuels.