

STRATHY SOUTH WIND FARM

ENVIRONMENTAL STATEMENT

VOLUME 1 – NON TECHNICAL SUMMARY

JUNE 2007



NON-TECHNICAL SUMMARY

A INTRODUCTION

Scottish and Southern Energy has submitted a planning application for a 177 MW, 77 turbine wind farm in Strathy Forest, near Strathy Village in Sutherland (Figure 1). The application was accompanied by an Environmental Statement, which recorded the findings of an Environmental Impact Assessment.

The Environmental Statement is contained within four separate volumes.

Volume 1, this volume, is the Non Technical Summary (NTS) which summarises the Environmental Statement.

Volume 2 is the main volume or Written Statement.

Volume 3 is the Volume of Figures referred to within Volume 2.

Volume 4 is the Volume of Appendices referred to within Volume 2.

A planning statement was also prepared by Jones Lang Lasalle and accompanied the planning application.

The Environmental Statement has been prepared by SSE Generation Ltd in consultation with The Scottish Executive and in collaboration with the following specialist consultants:

- Landscape and Visual: Ash design + assessment.
- Ecology and Ornithology: Ecology UK Ltd
- Geology and Hydrology: Mouchel Parkman Ltd.
- Noise: Hayes McKenzie Ltd
- Cultural Heritage: CFA Archaeology
- Traffic: Halcrow Group Ltd
- Social and Economic: Ash design + assessment.
- Tourism and Recreation: Ash design and assessment

B BACKGROUND

Man made emissions of greenhouse gases, in particular carbon dioxide, are widely believed to be accelerating the process of climate change. Concern about the environmental, social and economic consequences of climate change has driven agreements to control emissions of greenhouse gases. As part of the European Union plan, the UK has a target to reduce greenhouse gas emissions by 12.5% by 2008-2012, against a 1990 baseline¹.

A key element of the greenhouse gas reduction programme is the further promotion of renewable energy, by means of a market mechanism referred to as the Renewables Obligation. The Renewables Obligation incentivises electricity suppliers such as Scottish and Southern Energy to develop additional renewable energy supplies, and the Strathy North proposal forms a part of this wider programme.

¹ In addition there is a voluntary target of 20% reduction by 2010.

Scottish and Southern Energy's renewables programme includes onshore wind, refurbishing existing hydro, new hydro and co-firing of biomass. In addition, new and emerging technologies including offshore wind, tidal, solar and small scale wind are being evaluated and supported.

The Strathy South site was selected, along with other sites, after a detailed site selection process that considered technical and environmental factors. The site is not subject to any nature conservation or other designations.

C THE DEVELOPMENT

The proposed site of the wind farm is situated in north Sutherland, approximately 15km from the south of the village of Strathy, on the North Atlantic coast of Scotland. Running southwards from Strathy is the shallow valley of the River Strathy and the development site occupies the southern block of an area of a U-shaped commercial forestry known as Strathy Forest, which is situated at the headwaters of the Strathy Valley. The majority of the site undulates throughout the forest area with the lower ground towards the central booby inner boundary of the U-shaped forest area. The ground rises in elevation from approximately 140m above ordnance datum (AOD) to 190m AOD.

The windfarm layout is shown in Figure 2 and would comprise the following main elements:

- 77 wind turbines, with a tip height up to 110m high, on reinforced concrete foundations, with an internal or external transformer
- site tracks allowing access to each turbine, extending from an access track based upon an existing forest track
- a control building and switching-station
- anemometer masts

Turbines would be connected to the control building and switching-station by underground cables, and then by underground cable to a proposed new 132/33 kV sub-station within the Strathy South forest complex. The grid connection components do not constitute part of this application for Section 36 consent, and National Grid will submit any applications or request necessary permissions. It is proposed that the whole windfarm would connect to the grid through two new 132 kV underground circuits at a point adjacent to the existing Beauly to Dounreay 275 kV tower line (a distance of around 12 km).

Construction would last approximately 22 months, involving civil, electrical and turbine contractors. A temporary construction compound would be established. Rock will be required for various purposes, in particular for track construction, and borrow pits will be formed on site to avoid the need to import the majority of stone.

Environmental factors have influenced the design and layout of the windfarm, in particular landscape and visual, ecological and avian considerations.

Appropriate best practice measures will be incorporated into the detailed design and construction methods.

The windfarm would operate for nominally 25 years, typically generating enough electricity for 45,000 homes annually. At the end of 25 years the site would be decommissioned.

D ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Impact Assessment is a process that considers how a proposed development will change existing environmental conditions, and what the consequences will be. It therefore informs both the project design and planning decision-making processes.

The process, which is reported in the Environmental Statement comprises the following stages:

- Scoping, to define the issues which are to form the basis of the Environmental Impact Assessment
- Consultation, to supplement the Scoping and agree any specific methodologies
- Baseline reviews, to establish relevant existing conditions on the basis of currently available information and / or new surveys
- Characterisation of the value or sensitivity of potentially affected elements of the environment (receptors)
- Prediction and characterisation of the changes experienced by the receptors (impacts)
- Evaluation of the consequences for the receptor of the impact (effect)

The assessment of effects for some environmental aspects is based upon established methodologies, techniques and criteria. These are applied as appropriate.

E PLANNING CONTEXT

General

Scottish Planning Policy (SPP) identifies key priorities for the planning system. National Planning and Policy Guidelines (NPPG's) provide statements of Scottish Executive policy on nationally important land use and planning issues. Planning Advisory Notes (PAN's) provide advice on good practice and other relevant information. The following table summarises the policies and guidance that are pertinent to the proposed wind farm development.

Summary of plans, policies and guidance

Aspect	SPP/NPPG	PAN	Structure Plan	Local Plan	Supplementary Guidance
Sustainable development	SPP1, SPP 6	PAN 45	(H)G2		
Renewable energy	SPP 6	PAN 45	(H)E1	(TF)1.41 (C)SO6 (NW)2.28 (SE)SP16	Highland Renewable Energy Strategy and Planning Guidelines (May 2006)
Wind energy	SPP 6	PAN 45	(H)E2	(TF)1.42 (SE)LP22	

Aspect	SPP/NPPG	PAN	Structure Plan	Local Plan	Supplementary Guidance
Landscape & Visual	SPP1, NPPG 14, NPPG 15	PAN 45, PAN 60	(H)G6 (H)BC4 (H)T6 (H)L4	(TF)1.66 (C)SO8 (C)PP2 (NW)2.32 (SE)ENV1,2,3 (SE)SP17	Scottish Forestry Strategy (2006)
Ecology	NNPG 14, NPPG 15	PAN 45, PAN 60	(H)G6 (H)N1	(TF)1.56 (C)SO8 (NW)2.31 (SE)ENV1,2,3,4 (SE)SP17	
Birds	NNPG 14, NPPG 15	PAN 45, PAN 60	(H)G6 (H)N1	(TF)1.56 (C)SO8 (NW)2.31 (SE)ENV1,2,3,4 (SE)SP17	
Noise		PAN 45, PAN 56			
Cultural Heritage	SPP1, NPPG 5, NPPG 18	PAN 42	(H)G6 (H)BC1 (H)BC4	(TF)1.61 (TF)1.62 (C)SO8 (C)SP19 (C)SP25 (C)SP26 (C)SP27 (SE)ENV1,2,3 (SE)SP17	
Soils & Water					
Roads & Traffic	SPP1, NPPG 17	PAN 57			
Tele-communications & Aviation	NPPG 19	PAN 45, PAN 62			
Social & Economic	SPP1, SPP 6		(H)G2 (H)G4		
Other Issues: Access & Recreation	NPPG6, NPPG 11			(TF)1.63 (TF)1.64 (C)PP2 (NW)2.14a (NW)2.33	

Key to Abbreviations

SPP – Scottish Planning Policy

NPPG – National Planning Policy Guideline

PAN – Planning Advisory Note

(H) – Highland Structure Plan

(TF) – Tongue and Farr Local Plan

(C) – Caithness Local Plan

(NW) – North West Sutherland Local Plan

(SE) – South and East Sutherland Local Plan

F LANDSCAPE AND VISUAL ASSESSMENT

Background

The proposed site of the wind farm is situated in north Sutherland, approximately 11 km to the south of the village of Strathy, on the North Atlantic coast of Scotland. The nearest town is Thurso, approximately 25km to the east and the nearest regional centre is the village of Bettyhill, approximately 10km to the west. Running southwards from Strathy is the shallow valley of the River Strathy. The development site occupies an area of commercial forestry, roughly “U”-shaped on plan, which wraps around the headwaters of the River Strathy, its tributary, the Yellowbog Burn and the Yellow Bog. The two limbs of the site occupy the two low ridges which enclose the Yellow Bog, with higher land bordering the south end of the site. This higher land to the south comprises the foothills of Ben Griam Mor, Beinn a Mhadaidh and Ben Griam Beg. To the north is another block of forestry, known as Strathy Forest. To the east and west of the site are extensive raised plateaux characterised by bog and small lochans. These plateaux are defined to the north by the rocky coastline, which is interspersed with small bays and crofting villages.

The key operational elements and characteristics of the proposed wind farm development which may give rise to landscape or visual impacts are as follows;

- turbine layout
- turbine dimensions; it is assumed that wind turbines would be 65m to hub height, with 90m diameter rotors giving an overall height to blade tip of 110m
- track layout and dimensions
- borrow pit locations and layout
- control building location and dimensions
- alterations to public roads
- single track by-Pass of Strathy Village
- widening/realignment to existing forestry access track
- new bridge across River Strathy at Dallangwell
- removal of forestry for peatland restoration
- at the end of its operational life the wind farm will be de-commissioned

The relatively limited extent of disturbance during erection, together with the short duration of the effects and related reinstatement of working areas, would ensure that the effects of the construction phase on the landscape and visual amenity of the locality are limited. The decommissioning phase of the development would be of similar duration to the construction phase, with the dismantling of all above ground structures and reinstatement of disturbed ground. There would therefore be a temporary impact from the activities on site to remove structures, but this would be of relatively short duration.

Design Strategy and Landscape Mitigation

The design strategy for the key elements of the proposed wind farm development incorporated the following objectives;

- to generate a turbine layout which creates a clear statement of the function of the development through a form which relates to the purpose of the wind farm, i.e. wind generation;

- to create a wind farm of a size and density that reflects the scale and nature of the landscape in which it is located;
- to relate the turbine layout to the particular landform of the site and surroundings; and
- to create a design that takes account of the relevant national, regional and local policy and guidance.

The aim of the design process has been to achieve a turbine layout which relates to the landform of the site and adjacent areas and achieves a balanced composition of the turbines with the surrounding landform and skyline as seen from key receptors.

It is proposed that the potentially adverse landscape, visual and nature conservation impacts associated with the introduction of turbines at Strathy South, will be mitigated by a comprehensive programme of landscape enhancement which aims to restore a majority of the site, formerly the plantation areas, as blanket peat bog/ heathland.

Significant Landscape Impacts

Scottish Natural Heritage (SNH) Landscape Character Areas within 30km of the periphery of the proposals site were reviewed; however, subsequent to examination of the Zone of Theoretical Visibility (ZTV) / wireframe diagrams and following field-based analysis, the inner 15km radius was selected in this instance as encompassing all likely *significant* landscape character impacts.

However, only four of the Landscape Character Zones within the 15Km detailed study area are assessed as having significant adverse residual impacts during the operational period.

Character Zone B, “Upland Plateau with Raised Bogs” equates to SNH Regional Landscape Character Area 1 (Sweeping Moorland) and 1a (Flat Peatland). The proposals are situated within this character zone, which is of medium scenic quality (locally low-medium in forestry areas) and will receive medium magnitude of change from construction/ decommissioning and high magnitude of change during operation. However, direct beneficial change arising from the from peat restoration proposals will assist in mitigating potential adverse landscape impacts, as the resulting base landscape will be more in keeping with the surroundings than the current forestry block. This will combine to result in direct moderate adverse landscape impacts from construction/ decommissioning and also during operation, from turbines, access tracks, borrow pits, switching station, and the village single-track by-pass. Wide intervisibility over much of this character zone will also lead to widespread indirect landscape change due to the turbines, also leading to moderate adverse residual impacts.

Character Zone C, “Broad flat-bottomed valley” Sub-Zone C1: River Strathy Valley equates to SNH Regional Landscape Character Area 1 (Sweeping Moorland). It is of generally medium scenic quality (but is low-medium/low in places) and will receive medium magnitude of change from construction/ decommissioning and medium magnitude of change during operation. This will combine to result in indirect moderate adverse landscape impacts from construction/ decommissioning and moderate-slight impacts during operation, from the widened/ realigned access track and new bridge at Dallangwell; visibility of turbines and some visibility of access tracks/borrow pits (except where screened by existing and retained forestry trees) and it will also be intervisible with the village by-pass.

Local Character Zone A: Rocky Coast with Bays is of high scenic quality. Change will be intermittent, due to topography and will consist of indirect change from turbines and indirect localised change from the village by-pass. It will consequently receive low magnitude of

change from construction/ decommissioning and low magnitude of change during operation. Design changes have assisted in mitigating potential adverse landscape impacts, and the resulting layout will be result in a better “fit” with the landscape. This will combine to result in slight adverse landscape impacts from construction/ decommissioning and moderate-slight impacts during operation.

Local Character Zone E: Landmark Peaks and Foothills is of medium-high scenic quality. Indirect change will result from elevated views of turbines and tracks in the foreground-middleground to the north. It will consequently receive medium magnitude of change from construction/ decommissioning and also during operation. Peat bog restoration in lieu of coniferous plantation will assist in mitigating adverse impacts. Moderate adverse landscape impacts will accrue from construction/ decommissioning and these will reduce to moderate-slight during operation, once the mitigation proposals take effect.

It is therefore considered that, whilst there will be localised significant landscape impacts within 15km of the proposals, ranging from moderate to moderate-slight, impacts on the overall landscape of the study area will not be significant and impacts upon the National Scenic Area and AGLV’s will be Negligible. There will be no impact upon the designed landscape at House of Tongue.

Wild land Search Area Impacts

SNH has published a policy document relating to the identification and definition of wild land which sets out criteria to assist in the identification of such areas of land. At the request of SNH, an assessment of indirect impacts upon these areas was carried out.

The SNH policy document includes an indicative map illustrating potential areas of search (Wild Land Search Areas, or WLSAs) and parts of three of these falls within the study area. Although the proposed development site itself does not fall within the WLSA’s, it is intervisible with parts of them. Using the ZTV to identify these areas of intervisibility, a site survey was carried out in each of these Local Study Zones (LSZs) and an assessment carried out as to whether these areas displayed wild land characteristics, and, if so, how sensitive they were to the type of development proposed and the likely magnitude and hence, impact, which the proposals would have on these characteristics.

It is concluded that each of these areas identified do have wild land characteristics in varying degrees and that their sensitivity to the proposals varies between high (in the case of the Ben Hope Massif) and medium-low (in the case of the Flow Country). This is on account of the compliance with the various perceptual criteria laid out in the SNH policy document. The magnitude of change, however, as determined by degree of exposure to existing detractors and distance from the proposals, is generally negligible or low, with the exception of the high ground around Ben Loyal, which would receive a medium magnitude of change, leading to a noticeable deterioration in wild land characteristics. Apart from this localised area however, impacts on the wild land resource of the study area as a whole have been assessed as varying from slight adverse to negligible and therefore, are not considered to be significant.

Visual Impacts

The ZTV of the study area, confirmed by field survey, indicates that, within 10km of the site periphery (where significant visual impacts are most likely to be found) the proposals are generally well-screened from potential receptors by topography. This is because a majority of settlement and roads are situated in the incised valleys of Strathnaver to the west and

Strath Halladale to the east and on land sloping to the sea in the north. Furthermore, views to the south are effectively screened by Ben Griam Mor and Ben Griam Beg and their foothills.

Consequently, significant residual visual impacts would be likely at approximately twenty-six receptors, about half the number initially impacted significantly at construction stage. These residual impacts are limited to the Bothy at Lochstrathy, which is immediately adjacent to the development, localised views from the A836, (notably at Bettyhill Viewpoint, near Kirtomy, Druimbasbie and to the west of Strathy), a small number of elevated forest tracks/footpaths to the south-east and approximately eleven houses in East and West Strathy, on the north-east side at the foot of the Strathy Valley, where significant impacts are nevertheless restricted to those arising from views of the tops of a limited number of turbines and blade tips and the access track/ village by-pass.

In addition, one small cluster of receptors with significant residual visual impacts can be found on the south-west side of Strathnaver; a total of approximately four houses. This is because at this location the eastern valley side is more gently sloping than elsewhere, allowing views of the tops of turbines and blades at relatively close quarters to be obtained by these receptors and consequently impacts here range from moderate-slight to moderate, depending on individual receptor sensitivity.

A number of mountain peaks occur within the study area; Ben Griam Beg, Ben Klibreck, Beinn Ratha and Ben Loyal. However, with the exception of Ben Griam Beg, which is relatively close to the proposals, residual impacts during the operational period will not be significant due to the distance, elevation of the viewpoint (rendering the turbines below the skyline) and the relatively small proportion of the changed view which forms a part of the overall panorama obtained.

In conclusion, although there will be some localised significant adverse impacts on receptors and receptor groups within 10 Km of the periphery of the site, (notably on Ben Griam Beg, in Strathy East and a small number of elevated forest tracks/footpaths to the south-east), the impact of the proposals on the visual amenity of the study area when taken as a whole, is not considered to be significant.

Cumulative Landscape and Visual Impacts

There are twenty-three windfarm sites within a 60Km radius of the proposals site which are either in the planning system; consented or operational, at the time of writing, including the nearby proposed Strathy South windfarm.

For the purposes of this assessment it is the intervisibility of these within the 30km radius from the Strathy South periphery that has been used to guide the location of likely cumulative landscape and visual viewpoint receptors. Outwith this area it is considered unlikely that any cumulative impacts associated with Strathy South would be significant.

The breakdown of this composite picture was carried out on a site-by-site basis in order to ascertain the likely location and nature of the cumulative impacts and whether these would be experienced in Simultaneous Combination (windfarms are observable at same time), in Simultaneous Succession (where observer has to turn to see windfarms from the same receptor location), or in the case of routeway receptors whether these would be Frequently Sequential (where features appear regularly with short time lapses in between) or Occasionally Sequential (where features appear irregularly with long time lapses in between). The assessment was aided by the use of wireframe projections, which were produced for key viewpoints.

Out of the sixteen viewpoints assessed, six are likely to experience significant cumulative adverse landscape impacts (assuming Strathy South was constructed in combination with all

the other proposals and existing developments reviewed). These viewpoints are: Ben Griam Beg; A836 near Borgie; above Forsinard (near the Mackay Stone); Ben Loyal; Lochstrathy Bothy; and A836 East of Melvich. These adverse impacts would arise from the simultaneous combination of (in respect of Ben Loyal and Ben Griam Beg) a number of windfarms seen at a distance, which, when added to the composition, would significantly change the nature of the wider landscape character experienced from these locations. In the case of the remainder, landscape character change would occur as a result of closer juxtaposition with a limited number of nearby proposed windfarms (notably in combination with Strathy North and / or Ackron windfarm proposals). Of these significant impacts, Ben Griam Beg is the only viewpoint receptor predicted to receive Substantial Adverse cumulative impacts. The remainder of the significant impacts range from Moderate to Moderate-Slight Adverse.

The only significant simultaneous successive landscape impacts in the study area would also be experienced at Ben Griam Beg, where, in addition to Strathy North and South being seen in combination in views to the north, Gordonbush windfarm may also be seen in succession, in views to the south.

Out of the sixteen viewpoints assessed, five are likely to experience significant cumulative adverse visual impacts (assuming Strathy South was constructed in combination with all the other proposals and existing developments reviewed). These viewpoints are: Ben Griam Beg; A836 near Borgie; above Forsinard (near the Mackay Stone); Ben Loyal; and Lochstrathy Bothy. These adverse impacts would arise from the simultaneous combination of (in respect of Ben Loyal and Ben Griam Beg) a number of windfarms seen at a distance, which, when added to the composition, would significantly change the nature of the wider landscape character experienced from these locations. In the case of the remainder, landscape character change would occur as a result of closer juxtaposition with a limited number of nearby proposed windfarms (notably in combination with Strathy North and / or Ackron windfarm proposals). Of these significant impacts, Ben Griam Beg and Lochstrathy Bothy are predicted to receive Substantial Adverse cumulative impacts. The remainder of the significant impacts range from Moderate to Moderate-Slight Adverse.

In terms of routeway receptors, of the five assessed, significant and adverse sequential landscape and visual cumulative effects would only be experienced from the A836 coast road elevated section near Druimbasbie, both frequently and occasionally, (assuming Strathy South was constructed in combination with all the other proposals and existing developments reviewed). This would result from the sequential views of Strathy South seen with Strathy North and a number of other windfarms at a distance, which together would significantly and adversely impact upon the visual amenity and landscape character experienced from this routeway.

G ECOLOGY

The ecology assessment considers a study area of nearly 35km² encompassing the Strathy South site boundary together with a 500m buffer zone, an area for an access route between Strathy South and Strathy North plantations and an access route to the A836 near Strathy village. The assessment is based on new surveys of habitats, vegetation communities, protected mammal species, deer and fish habitat together with a study of existing survey information and information relating to sites carrying nature conservation designations.

The main potential effects considered are:

- Direct habitat loss
- Secondary effects causing habitat change or damage such as changes to peatland hydrology, restoration of disturbed areas and siltation of watercourses

- Disturbance of fauna
- Forest clearance

The study area consists of semi-mature conifer plantation surrounded by high quality blanket bog, heathland and associated habitats together with lochs, lochans, streams and the River Strathy. Many of these semi-natural habitats are also found in significant areas of open space within the conifer plantation, comprising 10–15% of the plantation area. Caithness and Sutherlands Special Area of Conservation (SAC) and Special Protection Area (SPA), together with their component Sites of Special Scientific Interest (SSSI), lie adjacent to the forest boundary throughout the study area. Several protected mammal species are present. Otter signs are present on the banks of Loch nan Clach and the Allt nan Clach to the north-west of the study area, along the Allt Badain and River Strathy and close to the Allt Loch Meala; pine marten field signs were found on forest tracks and rides close to the River Strathy; water vole field signs were found to be mainly concentrated on the banks of Loch nan Clach and the Allt nan Clach, and also the River Strathy, Yellowbog Burn, the Allt Badain and the Allt Reidhe. It is likely that wildcat use the study area but there is little evidence of use by bats or badger. A low–moderate population of red deer and roe deer occupy the plantation. Atlantic salmon and sea trout use the River Strathy catchment.

The layout of the wind farm has taken account of habitat type and designated sites, and has avoided the most sensitive areas in order to minimise impacts. Within the plantation, infrastructure will be located as far as possible within the planted areas (the habitat of least ecological value) and the proposed track network will make much use of existing tracks. Detailed siting of infrastructure at the construction phase would further seek to minimise impacts on the higher quality habitats. No significant negative impacts are predicted from habitat loss or damage within the forest boundary. Direct and indirect impacts on the designated sites will result from widening the access track from Strathy village and construction of a new access track between Strathy North and Strathy South plantations. The habitats affected amount to a small percentage of the SAC and there will be significant compensation in the form of habitat creation and restoration (see forest clearance below).

There is the potential for secondary impacts to watercourses and water bodies during the construction and operational phases, including impacts on habitats within the designated sites. Best practice techniques of track and turbine base construction, borrow pit operation and compound area management will be adopted, together with early vegetation restoration on areas of exposed peat and soil to ensure that drainage patterns and water quality within the study area are maintained as prior to wind farm construction.

The proposals include the clearance of approximately 13km² of conifer plantation and habitat restoration to blanket bog, heathland and broadleaved woodland as part of the landscape and ecological mitigation strategy. This will have a long-term significant positive impact on habitats and vegetation. In order to avoid short-term negative impacts (principally sedimentation and other pollution to watercourses and water bodies and consequent impacts on fish stocks, including within the designated sites) a series of mitigation measures will be adopted that ensure there is no increase in pollution to these habitats. Such measures will include phased felling over a minimum of five years, drain and furrow blocking to decrease run-off rate, use of settlement ponds, berms and vegetated filtration areas and the retention of existing trees on steep slopes.

Actual and potential impacts on protected mammal species include destruction of or disturbance to foraging areas, shelters and resting sites; disruption of large-scale movements; temporary disturbance during forest removal; destruction of breeding sites; increased risk of road traffic injury; and indirect effects due to pollution to watercourses and water bodies. The majority of these impacts are considered to be not significant due to the small amount of

habitat lost, the temporary nature of the disturbance (mostly during the construction phase) and the ability of the species concerned to become habituated to disturbance or new features. Destruction of breeding sites may have a significant negative impact especially if in use at the time, but this will be avoided by further pre-construction surveys and relocation of infrastructure where necessary, together with the setting up of exclusion zones around known breeding sites and alongside all watercourses and water bodies to restrict access by construction personnel and machinery. Should impacts on a water vole breeding site on the Allt Reidhe be unavoidable, a suitable mitigation package will be agreed with SNH and appropriate licensing sought, to include displacement through habitat management (with trapping if necessary) and exclusion from the track crossing area for the duration of the works. The potential for road traffic injury will be reduced by strict control of traffic speed on site, keeping the number of watercourse crossing points to a minimum and installing otter- and salmonid fish-friendly bridges and culverts where crossing points are necessary.

H BIRDS

Prior to the commencement of field survey work in 2003, consultations were held with Scottish Natural Heritage (SNH) and the Royal Society for the Protection of Birds (RSPB) regarding the scope of the ornithological studies, the methodologies to be employed and a method statement agreed with all parties. The survey protocols were reviewed after the completion of six months field survey work and a meeting was held with RSPB and SNH early in 2004 at which the ornithological data collected to date was presented and reviewed. During the consultation process, recommendations for further ornithological survey work to be completed during 2004 were developed and a programme for ornithological field survey work was agreed.

The study area consisted of a core area, encompassing the development envelope comprising the turbines and related infrastructure, and a series of buffer areas; a 500m buffer for breeding birds, specifically waders; a 2km buffer for breeding raptors and a 2km buffer extended to 3km in 2004 for breeding divers.

After consultation with SNH and RSPB, the following survey methodologies were adopted; diurnal vantage point survey, upland breeding bird survey, specific breeding greenshank survey, breeding raptor survey, dawn/dusk diver vantage point survey, breeding diver survey, common bird census and specific crossbill survey.

Ornithological field studies were undertaken from April 2003 to August 2004 to monitor breeding birds and bird flight activity within the defined study areas along with further targeted raptor and wader studies in 2005 to examine the ornithological interest of a study area to the north of the wind farm site which may be considered for a potential access route between Strathy South and Strathy North plantations. A total of 1,030.5 hrs of systematic ornithological field survey work was completed.

A total of 72 species of bird were recorded either on, near or flying over the site. Of the species recorded, 16 are listed in Schedule 1 of the Wildlife and Countryside Act 1981 (red-throated diver, black-throated diver, whooper swan, white-tailed eagle, hen harrier, golden eagle, osprey, merlin, peregrine falcon, common greenshank, fieldfare, redwing, brambling, common crossbill, Lapland longspur and snow bunting). Bird species of conservation concern recorded on site include 10 Red-listed species and 30 Amber-listed species.

The possible impacts of the development were further assessed on nine designate species from the Caithness Lochs SPA and/or the Caithness and Sutherland Peatlands SPA that were recorded during the survey periods in proximity to the proposed development. All nine species were classed as having a very high sensitivity to development because of their

associations with the local SPAs. Collision risk assessments were completed for golden eagle and hen harrier.

It was concluded that for six of the SPA qualifying species (greylag goose, red-throated diver, black-throated diver, merlin, golden plover and dunlin), the impact magnitude of both construction and ongoing/operational activities was negligible and the overall effect of the development to these species was low.

For the remaining three SPA qualifying species, hen harrier, golden eagle and greenshank, the impact magnitude associated with construction was considered low, the impact magnitude of operational/ongoing activities was also low, and therefore the overall effect was considered to be medium.

I NOISE

An assessment of the likely noise impact of the proposed Strathy South wind farm and the cumulative effects of both the Strathy North and Strathy South Developments operating simultaneously has been carried out. Baseline noise levels were measured at the three residential properties which are the only noise sensitive receptors near to the development site. Worst case turbine noise levels at these locations were predicted based on likely warranted sound power level data for Vestas V80 2MW wind turbines.

The baseline noise monitoring was carried out on two separate occasions. The local noise environment is relatively quiet with contributory noise sources being the effects of wind, forestry activities and occasional fast jets, however it was determined that background noise levels at the receptors are principally dependant upon the flow rate in the River Strathy. The assessment has been carried out by comparing the predicted noise levels with noise limits described in ETSU-R-97, Assessment and Rating of Noise from Wind Farms, as referred to in PAN 45, Renewable Energy Technologies.

The Strathy South assessment shows predicted noise levels at all of the nearest properties to be significantly lower than the 35dB L_{A90} simplified noise criterion for wind speeds up to 10 m/s.

A cumulative noise assessment including both Strathy North and Strathy South Wind Farms acting simultaneously shows that the worst case predicted turbine noise levels at the nearest residential locations to the site meet the ETSU-R-97 night time limit under all conditions, with the exception of Braerathy Lodge, where there may be a very small exceedance of the night limit during very low river flow rates.

The cumulative noise assessment also shows that these worst case predicted turbine noise levels meet the lower daytime noise limit under all conditions, except at Dallangwell and Braerathy Lodge, where during very low river flow rates the predicted noise level at Dallangwell meets the upper daytime noise limit, but there may be an exceedance of the upper daytime noise limit at Braerathy for wind speeds less than 10 m/s under these conditions.

Noise levels from construction and decommissioning are likely to be well below the adopted 67 dB L_{Aeq} criterion at all residential locations. Although noise may be audible at times during the construction period, the construction noise impact is therefore not considered to be significant. Noise from vehicle movements on local roads would cause no significant noise impact at the nearest houses. The contractor would employ “best practicable means” to do everything possible to reduce noise levels with due regard to practicality and cost.

J CULTURAL HERITAGE

The cultural heritage assessment covers an area encompassing the main wind farm site and access track. In addition, sites with statutory protection in the wider landscape (including scheduled ancient monuments, listed buildings and conservation areas within 15 km of the wind farm and historic gardens and designed landscapes within 30 km) have been assessed.

The main effects considered are:

- Direct effects on cultural heritage sites within the proposed development study area boundary and,
- Indirect, visual effects on the setting of cultural heritage sites both within the proposed development study area boundary and in the wider landscape.

A desk-based study and a reconnaissance field survey were undertaken which identified 44 sites of cultural heritage interest within the proposed windfarm area and proposed access route corridor. Direct effects are predicted in relation to sixteen sites, one of which is predicted to be significant. Indirect effects are predicted in relation to two sites and uncertain effects are predicted on a further six sites within the proposed development areas, none of which are considered to be significant. The need to provide appropriate mitigation in consultation and co-operation with the Highland Council has been recognised and addressed in the Cultural Heritage chapter.

The assessment of indirect visual effects has identified that none of the external receptors would receive a significance indirect impact from the proposed development.

K SOIL AND WATER

The main potential effects considered in the soil and water assessment are:

- Contamination of surface waters and drinking water supplies;
- Erosion and sedimentation;
- Modification of surface runoff and flows;
- Peat instability

The soil and water assessment considered the proposed site area including the access track and areas downstream of the site which could potentially be affected.

Strathy South Forest is a commercial conifer plantation surrounded by internationally important peatlands. The proposed site lies in an area of modified blanket peat and peaty soils with peat depths varying between 0.1 and 5m. A peatslide risk assessment has been carried out and a total of 11 areas of infrastructure areas have been identified as having a potential peatslide risk. However the implementation of a risk management strategy and suitable mitigation results in a low risk of peatslide induced by the windfarm construction. Mitigation measures include site investigations and micrositing as necessary at the detailed design stage, construction good practice, the appointment of an onsite geotechnical engineer during construction, continuous monitoring and reappraisal of the risk assessment.

A small number lochans are located within the site and a number of energetic upland streams originate on the site. The majority of these streams feed into the Upper River Strathy to the east of the site and the Yellow Bog Burn to the west of the site, both of these then feed into the River Strathy. These watercourses are flashy with high peak flows and rapid response rates during storm events, and low flows during prolonged dry spells. The larger watercourses and lochans support fish populations, including salmonid species. There are a

number of private water supplies in the vicinity of the site. Of these the sources for Bowside Lodge and Cottage, Dallangwell and Lochstrathy Bothy have the potential to be affected by the proposed development, but the likelihood of any impact is minimal with mitigation in place. There are also fishing interests at Loch nan Clach in the north-west of the site.

The proposed windfarm layout has been designed such that areas of deep peat and peat-slide risk areas are avoided wherever possible. All windfarm infrastructure will be located at least 60m from all natural watercourses, with the exception of some existing tracks which are to be utilised and a single section of access track located downhill of a small unnamed lochan. No windfarm infrastructure will be located within 70m of fish bearing lochs. Proposed new stream crossings have been minimised to 12 in total. A further 14 existing stream crossings along the site access track and within the site will require upgrading. Best practice design and construction of all elements of the windfarm infrastructure are proposed. In particular, drainage systems would include silt traps, sediment ponds and buffer strips as necessary to minimise sedimentation and attenuate peak flows. Stream crossings would be designed such that flows and fish migration are not impeded, and a rigorous pollution prevention plan would be implemented to minimise the risk of contamination of surface waters. Associated forestry felling proposals have been devised to minimise the impact of felling on the water environment and to provide an opportunity to reinstate a substantial proportion of the Strathy South plantation to blanket bog / heathland habitat. Regular water quality monitoring throughout the construction phase would be proposed for the surface waters and private water supply sources. Visual inspections of deep peat deposits would also be carried out.

It is concluded that with the proposed mitigation in place the majority of impacts on the soil and water environment will be not significant.

The assessment has identified that should a peat-slide occur the impact will be significant. However a peat-slide risk assessment has been carried out and it has been concluded that the risk of a peat-slide occurring, as a consequence of the windfarm construction, is low.

L ROADS AND TRAFFIC

The roads and traffic assessment for construction traffic considers transport links between the Trunk Road network at the A9(T) at Scrabster Harbour and the site access. The movement of turbine equipment has been considered from the potential port of entry at Scrabster. It also considers the movement of turbine equipment along the same route

The main potential effects considered are:

- Traffic congestion due to an increase in HGV traffic
- Traffic congestion due to an increase in non-HGV traffic
- Abnormal road wear and tear

The road network in the northern Highland Council area is of a relatively low density, and is generally characterised by two principal roads, the A9(T) from Scrabster to Inverness and the A836 Thurso to Tongue along natural communication corridors (along the east and north coast), and a network of local secondary and minor roads through the main straths and glens. The proposed site is therefore in relatively close proximity to the main road network, but currently relies on a less well developed road for access.

National and local transport policies were reviewed to allow a desktop hierarchy of roads to be prepared, and site visits were undertaken to undertake a visual review of conditions, and to identify sensitive receptors. A preferred route for construction traffic was derived, using the A9(T) and A836 from Scrabster Harbour through Reay/Isauld, and Melvich to the unclassified access road at Baligill east of Strathy village, and south west to the site access.

Turbine equipment would be delivered along the same route. Some lighter loads may arrive at Wick

The quantities of plant, equipment and materials required for the construction effort were considered, and a delivery profile has been established, identifying the average number of construction vehicle movements (average 12 vehicle round trips per working day over twenty two months). These movements were then compared in relation to historic traffic flow data to allow the level of impact of increased traffic volumes to be assessed. This showed that, for the locations at which historic traffic data was available, construction traffic would represent an increase of between 6% and 25%.of the HGV flow. For all vehicles (construction and staff) the increased flows represented 4% and 19% of the existing traffic flows on the A836.

The receptors assessed are mostly predicted to experience Insignificant or Low Significance Impacts, the exception being the single track road from Melvich west to the site access road, which is predicted to experience a Moderate Impact. Mitigation measures such as on-site concrete batching as opposed to hauling ready-mix to site, and local traffic management measures are proposed which seek to minimise the impact of traffic during construction

M AIR AND CLIMATE

The potential effects of the development on air and climate are for the following areas:

- Dust particulate production during construction
- Overall reduction of Carbon and Carbon Dioxide emissions by displacement of fossil fuel fired generation.
- Potential impact of the reduction of carbon sequestration and subsequent release of carbon dioxide due to land disturbance.

Whilst there is potential to generate dust particulate matter during the windfarm development process, no dust-sensitive receptors have been identified within the construction site boundary. In addition best practice measures have been identified to significantly minimise dust particulate generation and dispersion.

The development is estimated to generate 465,419 MWh which is predicted to offset over 363,027 tonnes of Carbon Dioxide annually from coal fired generation or 200,130 tonnes of Carbon Dioxide from grid mix generation annually.

The impact of CO₂ released as a result of peat disturbance is not significant as the windfarm site should pay for any carbon losses as a result of development on site in 29 months, where electricity is displaced from the overall grid mix.

Therefore no significant adverse effects on air and climate are predicted.

N TELECOMMUNICATIONS AND AVIATION

Civil and military aviation agencies, television and radio transmission operators, and mobile telephone network agencies and operators have been consulted. No objections have been raised with respect to telecommunications and aviation interests.

O RECREATION AND TOURISM

The Environmental Statement has considered the potential impacts relating to recreational and tourism interests within a 30km radius of the proposed site boundary. It has identified a

wide range of resources relating to accommodation, tourist routes, access to the countryside, game shooting, fishing, hill walking, surfing and bird-watching.

The assessment identifies that during the construction stage of the development there would be a significant impact on the following receptors: views from Bettyhill Viewpoint, Hill Track 332, Lochstrathy Bothy and from the hills to the south, particularly Ben Griam Beg, that would be used by climbers and walkers. These impacts would remain during the operational phase, as it would not be possible to mitigate against them.

Accordingly, there would be **locally significant** impacts to these recreation and tourism resources. However, it is concluded that impacts upon the wider recreational resource of the study area **would not be significant**.

P SOCIAL AND ECONOMIC

General

Caithness and Sutherland is one of the least densely populated areas of the UK and Europe. This area has a very diverse landscape and wildlife which is based on the complex underlying geology. A combination of the low population and the diverse landforms places emphasis on the natural heritage of the area.

Traditionally, the land-based economy centred on crofting, farming and countryside sporting activity. Through the latter part of the twentieth century, the nuclear industry at Dounreay dominated the economy. Sea fisheries, aquaculture, construction and the food and drink industry also contribute to the local economy and more recently, call/contact centres have been attracted to the area.

Tourism is considered to be a developing industry and one which is actively encouraged by Highland Council. The aim of the Highland Structure Plan demonstrates clearly the fragile balance that the Council strives to maintain between the economy, the natural heritage and the well-being of the community.

Local Economic Benefit During Construction

The main opportunity for local economic benefit associated with the windfarm would occur during the construction phase of the development. Suitably qualified local firms may be invited to bid for a significant portion of the construction work. Construction materials would normally be sourced locally and local transport and plant hire companies used.

The capital cost of the Strathy South windfarm development is estimated to be approximately £213 million and would be invested in the purchase of plant, equipment and the construction of buildings and other structures. This is split as follows:

- 70% for the purchase and erection of turbine structures
- 10% for civil engineering works (roads, foundations etc)
- 4% for onsite electrical works
- 16% for grid connection and associated site development works.

A significant amount of this work would be open to local tender particularly with regard to civil engineering.

There is currently one turbine assembly plant in Scotland, at Machrihanish in Kintyre, operated by Vestas with other suppliers importing turbines. However, several sites in Scotland are suited to the manufacture of towers.

It is estimated that the on-site construction workforce would total approximately 96 individuals, split between approximately 16 foresters, 52 civil engineering contractors, 11 turbine contractors, 14 electrical contractors, and 3 project management staff. Manning levels would, therefore, vary according to the phase of construction, with the highest levels needed at the point where civil works are nearing completion and the first turbines are being installed. At this point, site manning may reach approximately 64 individuals. On average, the manning level would be approximately 32 individuals.

Non-local construction personnel would be accommodated off the site, typically in local hotels and guest houses which may have a short term positive impact, locally, but is unlikely to be of wider significance.

There would be temporary disturbance to a relatively small proportion of the grouse shooting interests within the site boundary. The construction activities would be timed to minimise this disturbance and on completion of construction activities there would be no material impact on shooting activities on the estate.

Overall, the levels of expenditure in the local economy during construction and the impacts on employment generation are considered to have a **temporary positive impact**.

Local Economic Benefit During the Operation of the Development.

Windfarms can make an important contribution to rural diversification including the redistribution to local authorities of business rate monies collected by the Scottish Executive. Landowners within the development would derive rental income from the turbines and this new income would contribute to the economic viability of each land unit. This in turn could allow investment in other aspects of land management with potential to contribute to local economic benefit. In this way, the windfarm development may offer some positive benefit to the local economy. There would be the requirement for two full time equivalent operational jobs. However, overall, the residual positive impacts on economic activities in the vicinity of the site during the operation of the scheme are considered to be negligible.

Community Benefit

As a part of the wind farm development, Scottish and Southern Energy plc will offer the immediate surrounding communities a package of benefits based on established figures for other relevant developments of this type. It is outwith the remit of this document to present details of such a scheme but discussions are anticipated to commence shortly with local Community Council representatives, the Highland Council and other local enterprise groups. Scottish and Southern Energy has a strong track record of working closely and positively with local communities within the areas where its operational wind farms are sited.

Summary

The windfarm development is unlikely to have either a long-term significant positive or negative impact on the social and economic aspects of the study area, although there will be a temporary positive impact during the construction of the development.

Q SUMMARY

In summary, the Environmental Statement concludes that the development would result in environmental effects, as may be expected of any form of development. However, significant

environmental effects are likely only with respect to landscape and visual impacts within relative close proximity to the development site and also from a cumulative effect assuming all other proposals within the planning system are consented and built.

Such effects would need to be taken into account in assessing the planning merits of the development, in particular how it relates to Government policy in relation to promotion of renewable energy.

A copy of the application, with a plan showing the land to which it relates, together with a copy of the Environmental Statement discussing the Company's proposals in more detail and presenting an analysis of the environmental implications, are available for inspection, free of charge, during normal office hours at:

Area Planning and Building Standards Office The Highland Council The Meadows Dornoch	Thurso Library Davidson's Lane Thurso	Planning and Development Service Office The Highland Council Glenurquhart Road Inverness	Bettyhill Service Point NTC The Highland Council Bettyhill
--	---	--	---

The Environmental Statement can also be viewed at the Scottish Executive Library at Saughton House, Broomhouse Drive, Edinburgh, EH11 3XD.

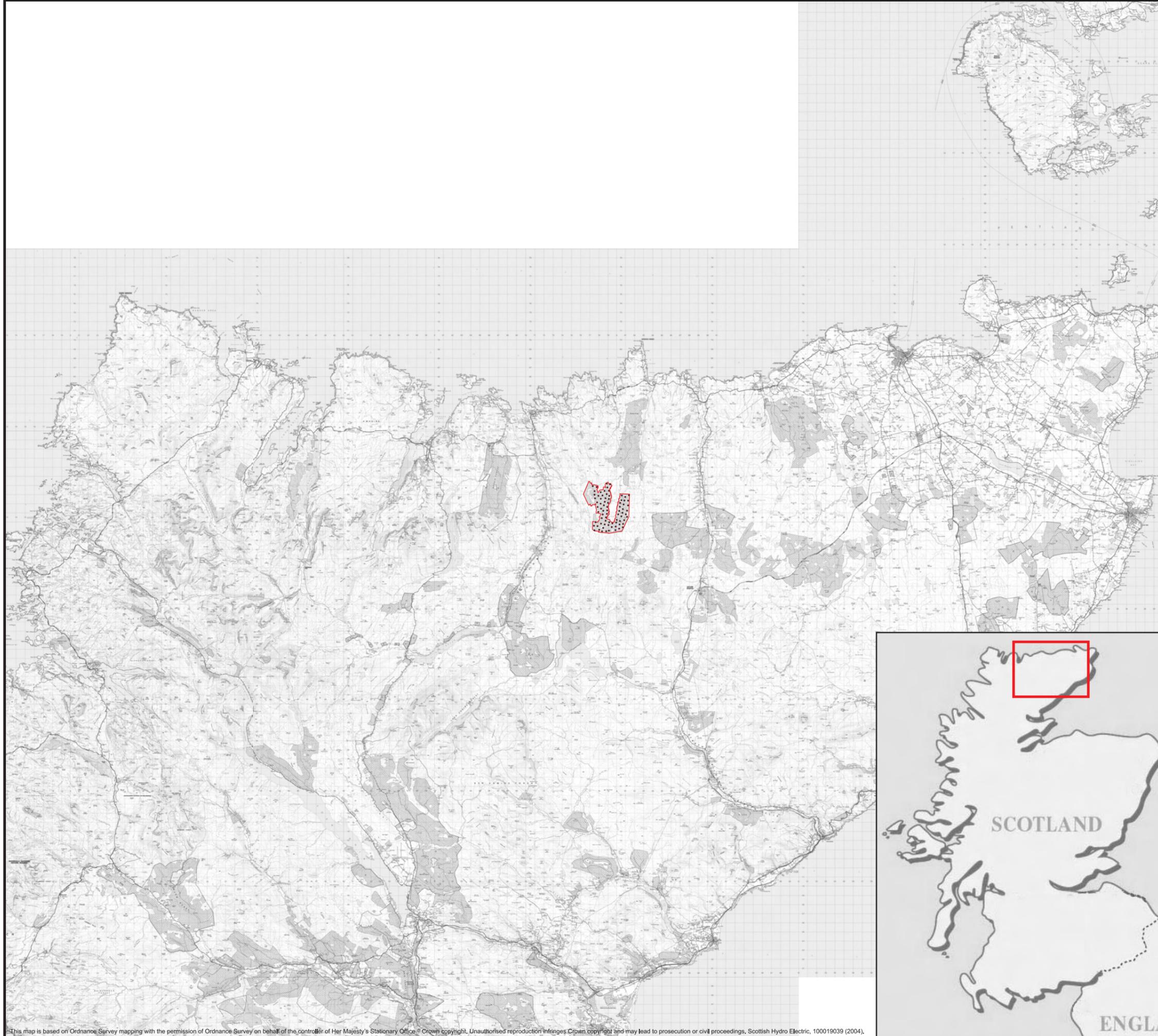
Copies of the Environmental Statement may be obtained from SSE Generation Ltd., Project Development, 200 Dunkeld Road, Perth, PH1 3AQ (tel: 01738 456174, e-mail simon.heyas@scottish-southern.co.uk) at a charge of £135-00 hard copy and £35-00 on CD. Copies of a short non-technical summary are available free of charge and are also available to download from the Scottish and Southern Energy plc website (www.scottish-southern.co.uk).

Figure 1

Key



Proposed Strathy South Wind Farm Site Location

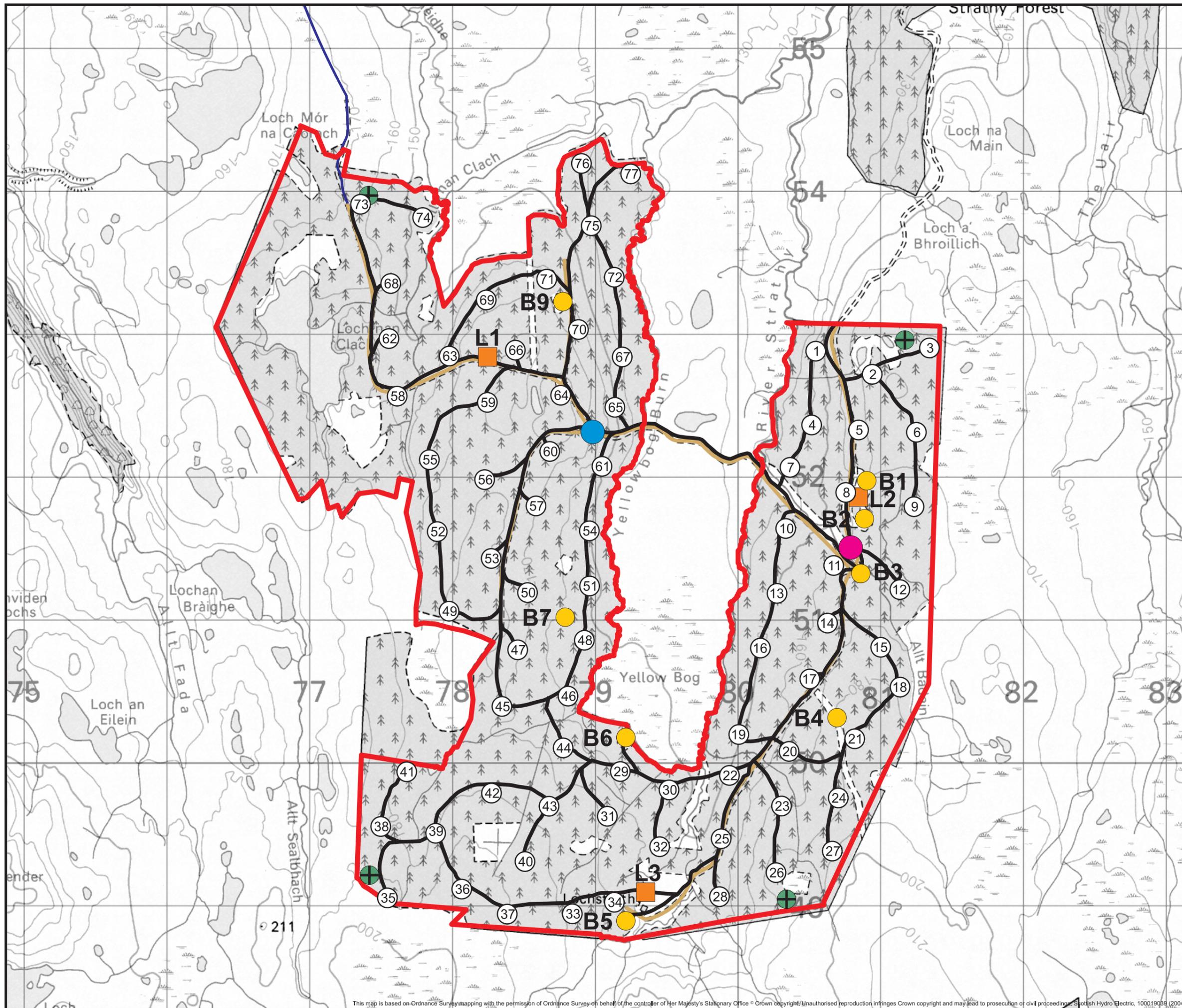


Client	Scottish and Southern Energy	
Project	STRATHY SOUTH WIND FARM	
Title	Site Location	
Drawing No.	104025(S)/1	Revisions
Scale	NTS	Date Nov 2006



This map is based on Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office. © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Scottish Hydro Electric, 100019039 (2004).

Figure 2



Key

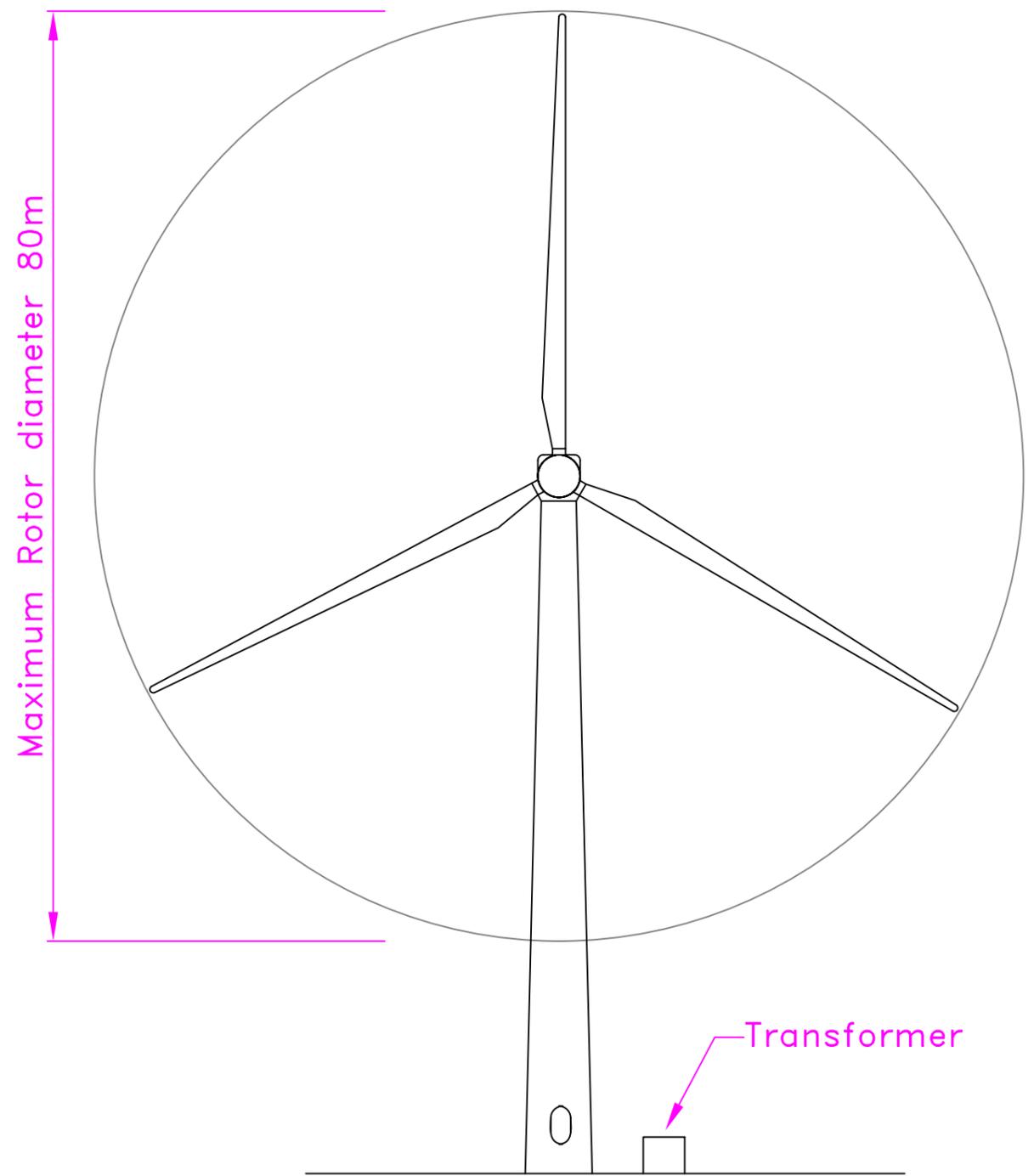
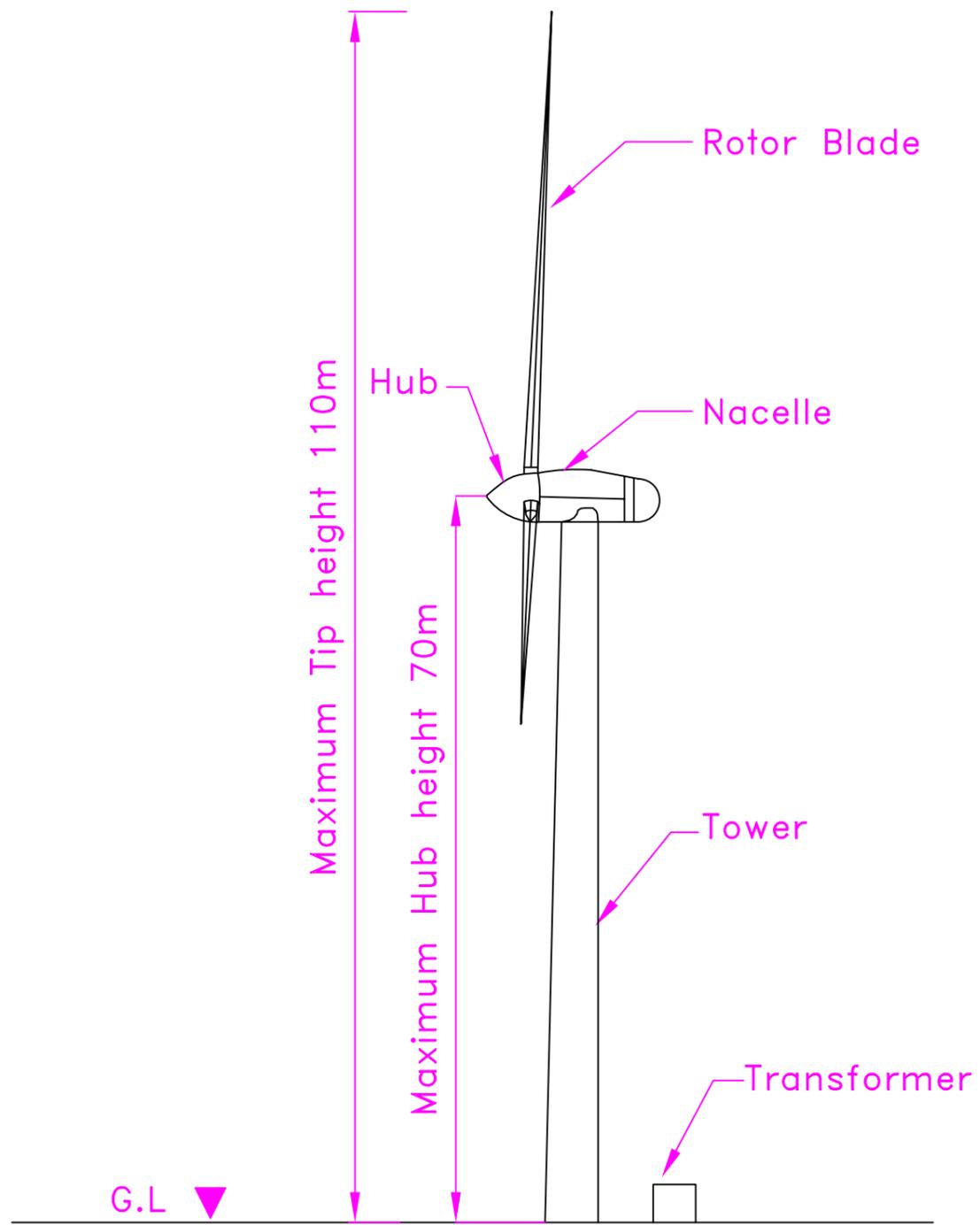
- Proposed Site Boundary
- Proposed New Tracks
- Existing Forest Track to be Retained / Upgraded
- New Floating Road along route of ATV track
- 3 Turbines
- Borrow Pits
- Switching Station
- Substation
- Laydown Area
- + Anemometers



Client	Scottish and Southern Energy	
Project	STRATHY SOUTH WIND FARM	
Title	Site Layout	
Drawing No.	104025(S)/2	Revisions
Scale	N.T.S	Date Dec 2004



This map is based on Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Scottish Hydro Electric, 100019039 (2004).



WARNING: DRAWING MAY BE REDUCED. DO NOT SCALE.



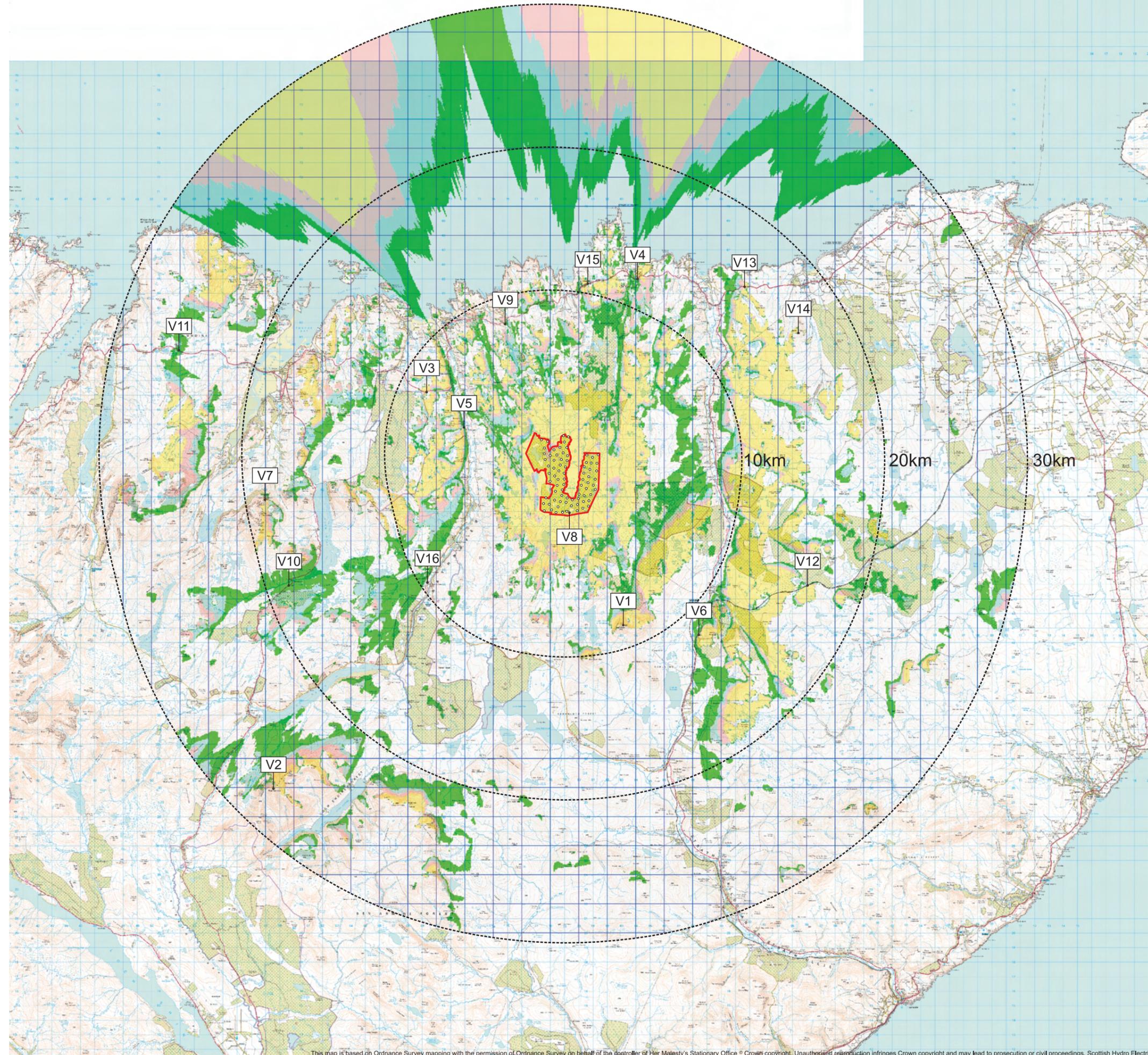
Project Number	Drawing Status
	FOR ILLUSTRATIVE PURPOSES ONLY

Title		Location		SSE Drawing Number		Sht No	Rev No
FIGURE 3 TYPICAL TURBINE ELEVATION		STRATHY SOUTH WINDFARM		172/1000/0009		00	00

REV	Date	Drwn	Chkd	Appd	REV	Date	Drwn	Chkd	Appd	REV	Date	Drwn	Chkd	Appd

DATE	04/12/06
SCALE	N.T.S
DRAWN	L.SAMUEL
CHECKED	S.McALEESE
APPROVED	S.McALEESE

Figure 4



Key

- Proposed Strathy South Site Boundary and Turbine Locations
- Radii from Strathy South

Visibility of Turbines

- 1 to 19
- 20 to 38
- 39 to 57
- 58 to 77

Viewpoint Location

- V1 NC 831 411 Ben Griam Beg
- V2 NC 585 299 Ben Klibreck
- V3 NC 693 572 A836 near Borgie
- V4 NC 841 650 A836 at Strathy
- V5 NC 719 547 B871 Achargary
- V6 NC 884 405 A897 above Forsinard (nr Mackay Stone)
- V7 NC 579 498 Sgor Chaonasaid (Ben Loyal)
- V8 NC 793 489 Bothy at Loch Strathy
- V9 NC 748 619 Bettyhill Viewpoint, nr Kirkotomy
- V10 NC 596 439 A836 south of Loch Loyal
- V11 NC 518 601 A838 at A'Mhoine
- V12 NC 961 439 Far North Railway
- V13 NC 917 644 East of Melvich
- V14 NC 954 613 Beinn Ratha
- V15 NC 806 646 Lednagullin
- V16 NC 693 441 Syre Lodge



Client		
Project	STRATHY SOUTH WIND FARM	
Title	30km ZTV to 110m Blade tip including Viewpoint Locations	
Drawing No.	104025(S)/4	Revisions
Scale	NTS	Date Nov 2006



This map is based on Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings, Scottish Hydro Electric, 100019039 (2004).



PHOTOMONTAGE VIEW

Figure 5

Viewpoint Information

Grid Reference 283038E 941234N
 Ground Height 554m
 Viewer Height 2m
 Included Angle 90°
 Viewing Distance 300mm
 Images digitally altered to the equivalent of
 35mm camera with 50mm lens.

Layout Information

Based on Layout LSTRATHYSOUTH006
 Blade Length 40m
 Hub Height 70m
 Nearest Visible Turbine 8.4km
 Number of Tips Visible 77*
 Number of Tips and Hubs Visible 77*
 Turbine Visibility 325° to 352°

*The information provided ignores the screening effects of
 forestry and other intervening objects.



Map Scale 1:200,000
 This map is based on Ordnance Survey mapping with the permission of Ordnance Survey on
 behalf of the controller of Her Majesty's Stationery Office © Crown copyright.
 Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil
 proceedings. Scottish Hydro Electric, 100019039 (2004).

Client		
Project	STRATHY SOUTH WIND FARM	
Title	VIEWPOINT 1 VIEW FROM BEN GRIAM BEG	
Drawing No.	104025(S)16	Revisions
Scale	N.T.S.	Date Dec. 2006





PHOTOMONTAGE VIEW

Figure 6

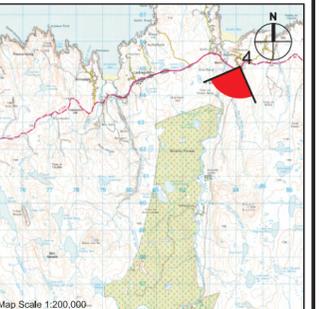
Viewpoint Information

Grid Reference 284100E 965000N
 Ground Height 33m
 Viewer Height 2m
 Included Angle 90°
 Viewing Distance 300mm
 Images digitally altered to the equivalent of 35mm camera with 50mm lens.

Layout Information

Based on Layout LSTRATHYNORTH006A
 Blade Length 40m
 Hub Height 70m
 Nearest Visible Turbine 11.9km
 Number of Tips Visible 0°
 Number of Tips and Hubs Visible 19°
 Turbine Visibility 195° to 210°

*The information provided ignores the screening effects of forestry and other intervening objects.



Map Scale 1:200,000
 This map is based on Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office. © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Scottish Hydro Electric, 100019039 (2004).

Client			
Project	STRATHY SOUTH WIND FARM		
Title	VIEWPOINT 4 VIEW FROM A836 AT STRATHY		
Drawing No.	104025(S)/6	Revisions	
Scale	N.T.S.	Date	Mar 2006

