Barville Wind Turbine

Non-Technical Summary

Volume I

September 2013

BARVILLE FARM – NON TECHNICAL SUMMARY

1 INTRODUCTION

1.1.1 An Environmental Statement (ES) has been prepared on behalf of RES UK & Ireland Ltd (RES) to support a planning application for a single wind turbine and associated infrastructure (Proposed Development) located on land south of Tilmanstone, Dover. The main components of the development comprise of a single wind turbine (proposed wind turbine), two electrical equipment kiosks, hardstanding and ancillary infrastructure. The location of the Proposed Development is shown on Drawing 3371_B101, whilst the application site (Site) is outlined in red on Drawing 3371_B102.

1.1.2 The Site comprises is located on land 1 km to the south of Tilmanstone and 6 km to the west of Deal and 9km to the north of Dover, in Kent..

1.1.3 The ES comprises this Non-Technical Summary (Volume I) and the following Volumes:

- Volume II: Environmental Statement Text;
- Volume III: Environmental Statement supporting Figures; and
- Volume IV: Environmental Statement supporting Technical Appendices.

1.2 Project Overview

1.2.1 The Site comprises approximately 6.37 hectares of land. The strategic road network adjacent to the Site comprises the A256 running in a north south direction (to the east of the Site) linking Dover to the south and Ramsgate to the north. The Site is accessed from Barville Road which links directly (300m) to the A256.

1.2.2 The Site lies between the villages of Tilmanstone and Eythorne (at Ordnance Survey Grid Reference 294503). The Site is bound to the north by Barville Road and the A256 to the east. The land to the south and west, located between the village of Eythorne and the Site, consists of agricultural land. Pike Road industrial estate is located approximately 700m to the west of the Site.

1.2.3 The Site consists of a number of horse paddocks, divided by a series of post and wire fences. These horse paddocks surround Barville Farm which is also located within the Site. An on-site access track from Barville Road provides access to Barville Farm before making a 90 degree bend and runs through along spine of the Site, providing access to numerous horse paddocks. The eastern, southern and western boundary of the Site consists of a series of hedgerows.

1.3 The Applicant

1.3.1 RES is one of the world's leading independent renewable energy project developers, with over 30 years' experience working across the globe to develop, construct and operate projects that contribute to a sustainable future. From long-term involvement in the wind industry, RES has gained a high level of expertise in the technical, environmental and financial disciplines for the development of a successful wind projects.

1.3.2 RES's award winning eco-friendly headquarters and education centre in Kings Langley, Hertfordshire is an exemplar of sustainability and the on-site renewable energy technologies include solar power, energy crops and a wind turbine next to the M25. There is a popular visitor centre outlining the benefits of renewable energy and sustainable development. RES also operates a number of regional offices in key markets worldwide.

1.3.3 Further information about RES can be found at:

http://www.res-group.com/

2 PROJECT DESCRIPTION

2.1.1 The planning application is for a wind turbine and associated infrastructure which would consist of the following elements:

- **Single three-bladed, wind turbine**: up to 100m maximum height to tip;
- **Turbine foundation**;
- **Two electrical equipment kiosks**: one to accommodate the metering equipment, switchgear and electrical protection equipment, and the other for the electricity transformer;
- **Crane hard standing**;
- **Temporary construction compound**; and
- **Ancillary infrastructure**: including underground cabling, on-site access track, access to public highway and site signage.

2.1.2 The proposed wind turbine will be operational for 25 years. Should the proposed wind turbine and associated infrastructure be replaced or refurbished after 25 years, this would be subject to a future planning application and relevant assessments at that time and therefore the environmental assessments only consider the construction, 25 year operational and decommissioning phases.

2.1.3 A plan of the Site showing the position of the proposed wind turbine along with the on-site access track, access from the highway, crane hard standing, transformer and metering kiosks, temporary construction compound and other infrastructure are shown in Drawing 03002D1001-03.

3 EIA METHODOLOGY

3.1.1 In November 2012, LDA Design submitted a Screening letter, in accordance with the EIA Regulations to Dover District Council (DDC) to determine whether an EIA was necessary. DDC provided a Screening Opinion on 15th December 2012 which confirmed that an EIA would be necessary for the Proposed Development.

3.1.2 In January 2013, following the confirmation that and EIA was necessary, LDA Design sought a Scoping Opinion in accordance with the EIA Regulations, to guide the preparation of the ES that would accompany the planning application. This request comprised a covering letter and EIA Scoping Report which set out the proposed scope and context of the EIA. DDC provided such a Scoping Opinion on 15th April 2013, having consulted with appropriate consultees, which was used as the initial basis for the identification of issues to be included in the ES.

3.1.3 Where relevant, consultation was undertaken with the local authority and prescribed consultees to determine study areas, methodology and mitigation measures for each environmental topic.

3.1.4 The full assessment for each environmental topic are presented in Chapters 6 to 13 in Volume II of the ES.

3.1.5 The ES has been prepared in accordance with the comments and advice as set out in the EIA Scoping Opinion and EIA Regulations.

3.1.6 The ES has considered the cumulative effects of the Proposed Development in combination with the environmental effects of other developments on sensitive receptors identified through the EIA Scoping process. The other developments considered within the cumulative effects assessment, are described as follows:

- Thornton Lane – A single wind turbine and associated infrastructure consisting of two glass reinforced electrical equipment kiosks, crane hardstanding, temporary construction compound, underground cabling, on site access track, access to public highway and site signage; and
- Tilmanstone Brickworks Solar Farm – A proposed 5MW photovoltaic array covering approximately 15 ha, buildings to accommodate Use Class B2 and recontouring of the colliery spoil on the site.

3.1.7 The procedures relating to the assessment of the environmental effects of the Proposed Development and information for inclusion in an ES are described in the EIA Regulations. Schedule 4, Part 1 and Part 2 of the EIA Regulations, sets out the information required in an ES.

4 GENERAL PLANNING POLICY

4.1.1 The Planning Policy Context chapter, within the ES, assesses how the Proposed Development performs against national and local planning policy objectives and the Development Plan.

4.1.2 This non-technical review highlights the most relevant policy and seeks to deliver a coherent argument that demonstrates the Proposed Development's compliance with various policy documents.

4.2 National Planning Policy and Guidance

National Planning Policy Framework March 2012

4.2.2 The NPPF sets out the Government's planning policies for England and states how they are to be applied.

4.2.3 The core theme of the NPPF is a presumption in favour of sustainable development. This includes not only protecting the environment from development which could damage its special character, but also supporting the economy and providing for the needs of the community.

4.2.4 The following sections within the NPPF are relevant to the Proposed Development:

- **Section 8** of the NPPF sets out policies in relation to promoting healthy communities. These policies are designed to ensure that social issues are accounted for in planning decisions. Chapter 11 Human and Socio-Economics of this ES demonstrates how the Proposed Development will respond to such policies.
- **Section 10** of the NPPF sets the context for considering renewable energy and climate change through the planning system. It also considers long term climate change, flood risk, water supply and changes to biodiversity and landscape. Paragraph 99 states that *"New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change"*. Paragraphs 100 – 104 consider flood risk. Chapter 13. Other Environmental Effects of this ES consider the impacts of the proposals upon Water Resource.
- **Section 11** of the NPPF sets the framework for considering the natural environmental and- landscape/visual impacts of development. Section 11 also considers Ground Conditions. Chapters 6: Landscape and Visual Impact Assessment, Chapter 7: Ecology and Ornithology, Chapter: 9 Noise Environment and Chapter 13: Other Environmental Effects considered the effect of the Proposed Development on these policies further and outlines mitigation measures as appropriate.
- **Section 12** of the NPPF sets out how local authorities should respond to applications for development in the context of the historic environment. Chapter 8: Cultural Heritage and Archaeology considers the impacts of the Proposed Development upon the historic environment.

Planning Practice Guidance for Renewable and Low Carbon Energy July 2013

4.2.5 This guidance document provides advice on the planning issues associated with the development of renewable energy and sets out the particular planning considerations that relate to wind turbines, encompassing:

- Noise impacts;
- Safety (buildings, power lines, air traffic, defence, radar and the strategic road network);
- Electromagnetic interference;

- Ecology;
- Heritage;
- Shadow flicker and reflected light;
- Energy output;
- Cumulative landscape and visual impacts; and
- Decommissioning.

4.2.6 Each of these planning considerations are addressed within the ES.

4.3 Local Planning Policy and Guidance

Dover District Core Strategy 2010

4.3.2 The Core Strategy was adopted on 24 February 2010 and is the principal document in the Development Plan. It contains the Council's overall ambitions and priorities for the Dover District and will be used to decide what the Dover District should be like up to 2026.

4.3.3 The Core Strategy sets out a number of objectives in order to focus action, measure progress and fulfil the social, economic and environmental aims of the district.

4.3.4 Annex 1 of the Core Strategy sets out a number of Development Management Policies which cover a select range of issues which are of relevance to the Proposed Development and have been addressed within the ES.

Land Allocations Pre-submission Local Plan December 2012 and Addendum to the Land Allocations Pre-Submission Local Plan May 2013

4.3.5 The Land Allocations Pre-Submission Local Plan, formerly called the Site Allocations Document, follows on from the Core Strategy. An Addendum was published in May 2013. Its primary purpose is to identify and allocate specific sites that are suitable for employment, retail and housing development in order to meet the Core Strategy's requirements and makes a major contribution to delivering the Strategy. It covers the same plan period as the Core Strategy. The latest round of consultation on the Plan was held from December 2012 – February 2012.

4.3.6 The document does not contain any specific policies, allocations or designations for the Site. However, it does provide guidance on a range of development management issues particularly in Annex 1 which contains guidance on Heritage Assets which are addressed within the ES.

Dover District Local Plan - Adopted 2002 Saved Policies

4.3.7 The majority of the policies in the Dover District Local Plan, adopted in 2002, have been superseded with the adoption of the Core Strategy.

4.4 Summary

4.4.1 The Proposed Development has been prepared in the context of the planning framework established at a national, regional and local level.

5 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

5.1.1 The Landscape and Visual Impact Assessment (LVIA) presents the approach and findings of the assessment of the potential impact of the Proposed Development on landscape character and representative visual receptors. It has been prepared based on best practice guidance and the methodology and scope of the assessment has been subject to consultation with Dover District Council.

5.1.2 The findings of the assessment indicate that landscape sensitivity within the study area varies little, with the two character areas likely to be affected being of Medium sensitivity overall. The proposed wind turbine is likely to become the dominant characteristic of the landscape within 1-1.2 km of the turbine, giving rise to the sense of being next to or at the wind turbine. Between that area and up to 2 km from the proposed wind turbine it would become one of the key characteristics, giving the sense of being near a wind turbine. As a result there are localised effects on both the Eythorne Arable Mosaic with Parkland and Eastry Arable and Woodland Clumps local landscape character areas, but these are not significant effects.

5.1.3 Impacts on views would be generally of Large scale within up to 1.2 km from the proposed wind turbine; Medium scale up to around 2 km from the proposed wind turbine, and decrease to Low and Negligible magnitude beyond. Significant effects (for high sensitivity receptors) are likely to arise up to 2 km from the Site. Beyond 5-6 km effects would generally be minimal. The topography of valleys and ridges/plateaux largely contains and defines the extent of the visibility of the proposed wind turbine and the fact that it is a single turbine reduces the proportion of the view it occupies.

5.1.4 Settlements within 5 km of the proposed turbine would generally only have views of the proposed wind turbine from a small number of houses on the edges facing the Site and from streets and footpaths as they emerge from those edges. There would be significant effects on localised areas of Eythorne and Tilmanstone.

5.1.5 Users of PRoW within up to 1.5 km would experience localised significant visual effects. Users of roads, cycle routes and long distance routes within the study area would not experience any significant visual effects.

5.1.6 There would be no significant effects on either the Kent Downs AONB or the South Foreland Heritage Coast from the proposed wind turbine.

5.1.7 Properties within 1-1.6 km of the proposed wind turbine would generally have some views of the proposed wind turbine. However, open views are relatively scarce with most benefitting from a degree of screening.

5.1.8 The Proposed Development would not create any significant cumulative effects with the other proposed wind turbine at Thornton Lane, on views or landscape character. The cumulative effects are limited due to the degree of separation between the proposed wind turbines and the contained area within which significant effects would arise. This is caused in most part by is location within a landscape within which the landform of ridges and valleys contains and defines both landscape character and views.

5.1.9 The Proposed Development would make a slight contribution to sequential views along the SUSTRANS Regional Cycle Route 15 as the proposed Thornton Lane wind turbine would be closer to the route. In combination, they would create two localised features along the route.

5.1.10 There would be no significant cumulative effects on either the Kent Downs AONB or the South Foreland Heritage Coast.

5.1.11 There is no potential for cumulative effects on residential amenity arising from the Proposed Development.

6 ECOLOGY AND ORNITHOLOGY

6.1.1 The Ecological Impact Assessment for the Proposed Development has been informed by consultation with nature conservation stakeholders, desk study and survey work, and has taken account of all relevant biodiversity policy and legislation. The approach to the assessment of likely impacts has been based on Institute of Ecology and Environmental Management (IEEM) Guidance, which is considered the industry standard.

6.1.2 The Site is not in close proximity to any statutory or non-statutory sites that have been designated for their nature conservation interest.

6.1.3 The desk study identified a range of ecological receptors that had been recorded in the wider area, particularly bats, birds and other protected species, that could potentially be affected by development. An Extended Phase 1 habitat survey was undertaken to identify the likelihood of these species being present, and to determine the quality of the habitats on the Site.

6.1.4 The Extended Phase 1 survey found that the Site is characterised by agriculturally improved horse-grazed pasture, sub-divided into fields by post and wire fencing. Hedgerows and lines of trees are present around parts of the Site boundary. Buildings and a (dried up) pond are present within the land ownership, but these are in excess of 600 metres from the proposed wind turbine.

6.1.5 Due to the low quality of the habitats present, and the very limited potential for protected species to occur within the Site and be affected by the Proposed Ddevelopment, the scope of additional survey work was restricted to walked bat transects, the deployment of static detectors and winter bird survey. The Site has very limited potential to support breeding birds due to its management, and other protected species are only likely to occur around the edges of the site.

6.1.6 The results of the work showed that bat activity away from the hedgerows was very limited, and that the Site is used in winter by a typical range of bird species, all of which are common or abundant in Kent.

6.1.7 The main mitigation has been achieved through the design process, by ensuring that the proposed turbine will be located away from hedgerows, such that the blade will be in excess of 50 metres from the nearest field boundary hedge. This separation distance will minimise the potential for bat species, most of which follow field boundary features (such as hedgerows) to fly through the rotor swept area, where they may be subject to collision. Minor measures to ensure compliance with legislation protecting other species has also been identified.

6.1.8 The assessment concludes that the ecological effects of the Proposed Development will be minimal both alone and in-combination with other proposed development within the wider area. Despite mitigation, there is some residual potential for effects to occur, principally through collision or bats and birds, but the likelihood of such effects occuring is very low.

7 CULTURAL HERITAGE AND ARCHAEOLOGY

7.1.1 The Cultural Heritage Impact Assessment considers the potential effects of Proposed Development on heritage assets such as historic buildings and historic and archaeological sites (designated and non-designated), including, Listed Buildings of all grades, World Heritage Sites, Scheduled Monuments, Conservation Areas, Registered Parks and Gardens, Registered Battlefields and locally listed/registered buildings and parks and gardens. The methodology and scope of the assessment has been subject to consultation with Dover District Council.

7.1.2 This assessment analyses the predicted effect of the proposed wind turbine on cultural heritage assets. 'Cultural heritage asset' is a catch-all terms for all kinds of sites, structures or areas of historic interest. It covers assets with formal designations, such as Listed Buildings, Scheduled Monuments and Conservation Areas and a wide range of undesignated assets that have been recorded, including archaeological sites.

7.1.3 The construction and decommissioning phases of the Proposed Development have the potential to harm heritage assets during ground-breaking works, directly disturbing or destroying features of interest.

7.1.4 During its operational phase, the Proposed Development may affect heritage assets through changes in their setting; such effects would generally be visual but other factors may be relevant. The setting of a heritage asset is the area within which it is experienced. This can contribute to what is valued about an asset and therefore change in the setting may be harmful.

7.1.5 This assessment has identified that the Proposed Development would result in adverse effects on heritage assets during the construction phase and operational period. None of the resulting effects would be EIA significant.

7.1.6 Construction works would damage sub-surface archaeological features associated with cropmarks of probable later prehistoric date interpreted as field boundaries and round barrows. This is considered to be an adverse effect of no more than minor significance, which would be fully mitigated by an appropriate programme of archaeological excavation and recording.

7.1.7 Operation of the wind turbine would affect the heritage significance of five heritage assets through visual change in their settings. There would be adverse effects of minor significance on Dane Court (Listed Building Grade II*), Waldershare Park House (Listed Building Grade I) and the Belvedere in Waldershare Park (Listed Building Grade I). There would be adverse effects of negligible significance on Waldershare Park (Registered Park & Garden Grade II) and Tilmanstone Conservation Area.

7.1.8 Any effects on the setting of heritage assets would occur for the duration of the operational life of the wind turbine and then be fully reversed on decommissioning. Mitigation has been achieved, where possible, through design and minimises the level of harm to these heritage assets.

7.1.9 Careful management of the decommissioning phase would ensure that no further adverse impacts occur on assets already damaged by construction works.

8 NOISE ENVIRONMENT

8.1.1 An assessment of the acoustic impact from both the construction and operation of the Proposed Development was undertaken, taking into account the identified most sensitive receptors.

8.1.2 The operational noise impact was assessed according to the guidance described in the 'The Assessment and Rating of Noise from Wind Farms' referred to as 'ETSU-R-97', as recommended for use in England by NPPF. The methodology described in this document was developed by a working group comprised of a cross section of interested persons including, amongst others, environmental health officers, wind farm operators and independent acoustic experts. It provides a robust basis for assessing the noise impact of a wind farm and has been applied at the vast majority of wind farms currently operating in the UK. ETSU-R-97 makes clear that any noise restrictions placed on a wind farm must balance the environmental impact of the wind farm against the national and global benefits that would arise through the development of renewable energy sources.

8.1.3 Representative baseline conditions (the "background noise level") at nearest neighbours were established by undertaking a noise survey at one nearby location. These measured levels were then used to infer the background noise levels at other nearby properties as the ETSU-R-97 document recommends. As background noise levels depend upon wind speed, as indeed do wind turbine noise emissions, the measurement of background noise levels at the survey location was made concurrent with measurements of the wind speed and wind direction, which covered a representative range. These wind measurements are made at the wind turbine site rather than at the properties, since it is this wind speed that will subsequently govern the wind turbines noise generation.

8.1.4 An estimate of noise levels at the nearest neighbours, using a sound propagation model, were made over a range of wind speeds taking into account the position of the proposed wind turbine, the nearest neighbours, and the candidate wind turbine type. The model employed (which considered downwind conditions at all times) took account of attenuation due to geometric spreading, atmospheric absorption, ground effects and barriers. It has been shown by measurement based verification studies that this model tends to slightly overestimate noise levels at nearby dwellings.

8.1.5 The relevant noise limits were then determined through analysis of baseline conditions and the criteria specified by the ETSU-R-97 guidelines. The general principle regarding the setting of noise criteria is that limits should be based relative to existing background noise levels, except for very low background noise levels, in which case a fixed limit may be applied. This approach has the advantage that the limits can directly reflect the existing noise environment at the nearest properties and the impact that the wind turbines may have on this environment. Different limits have been applied during day and night-time hours. The daytime limits are intended to preserve amenity (outdoor), while the night-time limits are intended to prevent sleep disturbance (indoor).

8.1.6 For those properties considered, the predicted noise levels are within noise limits at all considered wind speeds. The proposed wind turbine therefore complies with the relevant guidance on wind farm noise and the impact on the amenity of all nearby properties would be regarded as acceptable.

8.1.7 A construction noise assessment, which has incorporated the impact from increased traffic noise, indicates that predicted noise levels likely to be experienced at representative critical properties are below relevant construction noise criteria at the majority of properties. Two properties have predicted noise levels higher than 65dB(A) due to the construction of site tracks and access site tracks, this however is temporary and will last for a maximum of 4 days

9 ELECTROMAGNETIC INTERFERENCE AND AVIATION

9.1.1 An assessment of the potential effects of Proposed Development on electromagnetic interference and aviation has been undertaken.

9.1.2 The assessment considered the potential effects of the Proposed Development on television reception, radio reception, microwave communications and air traffic safeguarding.

9.2 Television Reception

9.2.1 The assessment identifies some small, localised areas which could potentially experience interference to television reception.

9.2.2 If television interference is found to occur, following the construction of the proposed wind turbine, a series of mitigation measures have been identified. These mitigation measures include:

- Alternative transmitter – tuning existing aerial to one of the other main transmitters in the area;
- Improved aerial system - by improving directionality, increasing aerial height, directing aerial away from or shielding from the proposed wind turbine; and
- Satellite television – likely to be an improvement to television service and can be installed if neither of the above solutions are appropriate.

9.2.3 The range of viable mitigation measures, as described above, is sufficient to mitigate any effects arising from the operation of the proposed wind turbine on television reception.

9.3 Radio Reception

9.3.1 The BBC do not expect wind energy developments to have a detrimental effect upon national or local radio reception.

9.4 Microwave Communications

9.4.1 RES consulted widely with organisations and system operators that could be affected by the Proposed Development. The proposed wind turbine has been located outside of the requested separation distance from the identified microwave links and therefore these links will be unaffected by the Proposed Development.

9.5 Aviation

9.5.1 An assessment of the likely impacts on aviation operations in the vicinity of the proposed wind turbine has been undertaken.

9.5.2 The following aviation operations have been identified as potential stakeholders

- Kent International Airport (KIA);
- National Air Traffic Service (NATS) Primary Surveillance Radars (Bovingdon, Debden, Gatwick, Pease Pottage and Stansted); and
- The Ministry of Defence.

KIA

9.5.3 Although the proposed wind turbine is likely to be detected by the KIA Primary Surveillance Radar (PSR), it is anticipated that the impact on KIA operations will be minimal due to the small and intermittent nature of the potential radar clutter that may be produced.

9.5.4 Should KIA determine that the impact on operations is too great, there are multiple potential options for mitigation, the most suitable of which would be determined during dialogue with KIA.

NATS

9.5.5 Line of Site analysis has been undertaken to determine the detectability of the proposed wind turbine by the NATS (En-Route Limited) (NERL) PSRs of Bovingdon, Deben, Pease Pottage, Gatwick and Stansted. The analysis has demonstrated that there will be no technical impact to any NERL infrastructure and is outside the safeguarding areas of all navigational aids.

Ministry of Defence

9.5.6 The proposed wind turbine is located in a low priority military flying zone. The Ministry of Defence (MoD) has been consulted using the protocol agreed between the aviation industry and Renewable UK.

9.5.7 The proposed wind turbine does not constitute an 'aerodrome obstruction' and in particular the MoD have not raised any physical safeguarding concerns with respect to en-route obstructions.

10 HUMAN AND SOCIO-ECONOMIC INCLUDING SHADOW FLICKER AND REFLECTED LIGHT

10.1 Human and Socio-Economics

10.1.1 The Human and Socio-Economic assessment presents the approach and findings of the assessment of potential impacts on local, regional and national socio-economics during construction, operation and decommissioning of the Proposed Development.

Employment and Economy

10.1.2 The construction and operation of the Proposed Development would have a positive effect on the local economy, in terms of local employment during the construction phase, and also in the longer term from the landowner rentals, business rates, local services and employment of maintenance staff.

10.1.3 On a national level the UK demand for wind energy will help establish, mainly via inward investment, a substantial new UK industry providing long term skilled jobs serving both the home and overseas markets.

10.1.4 Additional benefits will be realised by the project owing to its embedded generation, lack of fuel cost inflation, low decommissioning costs and no associated costs from pollution.

Community Benefit

10.1.5 The proposed wind turbine will become a feature of the area, and is likely to attract interest from locals and visitors alike. RES is also prepared to commit to direct community benefits from the operation of the Proposed Development.

Safety of Pedestrians using public footpaths

10.1.6 Modern wind turbines are remarkably safe given their size and relatively short evolution. The safety of the Proposed Development will be ensured through adherence to relevant design standards, construction practices and operational procedures. The minimum separation distance between the proposed wind turbine and the nearest public footpath (Public Footpath EE341) is approximately 85 m. The separation to public bridleway EE335B is further, at approximately 260 m. The turbine blades will therefore not over sail the footpath or the bridleway.

Land Use

10.1.7 The Site is currently managed for grazing horses and is of Grade 2 according to the Multi-Agency Geographic Information for the Countryside (MAGIC) maps.

10.1.8 Land required for the construction phase will be returned to its current use following completion of the Proposed Development. The Proposed Development has been designed to allow for continued grazing around the Proposed Development. The effects of construction and operation of the Proposed Development on land use are considered to be minimal.

10.2 Shadow Flicker and Reflected Light

Shadow Flicker

10.2.2 In sunny conditions, any shadow cast by a wind turbine will mirror the movement of the rotor. When the sun is high, any shadows will be confined to the immediate vicinity of the wind turbine, but when the sun sinks, moving shadows can be cast further afield and potentially over adjacent properties. Shadow flicker is generally not a disturbance in the

open environment as light outdoors is reflected from all directions. Whilst the moving shadow can occur outside, the shadow flicker effect is only experienced inside buildings where the shadow passes over an open door or window, since the light source is more directional. Therefore receptors within the open environment are not considered to be effected by shadow flicker.

10.2.3 Whether shadow flicker is a disturbance depends upon the observer's distance from the turbine, the direction of the dwelling and the orientation of its windows and doors from the wind turbine, the frequency of the flicker and the duration of the effect, either on any one occasion or averaged over a year.

10.2.4 In any event and irrespective of distance from a wind turbine, the flickering frequency will depend upon the rate of rotation and the number of blades.

10.2.5 There are six houses which could be subject to shadow flicker. It should be emphasised that this represents a worst case scenario. Due to frequent cloud cover, the proposed wind turbine not being operational at all times and the turbine blades not being aligned with the sun in a way to cast maximum shadow, the actual amount of shadow flicker experienced is likely to be much less.

10.2.6 There are no houses or offices within 500m of the proposed wind turbine. Therefore, based on Northern Ireland's Best Practice Guidance to Renewable Energy, it is concluded that the effect of shadow flicker resulting from the proposed wind turbine will not be significant and there will be no material reduction to residential amenity.

10.2.7 The proposed wind turbine would rotate at a maximum frequency well below the threshold that can trigger photosensitive epilepsy, therefore there will be no effect on human health due to the maximum rotation of the proposed wind turbine.

Reflected Light

10.2.8 A related visual effect to shadow flicker is that of reflected light. Theoretically, should light be reflected off a rotating turbine blade onto an observer then a stroboscopic effect would be experienced. In practice a number of factors limit the severity of the phenomenon and there are no known reports of reflected light being a significant problem at other wind power developments. Reflected light is not foreseen as a significant effect due to the following reasons:

- The proposed wind turbine has a semi-matt surface finish which means that it does not reflect light as strongly as materials such as glass or polished vehicle bodies;
- The convex surfaces found on a turbine blade will generally reflect light in a divergent manner; and
- As with shadow flicker, certain weather conditions and solar positions are required before an observer could experience the phenomenon.

11 OTHER ENVIRONMENTAL TOPICS CONSIDERATIONS

11.1.1 The Environmental Statement sets out the potential effects on ground conditions and traffic as a result of the proposed Development.

11.2 Ground Conditions

11.2.1 The Site overlays a chalk aquifer, as shown on the Environment Agency's Aquifer maps, the bedrock beneath the Site is designated as a Principal Aquifer which consist of layers of rock that have intergranular and/or fracture permeability which usually provide a high level of water storage.

11.2.2 There are no EA groundwater source protection zone within or immediate vicinity of the Site.

11.2.3 To mitigate against potential impacts on the principal aquifer beneath the Site, a series of measures will be employed during the construction and operation of the Proposed Development to ensure that any potential impact on the principal aquifer beneath the Site is avoided. Mitigation measures which will be employed to reduce and respond to any potential risks to ground water and surface water will be submitted to Dover District Council for approval prior to construction. These will be compliant with Pollution Protection Guideline 22 (PPG22). Best site management practices will also be adopted to reduce the potential for any spillages or leakages of potentially polluting substances

11.3 Transport Statement

11.3.1 The EIA Scoping Opinion provided by DDC highlighted that highways and access should be a consideration within the ES. The Scoping Opinion stated that a Transport Assessment was not required but that a Transport Statement should be prepared for the Proposed Development comprising of the following:

- Details of the daily and peak period construction traffic movements, including HGV's and site personnel vehicles;
- Details of the proposed improvements to the existing access track;
- Vehicle tracking movements to demonstrate that the largest vehicle visiting the site during the construction and decommissioning stage can gain suitable access to the site;
- Details of the route for abnormal loads on the trunk road network from the point of entry into the UK, and its route along the local road network to the site;
- Details of parking and turning for construction and site personnel vehicles;
- Details of wheel washing facilities to prevent the deposit of material on the highway;
- Assessment of the proposed turbine in relation to highway matters with regard to PPS22 companion guide and the Highways agency current guidance;
- A routing plan, showing the routing of vehicles associated with the construction phase, identifying routes for vehicles, avoiding the local villages;
- The Transport Statement should clearly state what the Traffic Management Plan will cover. Full details of the Traffic Management Plan can be secured by condition; and
- The ES should assess the implications of passing places and any diversions, and works to the existing road network and infrastructure along the access route to the site, particularly to accommodate abnormal loads.

11.3.2 A Transport Statement has been prepared and is included at Appendix 12.1 in Volume IV which responds to the queries raised by DDC in the Scoping Opinion.

12 ENERGY AND CLIMATE CHANGE

12.1.1 The UK is currently facing three major challenges in energy policy. One being the need to tackle climate changes by reducing greenhouse gas emissions, the second being to ensure a secure, diverse and clean energy supply as the country moves towards an increasing dependence on imported energy and the third to ensure the UK has energy that is affordable.

12.1.2 Wind energy projects, such as that being proposed for Barvile Farm, are required to ensure diverse, secure, economic and sustainable energy supply. Global emphasis is currently being placed on the final factor. Wind energy offers global benefits in terms of electricity generation in that it reduces emissions of carbon dioxide (the main 'greenhouse' gas associated with global climate change) and other pollutants, such as sulphur dioxide or oxides of nitrogen, which can lead to acid rain.

12.1.3 Wind energy provides us with a clean, safe, renewable energy source enabling us to reduce these damaging emissions and protect our environment. It also provides diversity and therefore security in United Kingdom energy supplies by reducing dependency on imported finite fossil fuels, such as coal, oil and gas

12.1.4 Each unit of electricity generated by a renewable source avoids on average the production of 430g of CO2 and small amounts of other pollutants (Renewable UK, 2010). Accordingly, it is estimated that the Proposed Development would prevent 1791 tonnes of CO2 from entering the atmosphere annually and would generate enough renewable energy, taking into account the fluctuating nature of the wind, and various loss mechanisms (e.g. wakes and electrical transmission) the proposed wind turbine would generate enough renewable energy to supply 976 homes in the Dover District area.

12.1.5 The benefits of using renewable forms of energy are not confined to tackling climate change. Environmental costs of conventional generation are avoided, including the health implications associated with poor air quality, the damage to the natural and built environment caused by acid rain and radiation related health and safety problems

13 FURTHER INFORMATION

13.1.1 Further information about the EIA is contained in the full ES which can be inspected at the following location during normal office hours:

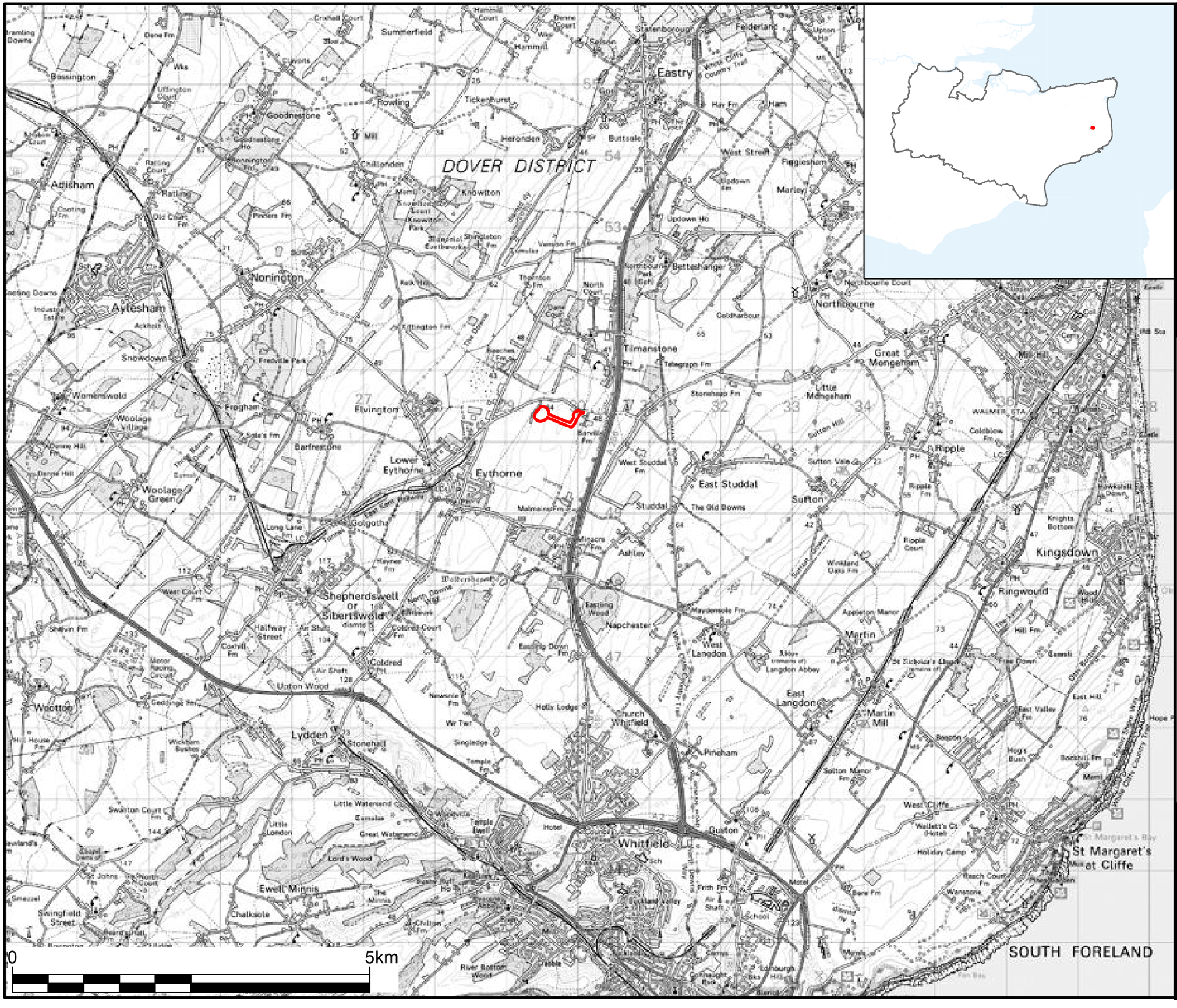
Dover District Council,
Council Offices,
White Cliffs Business Park,
Whitfield,
Dover,
CT16 3PJ

13.1.2 Written comments regarding the ES and / or the Proposed Development should be made to DDC Planning Department at the above address so that they can be considered as part of the consultation on the planning application.

13.1.3 Copies of the ES (Volume II, III and IV) can be purchased from RES for £250 from the address below:

RES UK & Ireland Ltd
Beaufort Court
Egg Farm Lane
Kings Langley
Hertfordshire
WD4 8LR
Tel: +44 (0)1923 299 200

13.1.4 The ES will also be available on a CD at a cost of £20. The NTS (this volume) will be made available without charge to all interested parties upon request.



BARVILLE FARM WIND TURBINE

SITE LOCATION

Site Location

N

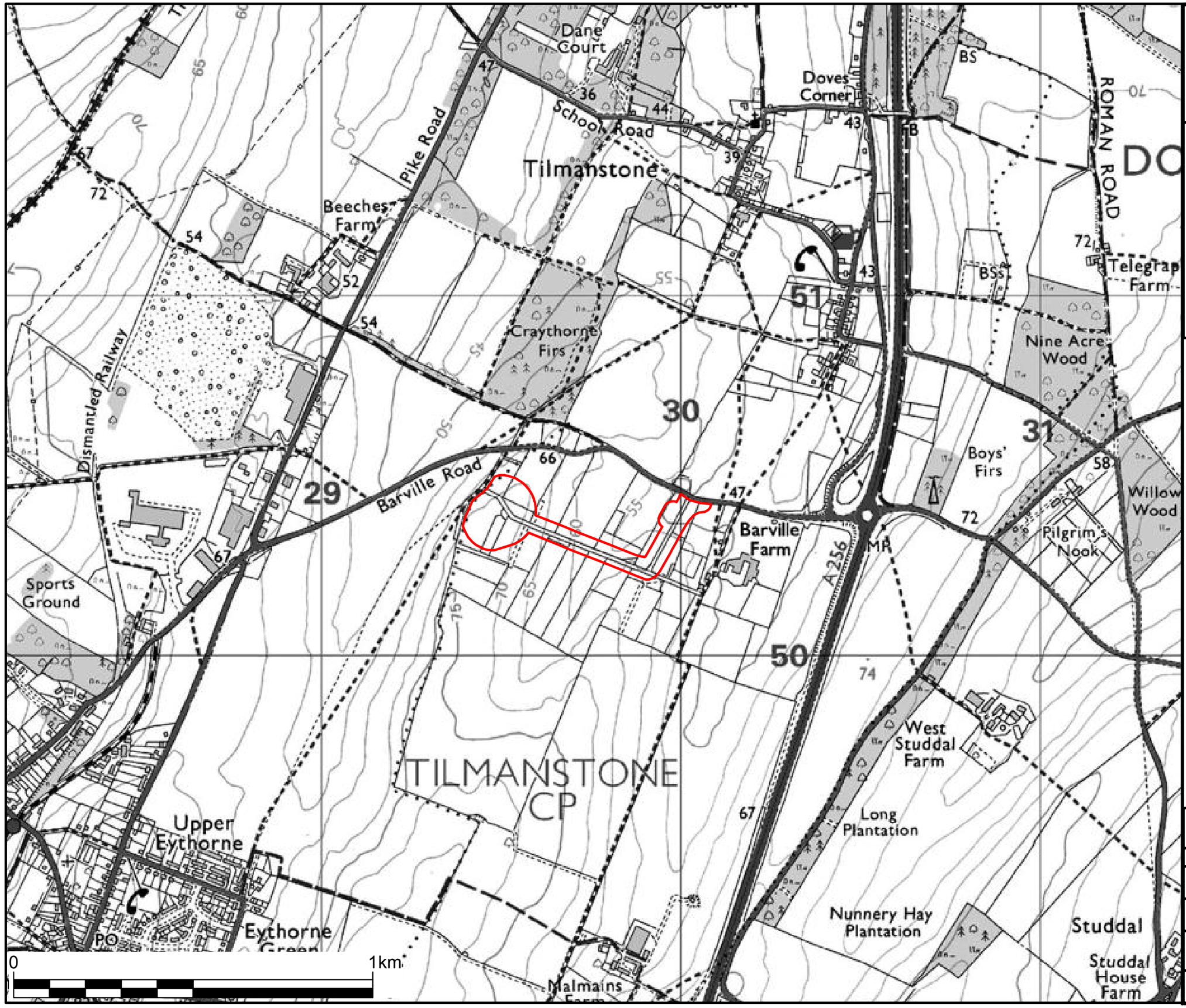
LAYOUT DWG | T-LAYOUT NO.

DRAWING NUMBER

3371_B101

SCALE - 1:50,000 @ A3

ENVIRONMENTAL STATEMENT & PLANNING APPLICATION 2013



BARVILLE FARM WIND TURBINE

SITE BOUNDARY

Site Boundary

N

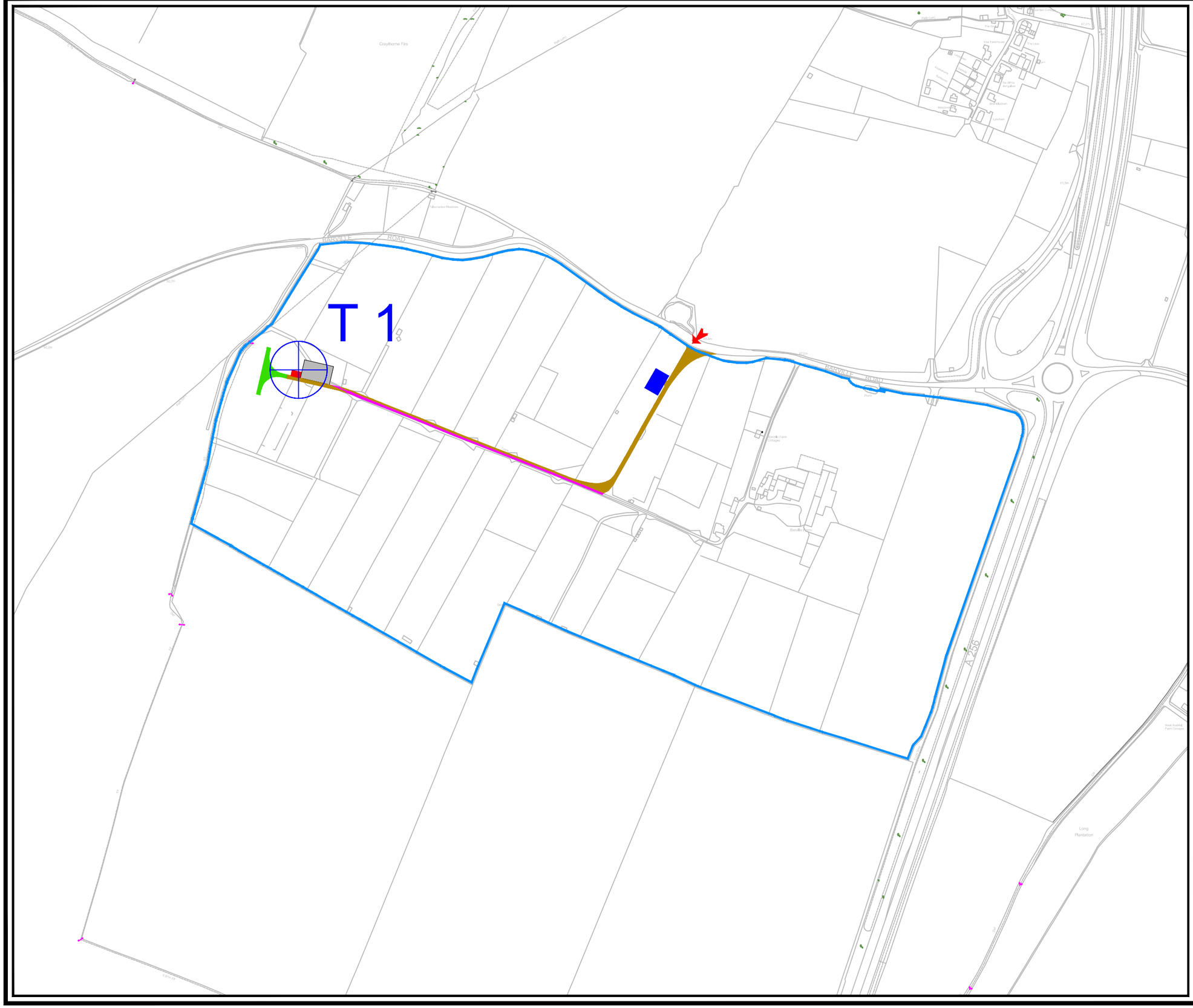
LAYOUT DWG	T-LAYOUT NO.

DRAWING NUMBER

3371_B102

SCALE - 1:10,000 @ A3

ENVIRONMENTAL STATEMENT & PLANNING APPLICATION 2013



BARVILLE FARM WIND TURBINE

INFRASTRUCTURE LAYOUT

KEY

- LAND OWNER BOUNDARY
- WIND TURBINE LOCATION
- SITE TRACKS (NEW EXCAVATED)
- SITE TRACKS (UPGRADE)
- CRANE HARD STANDING AREA (40 X 25m)
- TEMPORARY CONSTRUCTION COMPOUND (30 X 20m)
- TURBINE TRANSFORMER KIOSK WITH SURROUNDING PATH (13 X 7.5m)
- PERMANENT TURNING HEAD
- SITE ENTRANCE LOCATION

LAYOUT DWG	T-LAYOUT NO.
03002D0001-03	PENGbfm002

DRAWING NUMBER

03002D1001-03

SCALE - 1:5000 @ A3

ENVIRONMENTAL STATEMENT & PLANNING APPLICATION 2013