Proposed Fairburn Extension Wind Farm

Scoping Request

February 2012
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1. Introduction

1.1. Background

SSE Renewables (SSER) is seeking to develop a wind farm located within the Fairburn Estate, Strathconon, Ross-shire, in The Highland Council area. The site, which will be known as Fairburn Extension, is shown in Figure 1 (see Appendix A), and lies to the south of the existing operational Fairburn Wind Farm approximately 10km north west of Beauly and 20km west north west of Inverness. Marybank is the closest settlement to the site, lying some 3.5km to the north east. Contin lies approximately 4.5km to the north, while Muir of Ord is around 6.5km to the east.

The existing Fairburn Wind Farm, which has been operational since 2009, consists of 20 turbines with a 40MW capacity and is owned and operated by SSE.

SSER is considering a project in the region of 50 MW. The final choice of operating capacity, turbine size and layout will be based on environmental and technical considerations identified and evaluated during the scoping and environmental impact assessment stage of the development along with public consultation. The wind farm will generate renewable, carbon-free electricity for supply to the local electrical distribution grid and eliminate significant quantities of carbon dioxide emissions per year through the displacement of conventional fossil fuel electricity generation.

With an indicative capacity of 50 MW, the proposed wind farm may require planning permission to be granted by the Scottish Government under Section 36 (2) (a) of the Electricity Act 1989 (the Act). In support of the planning application, an Environmental Impact Assessment (EIA) will be required and the results of this assessment will be submitted alongside the application in the form of an Environmental Statement (ES).

SSER has commissioned SKM Enviros to lead the independent EIA and this report constitutes the start of the EIA process by requesting a formal scoping opinion for the proposed Fairburn Extension Wind Farm. As required by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 (“the EIA Regulations”), this scoping report provides the necessary background information for the Scottish Ministers to prepare a Scoping Opinion.

1.2. The Applicant – SSE Renewables

SSE Renewables (SSER) is the renewable energy development division of Scottish and Southern Energy (SSE). It is the second largest electricity generator across the UK and Ireland with a total capacity of over 11,300MW, comprising 4,470MW of gas and oil-fired capacity; 4,370MW coal-fired capacity and 2,538MW of renewable (including pumped storage, hydro, wind and biomass) capacity.

SSE is the leading generator of renewable energy in the UK. It now has 3,750MW of renewable energy capacity (onshore wind, offshore wind, hydro and dedicated biomass) in operation, under construction or with consent in the UK and the Republic of Ireland. It currently owns 910MW of onshore wind capacity in the UK and Ireland, and has 710MW in construction, including 350MW at our Clyde wind farm in southern Scotland, which is expected to cost £500million when it is due to be commissioned in 2012. By 2020, SSE aims to have over 3GW of onshore wind in operation.
1.3. Purpose of the Scoping Request

This document forms a written request from SSER to the Scottish Government Energy Consents and Development Unit (ECDU), under Regulation 7 of the Regulations, for their opinion as to the information to be provided in the Environmental Statement (a ‘Scoping Opinion’).

This document also informs the Scottish Ministers, under Regulation 8 of the Regulations, that SSER intends to make an application for Section 36 consent in relation to the proposed wind farm, and that it also intends to submit an ES with the application.

The request of a Scoping Opinion is a key element of the EIA process and allows refinement of the proposed EIA methodology. It also seeks to identify the most important environmental issues relevant to the proposals, and those that may not require further consideration. The role of an EIA is to identify, and where possible, mitigate the environmental impacts of the proposed project in order to gain the maximum benefits of renewable generation, while minimising the environmental costs.

The Scottish Ministers and consultees are also invited to identify any sources of information which they consider are of relevance and value to the EIA of the proposed Fairburn Extension Wind Farm being led by SKM Enviros.

1.4. Scoping Request Structure

Chapter 2 of this Scoping Request identifies the rationale behind the proposed development and the legal framework applicable to the content of this document.

Chapter 3 provides general information on the proposal as required by Regulations 7, (2) (a), (b) and (c), including a brief description of the nature and purpose of the proposed development and of its possible effects on the environment. It identifies what are considered to be the likely main environmental effects. Figures 1 and 2 (see Appendix A) show the location of the proposed wind farm and the site boundary.

Chapter 4 provides an outline of the proposed contents of the ES and the methodologies and outline scopes of work that the team of environmental consultants led by SKM Enviros intend to follow when assessing the likely environmental effects.

Chapter 5 provides information on how consultees can provide comment on this request for a scoping opinion.

Appendix A contains Figures 1 to 6. Figures 3a and 3b provides details of the Fairburn Wind Farm Habitat Management Plan area, part of which coincides with the proposed Fairburn Extension Wind Farm site. Figure 4 shows the Phase 1 Habitats map covering part of the Fairburn Extension site. Figure 5 shows the zone of theoretical visibility based on an unrestricted site capacity basis, viewpoint locations and landscape designations. Figure 6 shows interim peat depth probing results.

Appendix B provides an indicative list of consultees that will be contacted as part of the scoping request process.

Appendix C is a confidential Annex that contains protected species and bat survey reports and maps. It also provides details of ornithology vantage point survey locations and flight lines.
2. Rationale, Policy and Legislative Context

2.1. Requirement for increased electricity supply

Predictions of primary energy demand in Scotland forecast between an 8-10% decrease\(^1\), however, as a result of anticipated increases in electricity demand for transport and aging coal fired and nuclear plant that is due to close over the next 10 years, additional electricity supply will be required to meet Scottish and UK energy needs.

2.2. Why renewable energy?

Climate change is the greatest threat facing the world, not just through its impacts on ambient temperature, but also on the natural resources essential to life, including fresh water and food production. Climate change increases the risks from disease, flooding and sea level rise. Climate change is largely caused by emissions of greenhouse gases, of which carbon dioxide (CO\(_2\)) is the main one. A significant proportion of these emissions come from the combustion of fossil fuels for electricity generation: in 2006, over 30% of all Scottish emissions came from large scale production of electricity.

Scotland has responded to the challenges of climate change by passing the Climate Change Act (Scotland) 2009\(^2\) which set challenging targets to reduce its emissions by at least 80% from 1990 levels by 2050; with an interim emissions reduction target of at least 34% by 2020, increasing to 42% if the EU increases its 2020 target to 30% in the event of a global deal on climate change. The Climate Change Delivery Plan\(^3\) sets out the high level measures to meet the interim statutory targets for 2020 and the work to be done over the next decade to prepare for the more radical changes needed by 2030 if the emissions reduction target for 2050 is to be achieved.

Reducing emissions by at least 80% from 1990 levels, over the next 40 years will require a radical change in the way in which society uses its energy and land. Four transformational outcomes are identified by the Delivery Plan, of which the first and last are relevant to this proposed project.

- **Transformational outcome 1:** A largely de-carbonised electricity generation sector by 2030, primarily using renewable sources for electricity generation with other electricity generation from fossil fuelled plants utilising carbon capture and storage

- **Transformational outcome 4:** A comprehensive approach to ensure that carbon (including the cost of carbon) is fully factored into strategic and local decisions about rural land use through: appropriate protection for Scotland’s carbon rich soils; minimising emissions from agricultural and other land use businesses; encouraging the sequestration of carbon, for example, through woodland planting; and the use of natural resources to generate renewable energy.

In order to work towards Transformational Outcome 1, Scotland has set targets to generate 31% of Scottish gross electricity consumption from renewable sources by 2011, rising to 100% by 2020\(^4\).

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\(^2\) Climate Change (Scotland) Act 2009, Scottish Government, 2009
\(^3\) Climate Change Delivery Plan: Meeting Scotland’s Statutory Climate Change Targets, Scottish Government, 2009
2.3. Why a wind farm?

Wind power is currently one of the most developed, cost-effective and scaleable renewable electricity technologies, with the UK having the largest wind resource in Europe. For these reasons wind power is expected to be the key technology for the decarbonisation of the power sector.

2.4. Site Selection

The process by which SSE Renewables has identified the Fairburn Extension Wind Farm site is part of an exercise to select potential wind farm developments that are economically, environmentally and technically viable and acceptable. The proposed development is one proposal within a wider programme of development by SSE aimed at significantly increasing the proportion of energy generated from renewable sources.

The key technical and locational factors that influence the feasibility of a wind farm include:

- Adequate wind speed;
- Sufficient Area;
- Appropriate Ground Conditions;
- Access to electricity grid;
- Feasibility of access for abnormal loads;
- Suitable terrain topography; and
- Agreements with site landowners.

The Key potential environmental constraints include:

- Natural and built heritage designations;
- Proximity to centres of population;
- Ecological considerations;
- Airfield safeguarding;
- MOD training areas;
- Cumulative effects with other developments;
- Visibility in sensitive areas; and
- Potential interference with telecommunications.

This site selection process is broadly based on British Wind Energy Association Guidelines (BWEAG, 1994).

2.5. The Electricity Act

Under the Act, consent is required from the Scottish Ministers for the construction and operation of a wind power generating station with a capacity of 50 MW or above, therefore consent for this development, at this stage, will be required under Section 36 of the Act.

2.6. The Environmental Impact Assessment Regulations

applying to construct, extend or operate a power station or install or keep installed overhead electricity lines under Sections 36 and 37 of the Act. Guidance on the Regulations is contained in a Guidance Note. Under the Regulations, Section 36 development that is considered likely to have significant effects on the environment must be subject to EIA and an ES submitted with the Section 36 application.

Schedule 1 of the Regulations lists those developments for which EIA is mandatory, whilst Schedule 2 describes projects for which the need for EIA is judged by the Scottish Ministers on a case-by-case basis through a screening process. Schedule 3 describes the criteria to be used by the Scottish Ministers to determine if a development is ‘EIA development’.

Where EIA is required, environmental information must be provided by the developer in an ES. Schedule 4 of the Regulations specifies the information that should be provided in such a Statement.

The Regulations prohibit the Scottish Ministers from granting consent for an EIA development without taking into account an ES, together with any associated environmental information.

The proposed Fairburn Extension Wind Farm is a Schedule 2 development: “(1) a generating station, the construction of which (or the operation of which) will require a section 36 consent but which is not Schedule 1 development.” It therefore is likely to have significant environmental effects because of factors such as its nature, size or location, it is ‘EIA development’, and a formal EIA is required.

Given the size and location of the proposed development, it is our view that the proposed Wind Farm development should be subject to EIA.

2.7. Obtaining a Scoping Opinion (Regulation 7)

As previously stated in Section 1.3, this report is a formal request under Regulation 7 of the EIA Regulations for a Scoping Opinion from the Scottish Ministers. In accordance with the regulations and the guidance note, this report will include (as a minimum) the following information;

a) A plan sufficient to identify the site which is the subject of the proposed development;

b) A brief description of the nature and purpose of the proposed development and its possible effects on the environment; and

c) Such further information or representations as the person making the request may wish to provide or make.


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3. The Proposed Development

3.1. Description of Development Site

The proposed Fairburn Extension Wind Farm development site is located in an area of remote upland, approximately 3 km south west of Fairburn House within the Fairburn Estate and to the south of the River Orrin which flows from the Orrin Reservoir to the east of the site. Another watercourse, Allt Goibhre runs further to the south. The land cover across the site area mainly comprises open heather moorland and wet heath, with some blanket bog. The land rises to a height of 372m AOD and falls to 240m AOD on the western half of the site and on the eastern half rises to a height to 340m AOD, falling to 280m AOD to the south.

The site is crossed by a number of tributaries connected with Loch a’Mhadaidh directly south and the Orrin reservoir to the west.

The proposed development site occupies a total area of 589 hectares (1455 acres) and is currently used for deer stalking. The site is also part of a wider area which will be subject to the recently approved Habitat Management Plan (HMP) for the operational Fairburn Wind Farm. The area designated for the HMP, shown on Figures 3a and 3b in Appendix A, is to be used to safeguard and enhance natural heritage interests within the locality. It is intended therefore that the development of the proposed Fairburn Extension Wind Farm will augment and intensify the objectives of the Fairburn Wind Farm HMP. In the event the development is perceived to conflict with the HMP objectives, measures will be put in place to address this within the locality. The management prescriptions of the HMP aim to reduce the attractiveness of foraging and nesting habitat at the operational Fairburn Wind Farm site and increase the attractiveness of similar habitat outwith the wind farm site in order to minimise the impacts upon Hen Harrier, Red Kite and Merlin. Early consideration is being given to options on development design to avoid where possible and mitigate for any impacts on the Fairburn Wind Farm CMP area.

3.2. Description of Proposed Development

The main elements of the wind farm will comprise:

a) Three-bladed horizontal axis wind turbines of up to 140m tip-height with a capacity of 2-3.6MW;
b) At each turbine, associated low to medium voltage transformers and related switchgear;
c) Turbine foundations;
d) Hard standing areas for erection cranes at each turbine location;
e) On-site power collection system including turbine transformers, substation(s), control building(s), substation compound(s) and underground cables;
f) Grid connection;
g) Permanent, free-standing meteorological mast(s);
h) A site access route from the main road network (the A832);
i) Series of on-site tracks;
j) Borrow pit(s), on-site locations will be utilised where feasible; and
k) Temporary construction compound(s) and laydown areas.
1) A permanent bridge crossing the River Orrin.

Optimisation of the site will be considered early in the design and consultation process in order to achieve a balance between maximising energy yield and avoiding or reducing any negative impacts.

An indicative site layout is not presented in this report as design development is ongoing. At this stage of the development consideration is being given to a range of suitable wind turbine generators which scale the site in the region of 25-35 turbines and site capacity of circa 75MW. The site boundary (as shown in Figure 2) represents the maximum envelope within which the wind turbine generators, access tracks and other infrastructure may be located.

### 3.2.1. Control Building and Grid Substation

The cables would run to an on-site control building where the electricity would be metered. Typically the control building would extend to an area of 600m² with an appropriate vernacular design. Ideally the control building and sub-station equipment would be housed in a single compound that extends to 1 hectare that allows for suitable car parking and turning areas as shown on Figure 2, Appendix A. Depending on the size of the proposed wind farm the substation will be connected to an appropriately sized distribution system. Currently, we are proposing that all cabling to be underground and running parallel to the existing Fairburn wind farm cable route to the point of connection at Orrin Power Station.

### 3.2.2. Anemometry Masts

Planning consent for a 70m high temporary anemometer mast was granted by The Highland Council on 5th January 2012 (ref (11/04170/FUL). Installation of this mast is scheduled for March 2012. An anemometer mast is required to provide key wind climatology statistics including; mean wind speed, wind direction, exceedance values, air density, wind shear and turbulence intensity. These masts typically reflect turbine hub height. Permanent masts will likely be of a freestanding lattice design.

### 3.2.3. Access

The current preferred option for access involves taking the route previously used for construction of the Fairburn Wind Farm, and this was via a minor road that leads directly off the A832 heading west alongside the River Conon to Loch Achonachie (see Appendix A, Figure 1). The access would then utilise the existing tracks associated with the operational Fairburn Wind Farm before descending into Glen Orrin via a small valley to the south east of Sron nan Saobhaidh and crossing the River Orrin to ascend the lower slopes of Carn Doire Mhurchaidh. The corridor within which the proposed access would be located is shown in Figure 2.

### 3.2.4. Site Tracks

Each turbine requires access via a site track for construction and operational purposes. The construction of the track will depend upon local ground conditions: where the ground is firm, or where gradients are steep, the track will be of cut and fill type construction; where the ground is soft, i.e. in areas of deep peat, the track will have a floating construction. The site tracks would have a crest width of 7m wide with local widening at corners and passing places. Stone will be required for various purposes, primarily track construction, and this may be sourced from a nearby quarry or on-site borrow pit(s).
3.2.5. Wind Farm Lifecycle

It is expected that construction of a wind farm of this size would be carried out over a period of 12 to 24 months. It is currently proposed that the wind farm would have an operational life of 25 years. At the end of this period, typically, all equipment above ground level will be dismantled and removed from the site, cables and turbines foundations will be cut off below ground level and covered with topsoil. Access tracks will be left for use by the landowners, or rehabilitated to an agreed state if appropriate.

Alternatively, the Developer may apply for planning permission to extend the operational life of the wind farm and this application would be submitted in accordance with the relevant planning and environmental impact legislation and regulations at the time.

3.3. Construction Environmental Management Plan (CEMP)

In the event that the planning application for the development is approved, it would be proposed that various construction method statements will be issued to the planning authority for approval in consultation with SNH, prior to the commencement of construction work. Mitigation and environmental protection measures identified within the Environmental Statement would be implemented via a detailed CEMP. A framework CEMP will be prepared as part of the ES and will include information on specific environmental requirements and construction good practice that will likely be included in the construction phase CEMP. This will include construction phase requirements for pollution prevention (including environmental incident and emergency response), site waste management, drainage, watercourse crossing design, water quality monitoring, excavated materials and reinstatement, and ecological (habitats and species) protection measures.
4. Potential Environmental Effects

Previous experience at other wind farm development sites, combined with knowledge of the proposed site, allows the EIA topic leads and technical specialists to identify the possible effects of the proposed wind farm development. This section outlines the baseline environmental conditions, the relevant guidance/legislation, the proposed scope and study area of the assessment, the predicted effects, cumulative effects and any known mitigation that can be recommended at this stage.

The topics considered are as follows:

- Climate Change;
- Landscape and Visual Amenity;
- Ecology;
- Ecology – Ornithology;
- Hydrology, Hydrogeology;
- Noise;
- Air Quality;
- Archaeology and Cultural Heritage;
- Traffic;
- Socio-Economic;
- Aviation, and Communications;
- Shadow Flicker; and
- Waste

4.1. Climate Change

The rationale for developing onshore wind farms is the beneficial impact on reducing net greenhouse gas emissions by displacing electricity produced from conventional fossil fuel sources. There will be carbon emissions resulting from the manufacture of wind turbines and construction materials, construction activities and transport, these account for 98% of the total life cycle CO₂ emissions. Where a proposed development is located on carbon rich soils such as peat, there are potential impacts resulting from removal of peat during construction and indirect changes to hydrology that can result in losses of stored carbon. The footprint of the wind farm may have an impact on future carbon uptake by vegetation. EIA work under this heading will look at the benefits accruing from displacement of conventionally generated electricity, compared to the predicted direct and indirect losses of carbon from construction, operation and decommissioning, and will provide an estimate of the carbon payback time for the proposed development.

4.1.1. Baseline Description

The baseline for the environmental parameter is two-fold: firstly, the current percentage of renewable electricity generation in Scotland will be used as the baseline to determine the significance of the proposed development to reaching Scotland’s renewable generation targets (31% of Scottish gross electricity consumption from renewable sources by 2011, rising to 100% by 2020). Secondly, an estimate of the current quantity of stored carbon in the soil at this site will be used to help determine the significance of the estimated carbon losses from the site.
4.1.2. Guidance/Legislation

The Scottish Government has funded the development of a excel tool and associated report (Calculating carbon savings from wind farms on Scottish peat lands – a new approach’ (Nayak et al, 2008)) for calculating the potential carbon losses and savings from wind farms on Scottish peat lands and this calculator is currently seen as best practice for gauging the payback time for carbon emissions from wind farm projects. The current version of the carbon calculator is V2.1.0 (30th September 2011).

Applications for wind farms submitted under Section 36 of the Electricity Act (50 MW capacity or above) that are proposed for sites where there is likely to be peat areas greater than 0.5m in depth, and where loss or disturbance to peat could occur, are expected to use the carbon calculator in the new format provided by the refined tool in preparing the application. There is also an expectation that the tool will be used purposefully early in the development process to influence design, to reduce the carbon payback period and maximise carbon benefits. As part of their statutory consideration of wind farm applications, SEPA will validate final carbon assessments supporting Section 36 applications; and the findings will be a material consideration by Ministers in determining such applications.

4.1.3. Proposed Scope of Assessment

The positive effect of the proposed wind farm on climate change in terms of the avoided emissions of greenhouse gases will be described. Carbon losses and gains during the construction and lifetime of the wind farm, and the long term impact on stored carbon in peat soils, will be evaluated in order to ensure that the benefits of the wind farm in terms of mitigating climate change through contribution of renewable energy to the grid are not outweighed by the losses of carbon stored in soils and released by construction activities. This assessment will use the carbon calculator described above, ensuring that where feasible, robust and thorough survey methodologies are employed to produce the input data. Where proposed methods of site survey discussed within the carbon calculator and associated methodology are not achievable, SEPA will be consulted with to identify acceptable alternative methodologies or conservative estimates of parameters will be used within the model.

4.1.4. Potential Impacts

There will be carbon losses and gains during the construction and lifetime of the wind farm, and the long term impact on stored carbon in peat soils. There will also be contribution of renewable energy to the grid. It is anticipated that the overall impact of the proposed development on climate change will be positive and one of the key focuses of the climate change chapter will be to identify ways to enhance the positive impact, and minimise any carbon losses through construction methodologies and site restoration.

4.1.5. Cumulative Impacts

Cumulative effects will be assessed with identified planned or committed developments; the study area for this assessment would be agreed with Scottish Ministers and consultees as required.

4.1.6. Mitigation

Measures to minimise carbon emissions will be addressed throughout the ES and specific mitigation measures will outlined within the Framework CEMP. For example, this will include identification of measures for minimising peat excavation, transport and haulage of materials to and from the site, minimisation of waste etc. Site habitat restoration can also play a large part in minimising losses and
maximising future carbon gains by ensuring that ground conditions in and around degraded bogs are made favourable for re-colonisation by *Sphagnum* mosses.

Renewable energy projects can have beneficial impacts upon local and national air quality by contributing to savings in greenhouse gas emissions and other pollutants by replacing the energy produced from conventional energy sources.

The climate chapter will assess the impact from the proposed construction, operation and decommissioning of the wind turbines by predicting their contribution to a reduction in greenhouse gas emissions with calculations of site specific emission savings. It will also predict the level of CO₂ emissions released as part of the project and the resulting carbon payback period.

### 4.2. Landscape and Visual Amenity

The Landscape and Visual Impact Assessment (LVIA) section of the EIA will address the direct and indirect impacts of the proposed turbines and ancillary infrastructure on the landscape resource (capacity, character, quality and value), and the impacts on the visual resource and amenity, with the aim of identifying where significant impacts will occur. Wherever possible, identified effects will be quantified, but the nature of landscape and visual assessment requires interpretation by professional judgement.

The landscape and visual assessment will also provide input to the iterative design process, thereby reducing and minimising effects and, where possible, preventing significant effects from arising. The relationship between the proposed Fairburn Extension Wind Farm turbine layout and the operational Fairburn Wind Farm, which lies less than 1km away at its closest point, will be of particular importance in the design and assessment process.

#### 4.2.1. Baseline Description

**Landuse and Landscape Character**

The site lies on the generally north-facing slope of the River Orrin valley, and the landform of the site is defined by the valley, rising from around 230m AOD in the north to 370m AOD in the south. The site lies within *sloping terrace moorland* landscape character type and shows the typical topography of this type, with stepped landform, riven by deeply-incised stream gullies, rising from the River Orrin valley floor. This is a large-scale landscape, although its full extent is hard to comprehend from the valley floor due to the layers of terraces which prevent long open views up the slopes and beyond. In this area, *sloping terrace moorland* forms a transitional landscape between the enclosed, domestic farming landscapes of the Beauly and Cromarty firths to the east and the massive, elevated *rugged massif* and *rocky moorland* that lie to the north, south and west.

The landscape of the site is itself is a generally undeveloped upland moorland landscape, with tree cover limited to small areas of deciduous woodland along the River Orrin valley bottom. Several well-surfaced tracks give access to the areas around the site, to the north and the south. The operational Fairburn Wind Farm is visible throughout the site, with the Fairburn turbines seen at between 1km and 3.5km away from where they provide an influence on landscape character.

The landscape character assessment will consider the effects of the proposed wind farm on the landscape character types that cover the study area, as described in SNH Landscape Character documentation. The site lies within the Ross and Cromarty Review (number 119), which extends across the northern part of the...
study area (as defined in 4.2.3 below), while the southern part of the study area is covered by the Inverness District Review (number 114).

**Landscape Designations and Natural Heritage**

The site itself is not covered by any known landscape-related planning designations. There are, however, a number of designated areas within the study area, as described below, and these will be considered in the assessment.

**National Scenic Areas**: there are three National Scenic Areas (NSAs) within or partially within the study area. These are Glen Affric, Glen Strathfarrar, and Wester Ross. The closest of these, Glen Strathfarrar, is around 8.5km away to the south-west, and preliminary Zone of Theoretical Visibility (ZTV) mapping indicates that this NSA will gain very limited visibility of the proposed wind farm due to its enclosed valley form. The effect of the wind farm on this area will however be fully explored in the assessment.

The Glen Affric NSA is around 25km to the south-west of the proposed wind farm, and is shown on the preliminary ZTV to have negligible visibility, while Wester Ross NSA lies 33km to the north-west and is shown to have no visibility. The potential effects on these two latter NSAs will be monitored throughout the assessment process.

**Gardens and Designed Landscapes**: there are 15 Gardens and Designed Landscapes (GDLs) in the study area: Aldourie, Ardross Castle, Beaufort, Brahan, Castle Leod, Culloden House, Dochfour, Fairburn, The Fairy Glen, Leys Castle, Novar, Rosehaugh, Scatwell, Spa Gardens (Strathpeffer) and Tomnahurich Cemetery. Of these, Fairburn is the closest to the site, at a minimum of around 1km away, while Brahan is around 5.5km away, both to the north-east. Preliminary ZTVs show some visibility from these GDLs, and the effects on them, particularly in conjunction with the operational Fairburn Wind Farm, will be carefully considered in the design and assessment process. The other GDLs are less likely to be influenced by the proposed wind farm due to various combinations of no visibility, limited visibility, and distance. They will, however, be considered in the assessment.

**Proposed Special Landscape Areas**: there are five proposed Special Landscape Areas (SLAs) in the study area: Ben Wyvis; Cromarty Sutors, Rosemarkie and Fort George; Fannichs, Beinn Dearg and Glen Calvie; Loch Ness and Duntelchaig; and Strathconon, Monar and Mullardoch. The closest of these are Ben Wyvis and Strathconan, Monar and Mullardoch, which are around 10km to the north and 10km to the south-west respectively. While visibility from both of these areas is shown to be limited, particularly from the Strathconan, Monar and Mullardoch SLA, they will be fully considered in the assessment. The other three proposed SLAs are further away and have very limited visibility, but will be considered in the assessment.

**Search Areas for Wild Land**: Search Areas for Wild Land (SAWLs) are defined in SNH’s “Wildness in Scotland’s Countryside Policy Statement No. 02/03”. The concept of SAWL is not a designation, but is a consideration in the assessment. There are four areas of SAWL partially within the study area, with the closest being around 6km to the west of the site. Development need not lie within SAWL to have an effect upon it, and it is therefore possible that the proposed wind farm may result in some effect on these areas. This will be fully explored in the assessment. It is also possible that the landscape of the site itself may have wild land characteristics despite not lying with a SAWL, and this will also be explored in the assessment. We understand that revised wildness mapping will shortly become available from SNH. Should this be the case in the course of this assessment, the revised mapping will be considered in the assessment.
Visual Receptors and Visual Amenity

A number of potential visual receptors are found within the 35km study area. The landscape and visual assessment will include consideration of the receptors listed below. It should be noted that these are not intended to be comprehensive lists of receptors, but are rather examples of locations that may be included. Detailed lists of receptors will be identified through the scoping consultation and assessment process.

Settlements: settlements in the study area include Alness, Beauly, Contin, Conon Bridge, Dingwall, Fortrose, Invergordon, Inverness, Marybank, Muir of Ord, Strathpeffer, Munlochy and Rosemarkie. The settlements that lie in closest proximity to the site, or potentially with a higher level of visibility (such as Contin, Marybank, Muir of Ord, and Strathpeffer) will be considered in greater detail in the assessment. A number of settlements are shown on the preliminary ZTV to gain no visibility or very limited visibility of the proposed wind farm (for example, Beauly, Dingwall, and much of Inverness);

Roads: including the A9, A831, A832, A833, A834, A836, and A862;

Railway lines: the Inverness – Wick and Inverness – Kyle of Lochalsh lines;

National Cycle Routes: NCR 1;

Popular munros and other hill walks: including Ben Wyvis, Carn Chuinneag, and Beinn Dearg; and,

Visitor destinations: including the Fyrish monument, View Rock and Knockfarrel.

4.2.2. Guidance

The following guidance will be utilised in the methodology and production of the assessment:

- Horner + Maclennan and Envision (March 2006). Visual Representation of Wind farms: Good Practice Guidance. Scottish Natural Heritage (SNH) (F03 AA 308/2). Inverness;
- Planning and Development Service, The Highland Council (January 2010). Visualisation Standards for Wind Energy Developments;
- Scottish Natural Heritage (updated 2008) Advice Note - Assessing the Impacts on Wild Land;
- Scottish Natural Heritage (13.04.05) Cumulative Effect of Wind farms Version 2 revised; and,

4.2.3. Proposed Scope of Assessment

General

The landscape and visual assessment will assess the potential effects of the wind farm (including access tracks, substation, operations and maintenance building, and other associated infrastructure as well as the turbines) on landscape character and visual receptors around the study area.
The Study Area to the LVIA

The study area for the assessment of landscape and visual effects of the wind farm will cover a radius of 35 km from the nearest turbine. This is considered to be the maximum radius within which a significant effect could occur given the height of the turbines that are being considered (up to 140m to blade tip), and follows guidance given in ‘Visual Representation of Wind Farms Good Practice Guidance’ (Horner+Maclennan and Envision, 2006). The study area is shown in Appendix A Figure 5.

The cumulative assessment will cover a larger study area, to be agreed with The Highland Council (THC) and SNH. This is likely to extend to a 60km radius from the nearest turbine in Fairburn Extension Wind Farm in the first instance, and may then be reduced.

Reporting of the Assessment

The assessment will be carried out by the appointed consultants - Optimised Environments (OPEN) using a methodology that has been specifically devised by OPEN for the landscape and visual assessment of wind farms. This methodology accords with ‘Guidelines for the Assessment of Landscape and Visual Impacts: Second Edition’. The following summary provides information on the methodology.

The potential effects of the wind farm on the landscape and visual resource are grouped into four categories: physical effects, effects on landscape character, effects on views, and cumulative effects.

**Physical effects** are restricted to the area within the site boundary, and are the direct effects on the fabric of the site, such as the removal or addition of trees and alteration to ground cover. This category of effects is made up of landscape elements.

**Effects on landscape character** arise either through the introduction of new elements that physically alter the pattern of elements that makes up landscape character, or through visibility of the wind farm, which may alter the way in which the pattern of elements is perceived. This category of effects is made up of landscape character receptors, which are landscape character types or designated areas;

The assessment of **effects on views** is an assessment of how the introduction of the wind farm will affect views throughout the study area. The assessment of effects on views is carried out in two parts:

- An assessment of the effects that the wind farm will have on views from principal visual receptors, which are the notable settlements, routes, features and attractions found throughout the study area; and
- An assessment of the effects that the wind farm will have on a series of viewpoints that have been selected to represent visibility from around the study area.

**Cumulative effects** arise where the study areas for two or more wind farms overlap so that both of the wind farms are experienced at proximity where they may have an incremental effect. The cumulative assessment will include existing wind farms, those that are consented and those for which planning applications have been submitted. Sites that are at scoping stage may also be included if they are of specific relevance.

An assessment of **effects on SAWL** may also be required, as described previously. Should this be the case it will be carried out according to SNH guidance (“Advice Note - Assessing the Impacts on Wild Land” (updated 2008)).
Significance of Effects

The broad objective in assessing the effects of the wind farm is to determine, as required by the EIA Regulations, what the predicted significant effects of the wind farm on the landscape and visual resource will be. In this assessment effects will be assessed to be either significant or not significant.

The significance of effects is assessed through a combination of two considerations; (i) the sensitivity of the landscape element, landscape character receptor, view or visual receptor, and (ii) the magnitude of change that will result from the introduction of the wind farm.

Sensitivity is an expression of the ability of a landscape element, landscape character receptor, view or visual receptor to accommodate the wind farm, and is dependent on baseline characteristics including value, quality, importance, the nature of the viewer, and existing character.

Magnitude of change is an expression of the scale of the change on landscape elements, landscape character receptors and visual receptors that will result from the development of the wind farm.

The factors that are considered in sensitivity and magnitude of change are assimilated to assess whether the wind farm will have an effect that is significant or not significant. OPEN’s methodology for assessing wind farm development is not reliant on the use of a matrix to determine the significance of landscape and visual effects, nor does it define levels of significance. It is, however, considered useful to include a matrix in the methodology to illustrate how combinations of sensitivity and magnitude of change can give rise to a significant effect and to provide an understanding as to the threshold at which significant effects may arise. Table 1 below provides this illustration.

Table 1 Illustrative significance matrix

<table>
<thead>
<tr>
<th>Magnitude Sensitivity:</th>
<th>High</th>
<th>Medium-High</th>
<th>Medium</th>
<th>Medium-Low</th>
<th>Low</th>
<th>Negligible</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Significant</td>
<td>Significant</td>
<td>Significant</td>
<td>Significant/Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Medium-High</td>
<td>Significant</td>
<td>Significant</td>
<td>Significant/Not Significant</td>
<td>Significant/Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Medium</td>
<td>Significant</td>
<td>Significant/Not Significant</td>
<td>Significant/Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Medium-Low</td>
<td>Significant/Not Significant</td>
<td>Significant/Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Low</td>
<td>Significant/Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

Effects that are assessed within the dark grey boxes in the matrix are assessed to be significant in terms of the requirements of the EIA Regulations. Those effects that are assessed within the light grey boxes may be significant, or not significant, depending on the specific factors and effect that is assessed in respect of a particular landscape or visual receptor. In accordance with the Landscape Institute’s Guidelines for Landscape and Visual Impact Assessment (GLVIA) (paragraph 2.12), experienced professional judgement is applied to the assessment of all effects and reasoned argument is presented in respect of the findings in each case.
A significant effect occurs where the Development will provide a defining influence on a landscape element, landscape character receptor or view. A significant cumulative effect occurs where the combined effect of the Development with other existing and proposed wind farms will result in a landscape character or view that is defined by the presence of more than one wind farm and is characterised primarily by wind farms.

**Nature of Effects**

In this assessment, the nature of effects is assessed to be negative, neutral or positive, under the following definitions:

- **Positive effects** contribute to the landscape and visual resource through the enhancement of desirable characteristics or the introduction of new, positive attributes. The removal of undesirable existing elements or characteristics can also be beneficial, as can their replacement with more appropriate components;

- **Neutral effects** occur where the proposed wind farm neither contributes to nor detracts from the landscape and visual resource or where the effects are so limited that the change is hardly noticeable. A change to the landscape and visual resource is not considered to be adverse simply because it constitutes an alteration to the existing situation; and

- **Negative effects** are those that detract from or weaken the landscape and visual resource through the introduction of elements that contrast, in a detrimental way, with the existing characteristics of the landscape and visual resource, or through the removal of elements that are key in its characterisation.

Judgements on the nature of effect are based on professional experience and reasoned opinion informed by best practice guidance.

**Cumulative Assessment**

The cumulative assessment will be of particular importance for this wind farm due to the proximity of operational and proposed wind farms, including Fairburn, the consented sites at Lochluichart and Corriemoillie, and the application sites at Auchmore and Druim Ba. Other more distant sites throughout the study area will also be relevant. The cumulative assessment will be carried out in accordance with ‘Guidance for Cumulative Impact of Wind Farms’, Version 2 Revised 13.04.05, SNH, and advice will be sought from THC and SNH as to sites to be included in the assessment.

The cumulative assessment will initially consider operational, consented and planning application/Section 36 sites within a radius of 60km from Fairburn Extension. Scoping sites may also be included where they are considered to be of specific relevance.

**Visualisations**

Visualisations will be carried out in accordance with ‘Visual Representation of Wind Farms Good Practice Guidance’ (Horner+Maclellan and Envision, 2006). The Highland Council has specific requirements in terms of the production of wind farm visualisations, and the Council will be consulted on this matter in order that all the appropriate information is provided in the landscape and visual assessment.
Viewpoint Selection

The following locations have been identified as possible viewpoints for the assessment. The viewpoints used in the visual assessment of Fairburn Wind Farm have been used as the basis for this list, with some Fairburn viewpoints taken out according to the level of visibility of Fairburn Extension (i.e. where there is no visibility or very limited visibility). Other possible viewpoints have also been added in, where locations that may gain a higher level of visibility of Fairburn Extension have been identified. It should be noted that this is a preliminary draft viewpoint list, and the suggestion of potential viewpoint locations is welcomed. A full viewpoint list will be identified through the course of the assessment, dependent on the layout and visibility of the proposed wind farm.

Table 2 Viewpoint Locations

<table>
<thead>
<tr>
<th>VP</th>
<th>Location of viewpoint</th>
<th>Approx Distance from site</th>
<th>Grid Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Road to Orrin reservoir (near Fairburn Wind Farm viewpoint 1). Included as a view up the River Orrin valley, where the wind farm is seen in relation to the southern valley landform. Several Fairburn turbines visible to the north of the valley.</td>
<td>500m</td>
<td>243662/851588</td>
</tr>
<tr>
<td>2</td>
<td>Fairburn Estate. The Fairburn Wind Farm viewpoint in Fairburn Estate has very limited visibility of Fairburn Extension so a new location will be sought (although visibility from the GDL is very limited due to screening by landform and vegetation).</td>
<td>Tbc</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Track between Erchless and Orrin dam (Fairburn Wind Farm viewpoint 5). Close proximity view from the south of the site.</td>
<td>1.4km</td>
<td>240522/847901</td>
</tr>
<tr>
<td>4</td>
<td>A834 at Contin (Fairburn Wind Farm viewpoint 6). View gained by road-users and residents, with wind farm seen in relation to the southern Orrin valley landform. Negligible visibility of Fairburn Wind Farm.</td>
<td>5km</td>
<td>245976/855769</td>
</tr>
<tr>
<td>5</td>
<td>Footpath at View Rock, Contin (Fairburn Wind Farm viewpoint 7). Popular walking location near Strathpeffer and Contin.</td>
<td>6.5km</td>
<td>245915/857343</td>
</tr>
<tr>
<td>6</td>
<td>Jamestown (Fairburn Wind Farm viewpoint 8). View gained by road-users and residents, with wind farm seen in relation to the Orrin valley landform. Limited visibility of Fairburn Wind Farm.</td>
<td>6km</td>
<td>247941/856509</td>
</tr>
<tr>
<td>7</td>
<td>A835 to the east of junction with A832 (Fairburn Wind Farm viewpoint 10). View gained by road-users, within the Brahan GDL.</td>
<td>6km</td>
<td>250340/854795</td>
</tr>
<tr>
<td>8</td>
<td>Knockfarrel (Fairburn Wind Farm viewpoint 11). Popular walking location near Strathpeffer and Dingwall.</td>
<td>9.5km</td>
<td>250497/858536</td>
</tr>
<tr>
<td>9</td>
<td>Balvaird, Muir of Ord (Fairburn Wind Farm viewpoint 12). Residential viewpoint.</td>
<td>8km</td>
<td>254045/851445</td>
</tr>
<tr>
<td>10</td>
<td>Heights of Fodderty (Fairburn Wind Farm viewpoint 13). Elevated marked viewpoint on minor road.</td>
<td>12km</td>
<td>251887/860997</td>
</tr>
<tr>
<td>11</td>
<td>Ben Wyvis summit. Popular Munro, within Ben Wyvis SLA.</td>
<td>17km</td>
<td>246309/868378</td>
</tr>
<tr>
<td>VP</td>
<td>Location of viewpoint</td>
<td>Approx Distance from site</td>
<td>Grid Reference</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------------------------------------------------</td>
<td>---------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>12</td>
<td>Sgurr na Ruaidhe (Fairburn Wind Farm viewpoint 18). Elevated viewpoint to north-west of the site, within SAWL and proposed Strathconon, Monar and Mullardoch SLA.</td>
<td>13km</td>
<td>228902/842628</td>
</tr>
<tr>
<td>13</td>
<td>Minor road/Great Glen Way near Ladycairn (instead of the nearby Fairburn Wind Farm viewpoint 19)</td>
<td>15.5km</td>
<td>256001/838872</td>
</tr>
<tr>
<td>14</td>
<td>A9 view (Fairburn Wind Farm viewpoint 20). Clear view from A9 just before Cromarty Firth crossing.</td>
<td>15km</td>
<td>259048/858041</td>
</tr>
<tr>
<td>15</td>
<td>A9 view (from Cromarty Firth crossing) with negligible visibility of Fairburn.</td>
<td>17km</td>
<td>258852/861642</td>
</tr>
<tr>
<td>16</td>
<td>An Coileachen (Fairburn Wind Farm viewpoint 21). Elevated viewpoint to north-west of the site, within SAWL and proposed Fannichs, Beinn Dearg and Glencalvie SLA.</td>
<td>26km</td>
<td>224167/868024</td>
</tr>
<tr>
<td>17</td>
<td>A9 (Fairburn Wind Farm viewpoint 22). Open view from Kessock Bridge.</td>
<td>21km</td>
<td>266854/847290</td>
</tr>
<tr>
<td>18</td>
<td>Cnoc Fyrish (Fairburn Wind Farm viewpoint 23). View from popular walking destination.</td>
<td>24.5km</td>
<td>260780/869727</td>
</tr>
</tbody>
</table>

4.2.4. Mitigation Measures

The principal mitigation of landscape and visual effects of wind farms is achieved through careful layout design and turbine height selection, which can reduce effects, or in some cases, prevent effects from arising. The potential for mitigation of landscape and visual effects will be considered throughout the design and assessment process, and will be described in a design statement. The relationship between the proposed Fairburn Extension Wind Farm and the existing Fairburn Wind Farm will be of particular importance due to the visual association between these sites.

4.3. Ecology

This section describes potential issues and impacts associated with the proposed wind farm with respect to species and habitats of nature conservation value. The approach to ornithological impact assessment is addressed separately in Section 4.4.

4.3.1. Baseline Description

The following ecological surveys have been undertaken at the site of the proposed wind farm, during the summer of 2010:

- NVC surveys (with subsequent conversion to Phase 1 habitat categories) – (see Figure 4 in Appendix A);
- Dedicated protected species survey as follows:
  - Badger
  - Bat
  - Otter
  - Pine Marten
These surveys revealed a site dominated by five habitat types: dwarf-shrub heath; tussock grassland; blanket bog; flushes; and bracken. The presence of badger; bat; otter; water voles; and three reptile species (adder, common lizard and slow worm) was also confirmed. A protected species survey report and map is provided as a confidential appendix, (Appendix C), to this report. Appendix C also contains a bat report and map,

The site is not covered by any statutory nature conservation designations.

4.3.2. Guidance/Legislation

The impact assessment methodology used in the EIA will follow the IEEM Guidelines for Ecological Impact Assessment in the UK\(^6\), incorporating other best practice guidance as appropriate.

The assessment will take into account the following guidance and legislation:

- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- Nature Conservation (Scotland) Act 2004; and
- Environmental Impact Assessment Directive 85/337/EEC (as amended);
- Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011);
- The Water Environment and Water Services (Scotland) Act 2003 (WEWS);
- Policy Advice Note PAN 58 - Environmental Impact Assessment (Scottish Executive 1999);
- Planning Circular 3 2011;
- Highland Local Biodiversity Action Plan 2010;

4.3.3. Proposed Scope of Assessment

It is proposed that the assessment will extend to all protected species (i.e. those afforded protection under national and European legislation), together with those included on local and national Biodiversity Action Plans (BAPs). In addition, the assessment will cover potentially affected designated sites, and those habitats deemed to be of sufficient ecological importance by virtue of their inclusion on national and European legislation and local and national BAPs.

4.3.4. Potential Impacts

The potential impacts of the scheme are thus:

- Death or injury to a protected species during wind farm construction/maintenance;
- Displacement through indirect loss of habitat if protected species avoid the proposed wind farm and its surrounding area due to turbine operation and maintenance and visitor disturbance;
- Direct habitat loss through construction of the proposed wind farm infrastructure; and
- Habitat modification due to change in land cover (e.g. deforestation or impacts on hydrology).

An assessment of the potential effects of road modifications along the proposed access route to the site will be included.

4.3.5. Cumulative Impacts

The main potential cumulative impacts will arise from the proposed wind farm’s association with the existing Fairburn Wind Farm. These impacts, and those associated with other wind farms in the wider area are yet to be fully assessed, and will be informed following consultation with SNH.

4.3.6. Mitigation

During the development phase of the Fairburn Extension Wind Farm proposal, SSER will follow its standard procedure for minimising potential ecological impacts; firstly, by designing the wind farm to avoid or limit ecological impacts wherever possible, and secondly, by undertaking to employ industry best-environmental-practice during wind farm construction and operation. Should the Ecological Impact Assessment (EcIA), carried out in preparation of the ES, predict any residual negatively-significant
potential ecological impacts, then SSER will undertake to fully mitigate these potential impacts via a programme of appropriate measures.

4.4. Ecology – Ornithology

This section describes potential issues and impacts associated with the proposed wind farm with respect to bird interests and their ornithological importance. Particular regard is given to species of conservation concern that by virtue of their breeding, feeding or migrating behaviour may be particularly sensitive to the wind farm development and to species with National or International protection under the Wildlife & Countryside Act (1981 & later amendments) and the European Union Birds Directive (79/409/EEC).

4.4.1. Baseline Description

The following ornithological surveys have been undertaken at the site of the proposed wind farm and for a total of 17 months (September 2009 until August 2010; and April until August inclusive 2011):

- Flight activity Vantage Point (VP) surveys (within 250m buffer of the site);
- Upland Breeding Birds Surveys (BBS) (500 metre buffer of the site);
- Scarce Breeding Birds survey (e.g. breeding raptors; 2km buffer around the site);
- Black Grouse lek surveys (1.5km buffer around the site);
- Meadow Pipit transects; and
- Raptor and Owl prey surveys.

The site is not covered by any statutory nature conservation designations. The Glen Affric to Strathconon SPA is approximately 3km to the west of the proposed wind farm site. It is designated for its population of breeding Golden Eagles.

The following Target Species have been recorded during the VP surveys:

- Black-throated Diver
- Black Grouse
- Golden Eagle
- Goshawk
- Golden Plover
- Greylag Goose
- Hen Harrier
- Merlin
- Osprey
- Peregrine
- Pink-footed Goose
- Red Kite

In addition, the following Target Species have been confirmed as breeding on, or close to, the site:

- Golden Plover
- Greenshank
Merlin (in 2010)
Black Grouse (Lek sites)
Red Kite (in 2010)

4.4.2. Guidance/Legislation

The following guidance/legislation has been, and will continue to be, used as part of the survey and assessment process for the ornithological study at the proposed wind farm.

- SNH (2005) Survey Methods for Use in Assessing the Impacts of Onshore Windfarms on Bird Communities (as revised – December 2010);
- SNH (2006) Assessing the Significance of Impacts from Onshore Windfarms on Birds outwith Designated Areas;
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Nature Conservation (Scotland) Act 2004 (as amended);
- Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011);
- UK Biodiversity Action Plan (BAP);
- Birds of Conservation Concern (BoCC 3) ‘Red list’;
- Scottish Natural Heritage (2000) Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action. SNH Guidance Note. SNH;
- Scottish Natural Heritage (2006) Assessing significance of impacts from onshore Windfarms on birds outwith designated areas;
- Scottish Natural Heritage (2009) Environmental Statements and Annexes of Environmentally Sensitive Bird Information;
- Scottish Natural Heritage (2010) Post-construction management of wind farms on clear-felled forestry sites; reducing the collision risk for hen harrier, merlin and short-eared owl from Special Protection Areas; and
- Policy Advice Note PAN 58 - Environmental Impact Assessment (Scottish Executive 1999).

4.4.3. Proposed Scope of Assessment

It is proposed that the assessment will extend to all the Target Species detailed within section 4.4.1, together with species of greater conservation concern from those Secondary Species observed (i.e. Crested Tit, Crossbill sp., etc.). In more general terms, impacts upon the following groups will be assessed:

- Breeding birds;
- Wintering birds;
- Breeding/non-breeding birds overflying the site; and
- Migrating birds overflying the site.
4.4.4. Potential Impacts

The potential ornithological impacts of the scheme are thus:

- Displacement through indirect loss of habitat if birds avoid the proposed wind farm and its surrounding area due to turbine operation and maintenance and visitor disturbance. Displacement can also include barrier effects in which birds are deterred from using normal routes to feeding or roosting grounds;
- Direct habitat loss through construction of the proposed wind farm infrastructure;
- Habitat modification due to change in land cover (e.g. deforestation or impacts on hydrology); and
- Death or injury through collision with turbine blades, overhead wires, met masts, or fences associated with the proposed wind farm.

4.4.5. Cumulative Impacts

The main cumulative impacts will arise from the proposed wind farm’s association with the existing Fairburn Wind Farm. These impacts, and those associated with other wind farms in the wider area are yet to be fully assessed, and will be informed following consultation with SNH.

4.4.6. Mitigation

During the development phase of the Fairburn Extension Wind Farm proposal, SSER will follow its standard procedure for minimising potential ecological impacts; firstly, by designing the wind farm to avoid or limit ecological impacts wherever possible, and secondly, by undertaking to employ industry best-environmental-practice during wind farm construction and operation. Should the Ecological Impact Assessment (EcIA), carried out in preparation of the ES, predict any residual negatively-significant potential ornithological impacts, then SSER will undertake to fully mitigate these potential impacts via a programme of appropriate measures.

4.5. Hydrology, Hydrogeology and Geology

The assessment will ascertain the likelihood of the development causing impacts on the water and soils environment.

The construction and operational phases of a wind farm have the potential to impact on the hydrology, hydrogeology and geology within the localised area, including drainage patterns, watercourses and both shallow and deep groundwater systems.

The proposed site for Fairburn Extension is essentially located within a separate sub-catchment of the Orrin Reservoir to the existing wind farm infrastructure.

This project will gain access via existing tracks within the Fairburn Estate and then via the existing Fairburn Wind Farm. Access to the Fairburn Extension site will therefore for the most part via an established route for wind farm abnormal load traffic. The assessment would address the potential effects of the new track descending south from the existing Fairburn site, involving a new crossing over the River Orrin north west of Carn Doire before rising up the slope again to the site. The area of search for the proposed river crossing is shown in Appendix a, Figure 2.
4.5.1. Baseline Description

Surface Water Hydrology

The area of the wind farm lies entirely within the catchment of the River Orrin, immediately north of the site, Allt Loch a’Mhadaidh in the west and numerous un-named burns and tributaries conveying surface water runoff off the slopes of Creah a’Bhainne, Carn Doire Mhurchaidh, and from the lower western slopes of Cul Mor.

The central south of the site lies within the sub-catchments of Loch a’Mhadaidh and Loch Coire Cruch na Lithe. Both lochs receive surface water from the southern slopes of Carn Doire Mhurchaidh. Loch a’Mhadaidh conveys flows north via Alt Loch a’Mhadaidh direct to the River Orrin, whilst Loch Coire Cruch na Lithe conveys flows via Allt Loch Cruach na Lithe south east to Alt Goibhre which flows eastwards to the River Orrin at Altgowrie.

Fish

The River Orrin flows for over 11 km within the Fairburn Estate and has an excellent population of Atlantic Salmon (Salmo salar) and Brown Trout (Salmo trutta). Spawning and juvenile habitats for these species will be particularly vulnerable to development impacts associated with sediment release, as well as contamination from chemical pollution and impacts associated with altered flows.

Currently, stretches of the River Orrin within the estate are un-fishable due to an infestation of rhododendron (Ponticum). SSE along with SEPA, SNH, the Macaulay Institute and Fisheries Research Services are working together through the Water Framework Directive and actions of the River Basin Management Planning Process to enhance the ecological potential of various water bodies in the vicinity. Efforts are being made on the River Orrin to identify sediment management requirements to improve habitat and enable salmon natural spawning.

Flood Risk

The SEPA indicative flood risk map shows that none of the site is at risk of flooding during a 1-in-200 year flood event. A flood risk assessment is therefore not anticipated to be necessary. Potential impacts from site activities on runoff and flood risk of the receiving waters will need to be considered.

Geology and Groundwater

Drift

A review of the British Geological Society online ‘GeoIndex’ shows the majority of the lowland site to be underlain by hummocky Glacial deposits comprising Diamicton sand and gravel.

Some localised Peat drift deposits are shown on the western slopes of Carn Doire Mhurchaidh and adjacent to the River Orrin.

Solid

The site and surrounding area is underlain by Tarvie Psammite formation, described by the BGS as well bedded, flaggy brown and white quartzrose psammite with minor semi pelite bands. The bedrock is part of the Loch Eil group.
Groundwater

The hydrological map of Scotland (1:625,000 scale, BGS, 1988) shows the site to be underlain by the Tarvie Psammite Formation classified as an impermeable non-aquifer with low to very low productivity.

Any groundwater will be confined largely to joints and other discontinuities in the bedrock. To the north of the site in the valley, adjacent to the River Orrin, groundwater is likely to be held close to the surface, associated with the Glacial sand and gravel.

The SEPA River Basin Management Plan (RNMP) data sheets describe the sand and gravel drift deposits of the site and surrounding areas to be classified as the Conon groundwater body. The shallow groundwater body is classified as good for quality and quantity.

Wind farm development generally does not pose a major risk to groundwater resources, provided construction takes place in line with pollution prevention best practice. However, it is accepted that environmental impacts are possible, particularly within a localised area around, and down gradient of, significant infrastructure development. In line with SEPA’s Land Use Planning System Guidance Note 4 (LUPS GN4), the site will be assessed for the presence of Groundwater Dependent Terrestrial Ecosystems (GWDTEs) within a radius of 100 m from roads, tracks and trenches and within 250 m from borrow pits and foundations. This assessment will include areas beyond the site boundary, if necessary. Identification of GWDTE will be carried out as part of the phase 1 habitat survey and will be in line with SNIFFER (2009) guidance. Full details of all GWDTEs, with associated National Vegetation Classification (NVC), are contained within LUPS GN4. Similarly, all groundwater abstraction points with respect to water supply will be identified through consultation with SEPA and Council and will be confirmed through a site walkover survey. Any GWDTE or groundwater abstraction identified i) within 100m from roads, tracks and trenches or ii) within 250m from borrow pits and foundations will be classified as being at risk and will require specific mitigation measures to ensure the sensitive receptors are protected.

Water Quality

Both the Orrin Reservoir and River Orrin are heavily modified water bodies for their use in the production of hydropower, however, both are classified ‘Good’ for ecological quality. Both water bodies support Salmon and Trout fisheries although work is currently ongoing to enhance the quality of the environment. Due to the reliance for hydropower water bodies in the area are sensitive to changes in water levels, temperature, sedimentation and dissolved oxygen levels.

Private Water Supplies

Although the likelihood of groundwater borehole supplies is low, properties could be reliant on surface water or shallow groundwater for a private water supply. The proposed wind farm site and the immediate surrounding area is a rural area with a number of local farms which are likely to be reliant on private supplies. Identification of private water supplies and their sources will be required.

Peat Slide Risk Assessment

Site reconnaissance surveys with peat depth probing are currently being undertaken at the proposed Fairburn Extension development. The purpose of this survey work is to confirm desk study findings and aerial photograph observations and provide information on the nature of the peat and depths, concentrating on areas where potential track layouts and turbine locations are considered feasible.
In the absence of a preliminary track layout, a first phase of probing was undertaken (January 2012) on a 100m x 100m grid formation across the majority of the site, in order to provide widespread coverage of peat depths across the site in accordance with Scottish Government Guidance on Development on Peatland. A desk top review of available information, including BGS maps indicated that areas to the east and south of the study area have little superficial soils present, with rock at or close to the surface. The information gathered from the Phase 1 survey works will be used to inform the design and layout of the Development. Once a preliminary track layout and the location of site infrastructure has been established, a further phase of probing works will be undertaken (Phase 2). Interim peat depth probing results are provided in Figure 6, Appendix A.

A visual assessment of peat conditions and estimated peat extents across the site is carried out during the surveys, with pertinent features, such as active, incipient or relict instability recorded. Peat probing is undertaken using a gouge auger sampler to identify the thickness of peat deposits, as well as providing an indication of peat stratification and localised surface hydrological conditions.

At each peat probing location, the following information is recorded:

- an indication of the nature of the peat, described as fibrous, semi-fibrous or amorphous. These descriptions are determined with reference to Section 5.12 of EN ISO 14688-1:2002 with the exception that the term ‘pseudo-fibrous’ is replaced with ‘semi-fibrous’ in this for the purposes of our assessments;
- an indication of surface hydrology
- a qualitative visual observation of the apparent moisture content of the peat samples collected using the descriptions in Table 3 below; and
- an indication of the substrate below the peat, with categories including:
  - hard at base (probable bedrock);
  - weathered rock;
  - glacial till;
  - glacial sands and gravels;
  - silt / clay

**Table 3  Subjective Moisture Content Descriptions**

<table>
<thead>
<tr>
<th>Moisture Content Descriptor</th>
<th>Appearance</th>
<th>Squeeze Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry</td>
<td>Peat may appear shrivelled or cracked</td>
<td>Crumbles, no moisture and feels dry</td>
</tr>
<tr>
<td>Moist</td>
<td>Peat damp to touch</td>
<td>Pliable with little to no excess water when squeezed</td>
</tr>
<tr>
<td>Wet</td>
<td>Peat appears saturated but remains intact</td>
<td>Pliable with excess water when squeezed</td>
</tr>
<tr>
<td>Very Wet</td>
<td>Peat appears watery. Peat sample maybe partially lost on retrieval of auger</td>
<td>Liquefies to a slurry when squeezed</td>
</tr>
</tbody>
</table>

---

8 Guidance: Developments on Peatland, Site Surveys, 2011, Scottish Government
The findings of the peat depth probing works will be used to generate factors of safety within the Peat Stability Landslide Hazard Risk Assessment which is undertaken in accordance with the 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments', produced by the Scottish Government.

**Baseline Summary**

An initial review of the baseline hydrological, hydrogeological and geological conditions on and around the site indicates that sensitive receptors are likely to include water abstractions in close proximity to the site, and habitats for Atlantic salmon and Sea trout will be particularly vulnerable to development impacts associated with sediment release, as well as contamination from chemical pollution and impacts associated with altered flows.

4.5.2. **Guidance/Legislation**

There are no defined criteria for assessing the impacts of developments on the water and soils environment. Therefore this assessment will be based on the guidance for undertaking impact assessments given in the Institute of Environmental Management and Assessment (IEMA Guidelines for Environmental Impact Assessment). SKM Enviros has developed a methodology based on this guidance for assessing impacts that is based on defining the baseline sensitivity and defining criteria for impact magnitude relating to the identified site specific water and soil processes.

Qualitative assessment of flooding risks will be undertaken in accordance with Scottish Planning Policy (SPP).

4.5.3. **Proposed Scope of Assessment**

The assessment will be based on site visits, a desk-based data collection exercise and thorough consultation. A site visit is a critical element to determine the sensitivity of the hydrological and soils environment and identify potential watercourse crossings. Data will be collected from a wide range of sources including the following as appropriate:

- Topographical mapping;
- British Geological Survey (BGS) and the Soil Survey;
- Private Water Supplies information from the Local Authorities; and
- Surface water and groundwater information from SEPA and Local Authority.

Private water supplies and other water uses (e.g. agriculture) which rely on flows from the site are to be investigated and could be of particular importance at this location. This will be investigated by collecting information on private water supplies from the Local Authority Environmental Health department, issuing questionnaires to potential properties reliant on private water supply and a door to door survey which will aim to identify and locate private water supplies.

Consultation will be important to establish the land drainage and flooding constraints. The following bodies will be consulted:

- SEPA;
- Conon District Salmon Fishery Board;
- Scottish Water;
Scottish Natural Heritage; and
The Highland Council.
To complement the assessment, consultation with SEPA and The Highland Council will be undertaken with regard to flood risk to determine the requirement for an assessment of flooding risks that will focus on all potential sources of inundation to the site and will also include an assessment of surface water management for the proposed redevelopment.

### 4.5.4. Potential Impacts

The construction of a wind farm often requires various activities which may have the potential to directly impact on water quality and flow of both surface water and groundwater, and indirectly impact ecological factors. These include:

- Unmanaged erosion/sediment deposition and suspended solids generated from ground disturbance could cause modification to stream channel morphology, potential smothering of habitats/impact on aquatic flora and fauna, especially fish and affect water abstracted for drinking supply;
- Oil/fuel pollution (from accidental spillage or incorrect transport, storage or refuelling procedures) which has the potential to impact on both terrestrial and aquatic flora and fauna and also on human activities such as water abstracted for drinking supply; and
- Any alteration of natural drainage or sub-surface hydrogeological patterns could disturb natural subsurface water flows to either water dependent habitats or to local abstraction points, unless properly managed. Likewise, the development of new tracks across existing streams and channels has the potential to block water flow. Poorly designed drainage on unstable areas may increase landslip risk on sloping ground.

### 4.5.5. Cumulative Impacts

Potential cumulative impacts upon the water and soils environment will be assessed and consultation will determine the committed or planned developments that should be considered.

### 4.5.6. Mitigation

The design of the mitigation measures will be based on relevant guidance provided by the Scottish Natural Heritage, SEPA and others, such as CIRIA guidance. It is expected that mitigation will come through appropriate design and layout modifications following consultations with the SEPA and other key stakeholders.

Mitigation measures are expected to be included within the wind farm design although specific measures will also be detailed within the Framework SEMP and will include as a minimum:

- Adoption of best practice pollution prevention, drainage control and waste management procedures
- Protection of existing land drainage requirements and water course crossings, and;
- Appropriate design of foundation installation taking into account the presence of peat across the site, the management of soil water levels and the potential to generate excessive quantities of groundwater contaminated with sediments.
4.6. Noise

Noise can have an effect on the environment and on the quality of life enjoyed by individuals and communities. The effect of noise can therefore be a material consideration in the determination of planning applications. The noise assessment for Fairburn Extension Wind Farm will be focused on determining the resultant noise levels arising from the development at the nearest receptors, and assessing these predicted levels in the context of protecting amenity.

Wind turbines have been specifically designed for use in remote areas with low existing ambient (background) noise levels. However, they are not totally silent and an assessment will be carried out on the noise levels predicted at the nearest residential properties to the proposed wind turbines.

The basis of the assessment will take as its starting point the cumulative noise scenario. This is the potential noise impact on identified receptor locations from the proposed wind farm when operating simultaneously with the existing Fairburn Wind Farm. In relation to any cumulative noise impact, the guidance in ETSU-R-97 states that existing wind farms should not be considered as part of the prevailing background noise. As such it is proposed to use the existing planning conditions (i.e. operational noise limits) as a basis for the Fairburn Extension Wind Farm noise assessment.

4.6.1. Guidance/Legislation

The assessment will be carried out in the context of existing planning guidance PAN 1/2011, ‘Planning and Noise’. It will also be in accordance with current statutory and non-statutory guidance, with particular reference to the standard for wind farm noise assessment defined by the Noise Working Group (NWG) – ETSU-R-97 (‘The Assessment and Rating of Noise from Wind Farms’), as well as British Standards and other documents relating to noise and its effect on humans, including guidance on the character of wind farm noise. The assessment will also follow the procedure described in the Institute of Acoustics (IOA) ‘Acoustics Bulletin’ (Volume 34 No.2, March/April 2009). This outlines the best practice on the consideration of site-specific wind shear.

In ETSU-R-97, the NWG recommends that the current practice on controlling noise from wind turbines is by the application of noise limits at the nearest residential properties. It suggests separate noise limits for the daytime and the night-time period, which are derived from background noise levels measured during the quiet periods of the day and during the night.

The approach is to limit the noise from the wind turbines relative to (5dB higher than) the existing background noise, but that it is not necessary to restrict wind turbine noise below certain fixed limits in order to provide a reasonable degree of protection. Compliance with the noise limits derived constitutes the measure of significance of the potential impact.

4.6.2. Baseline Description

As discussed, noise limits are to be based relative to the existing background (baseline) noise and this necessitates background noise surveys for properties likely to be affected. However the guidance in ETSU-R-97 also states that existing wind farms should not be considered as part of the prevailing background noise. Whilst it is likely that noise from the existing Fairburn turbines will not be audible at potential monitoring locations for Fairburn Extension, the measurement of background noise whilst an existing wind farm is operating will not fully comply with the ESTU-R-97 guidance. As such, it is not proposed to
undertake any background noise monitoring in order to derive noise limits for Fairburn Extension Wind Farm. It is instead proposed to adopt the Fairburn noise limits as a basis for the assessment.

4.6.3. Proposed Scope of Assessment

Noise limits currently apply to the operation of Fairburn Wind Farm, with respect to the prevailing background noise levels defined within the Fairburn ES and are applicable at the closest residential properties to the Fairburn turbines. These properties will also need to be considered as part of the Fairburn Extension noise assessment, where the resultant noise levels at each property as a result of the operation of the proposed turbines will be compared to daytime and night-time noise limits. Compliance with the Fairburn noise limits will constitute the measure of impact of the proposed turbines and the assessment will aim to demonstrate the feasibility of achieving those limits based upon reasonably conservative assumptions. The reasoning for this approach will be discussed and agreed with The Highland Council through further consultation.

4.6.4. Potential Impacts

Assessment of noise levels predicted at identified sensitive receptors, as a result of the operation of the wind turbines, will be performed in accordance with the methodology in ISO 9613-2:1996, which is the preferred method of predicting wind turbine noise emission levels. The predicted levels will be compared against the daytime and night-time noise limits as detailed in the Fairburn planning conditions, if acceptable to THC.

The general approach for the assessment at each receptor will be as follows;

- Agreeing an appropriate reference sound power level and wind shear factor for each set of turbines (wind shear data for each site will be gathered from SSE, based on wind data collected);
- Prediction of received noise at receptor locations with the LimA model, using the ISO 9613:1996 methodology and agreed assumptions; and,
- Comparison of predicted levels with agreed noise limits i.e. existing Fairburn operational noise limits.

Noise during the construction and decommissioning of the turbines will be addressed, according to the guidance given in British Standard BS 5228:2009, ‘Noise and Vibration Control on Construction and Open Sites’. Noise during these phases will be generated by a number of sources. These will be considered in three phases – installation of the turbine support structure, followed by the construction of the turbine and assembly of the turbine.

4.6.5. Cumulative Impacts

Cumulative impacts on the locality relating to noise will be addressed and scope of the cumulative assessment will be agreed through further detailed consultation with THC, which will be based on the information given above.

4.6.6. Mitigation

If required, potential mitigation options will be identified and could include advice on site layout and the effects of turbine selection.
4.6.7. Impacts Scoped Out of Assessment

It is proposed that the assessment will not address noise from construction traffic or operational traffic, as the impacts from noise levels generated by the short duration of construction traffic and the very low operational traffic volumes are not considered to be significant. The relatively large distances and minor construction activity also means that vibration levels during all phases of the development are not considered likely to affect sensitive receptors. Vibration impacts are also proposed to be scoped out and not addressed as part of the EIA.

4.7. Air Quality

This chapter examines the potential impacts of the wind farm with regards to the temporary impacts to air quality and nuisance during the construction phase.

4.7.1. Baseline Description

The proposed development site is located in a relatively remote area, with a small number of properties scattered within a radius of approximately 2km from the site boundary. The A832 (approximately 4km northeast of the site), the A835 (approximately 4.5km north of the site) and the A862 (approximately 7.5km southeast of the site) are the main trunk roads in the vicinity of the site. Apart from the main road network there are no other known significant sources of air pollution or odour within the vicinity of the proposed development.

4.7.2. Guidance/Legislation

The EPUK guidance (Environmental Protection UK, 2010) aims to ensure air quality is accurately accounted for in the UK development control process whilst highlighting the importance of good air quality within the local development framework. The guidance focuses on the impact of traffic emissions during the construction and operation of a development, and the assessment and control of dust impacts during construction.

4.7.3. Proposed Scope of Assessment

The wind farm operation will not generate any significant emissions to air and therefore local air quality will not be affected by this phase of development.

There is the potential for impacts during the construction/decommissioning phase including dust creation and increase in vehicle emissions. This is typically assessed on a quantitative basis looking at potential sources, potential receptors and the level of mitigation required.

4.7.4. Potential Impacts

During construction and decommissioning phases the potential air quality impacts from the proposal are:

- Dust creation during construction/decommissioning; and
- Emissions from construction/decommissioning traffic.

Impacts on air quality during construction will be temporary; and the distance between the proposed turbines and the closest residential properties (estimated to be over 2km) suggests that construction activities on the wind farm site are unlikely to cause significant impacts with regards to dust.
The number of vehicles generated during construction will be predicted by traffic and transport consultants. Typical traffic generation from wind farm developments are moderate over the duration of construction. The proposed access route will bypass the majority of sensitive receptors, further minimising potential effects from vehicle emissions.

It is considered that using standard appropriate mitigation measures the overall impact upon air quality will be reduced to an appropriate level and can classed as minor. Therefore, it is recommended that air quality is scoped out of the Environmental Impact Assessment but that suitable mitigation measures are contained within the Site Environmental Management Plan.

4.7.5. Cumulative Impacts

With no significant impacts on air quality predicted, there would be no combined cumulative impact with other planned or committed developments.

4.7.6. Mitigation

Dust generation will be mitigated through the application of standard dust mitigation measures on and off site and good house-keeping practices during construction, operation and decommissioning phases. These will be included within the framework CEMP.

4.8. Archaeology & Cultural Heritage

This chapter of the ES will identify cultural heritage assets that may be subject to impacts, both within the limits of the application site and beyond, establish the archaeological potential of the development site, assess the predicted impacts and propose mitigation. It will consider both physical and setting impacts.

4.8.1. Baseline Description

There are no designated cultural heritage assets within the proposed development area.

Within 5km of the proposed development there are six Scheduled Monuments (Table 4). These are all prehistoric in date, five of these assets being forts and the seventh a chambered cairn.

<table>
<thead>
<tr>
<th>SM No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2397</td>
<td>Preas Mairi, chambered cairn</td>
</tr>
<tr>
<td>2422</td>
<td>Dun Garbhlaich, fort, Kilmorack</td>
</tr>
<tr>
<td>2424</td>
<td>Dun a Chliabhain, fort</td>
</tr>
<tr>
<td>4979</td>
<td>Dun Mor, fort</td>
</tr>
<tr>
<td>5212</td>
<td>Dun Fhalmhair, fort</td>
</tr>
<tr>
<td>11056</td>
<td>Carn na Buaile, fort 750m NNW of Comrie, Contin</td>
</tr>
</tbody>
</table>

Within 5km of the proposed development, there is one Category A Listed Building, six Category B Listed Buildings and five Category C(S) Listed Buildings (Table 5).
Table 5  Listed Buildings within 5km of the Proposed Development

<table>
<thead>
<tr>
<th>LB No.</th>
<th>Name</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>14030</td>
<td>Fairburn Tower</td>
<td>A</td>
</tr>
<tr>
<td>1790</td>
<td>Contin Parish Church (Church Of Scotland) And Burial Ground</td>
<td>B</td>
</tr>
<tr>
<td>14020</td>
<td>Orrin Bridge Over River Orrain At Aultgowrie</td>
<td>B</td>
</tr>
<tr>
<td>14031</td>
<td>Fairburn House</td>
<td>B</td>
</tr>
<tr>
<td>14032</td>
<td>Fairburn, Aultgowrie Lodge, Gate Piers And Gates.</td>
<td>B</td>
</tr>
<tr>
<td>18964</td>
<td>Aultvaich Corrie Vanie Threshing Barn, Byre And Wheel House</td>
<td>B</td>
</tr>
<tr>
<td>51708</td>
<td>Conon Valley Hydro Electric Scheme, Orrin Dam With Integrated Fish Pass</td>
<td>B</td>
</tr>
<tr>
<td>1768</td>
<td>Contin Manse (Church Of Scotland)</td>
<td>C(S)</td>
</tr>
<tr>
<td>1770</td>
<td>Coul House Hotel West Lodge</td>
<td>C(S)</td>
</tr>
<tr>
<td>1778</td>
<td>Scatwell House Community Centre Cottages And Walled Garden</td>
<td>C(S)</td>
</tr>
<tr>
<td>1779</td>
<td>Scatwell House Main Gate Lodge, Gate Piers And Gates</td>
<td>C(S)</td>
</tr>
<tr>
<td>51709</td>
<td>Conon Valley Hydro Electric Scheme, Torr Achility Power Station And Dam</td>
<td>C(S)</td>
</tr>
</tbody>
</table>

There are also two Inventory Historic Gardens and Designed Landscapes within 5km of the proposed development (Table 6).

Table 6  Inventory Historic Gardens and Designed Landscapes within 5km of the Proposed Development

<table>
<thead>
<tr>
<th>Garden ID No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>173</td>
<td>Fairburn</td>
</tr>
<tr>
<td>332</td>
<td>Scatwell</td>
</tr>
</tbody>
</table>

There are no Conservation Areas, Inventory Battlefields or World Heritage Sites within 5km of the proposed development.

There is one undesignated cultural heritage asset recorded within the proposed area, a building (NMRS NH44NW2) depicted as unroofed on the First Edition Ordnance Survey Map (1875-81). To the immediate south east of the proposed development area is a group of approximately 12 hut circles and a contemporary field system (NMRS NH45SE3). These were surveyed by the Ordnance Survey at 1:10,000 in 1973 and can therefore be readily avoided. The majority of other known cultural heritage assets within 5km of the proposed development are located in the more fertile land of the valley floors.

4.8.2. Guidance/Legislation

The assessment will be carried out with reference to the following policy and guidance:

- Scottish Planning Policy (2010);
- Scottish Historic Environment Policy (Historic Scotland 2008);
- Managing Change in the Historic Environment: Setting (2010);
- PAN 2: Planning and Archaeology (2011);
- Standard and Guidance Archaeological Desk-Based Assessment (Institute for Archaeologists 2008); and,
- Relevant national and local planning policy and guidelines.
4.8.3. Proposed Scope of Assessment

For the purposes of this assessment, cultural heritage assets have been defined as all relict man-made assets predating the earliest Ordnance Survey mapping in this area and selected sites of more recent date. This includes all Scheduled Monuments, Listed Buildings, Conservation Areas, Inventory Gardens and Designed Landscapes and Inventory Battlefields. Further assets, such as those of special military, maritime or industrial interest, will also be considered where appropriate. The palaeoenvironmental potential of peat deposits will also be considered.

The study area for the assessment will take in three concentric areas:

- The Inner Study Area corresponds to the limit of the proposed development area. Within this area all cultural heritage assets will be considered for construction and operational impacts.
- The Middle Study Area extends 5 km from the boundary of the Inner Study Area. Within this area all nationally important cultural heritage assets will be considered for operational impacts. Relevant cultural heritage assets within this area will be considered to inform the potential for previously unrecorded cultural heritage assets within the Inner Study Area.
- The Outer Study Area is based on the Zone of Theoretical Visibility (ZTV) as defined in the Landscape and Visual Chapter. Within this area assets raised specifically by consultees will be considered in relation to setting impacts.

Relevant bodies will be consulted regarding the proposed development and its impacts. These will include:

- Historic Scotland; and,
- The Highland Council’s Historic Environment Team.

The following data sources will be used:

- National Monuments Record of Scotland (NMRS);
- Vertical aerial photographs held by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS);
- The Highland Council’s Historic Environment Record (HER);
- Historic Scotland GIS databases regarding designated assets;
- Maps held by National Library of Scotland;
- Plans held by National Archives of Scotland; and,
- Other readily accessible published sources.

A walkover survey of the proposed development area will be undertaken. This will check the results of the documentary research and will record any previously unrecorded assets and their current condition. Sufficient data to identify and interpret assets and establish their extents will be gathered; detailed survey will not be undertaken at this stage. Cultural heritage assets with potential for significant impacts on their setting will also be visited to establish baseline conditions.

The report will clearly set out the nature and location of all relevant cultural heritage assets and provide an assessment of the significance of any impacts. Recommendations will be made for the mitigation of any impacts.
4.8.4. Potential Impacts and Mitigation

Construction work has the potential to damage or destroy cultural heritage assets. This may occur either as a result of the design of the development or as an accidental consequence of construction plant movement. The impacts may be direct, for instance where an archaeological deposit is removed or damaged during ground-breaking works, or indirect, for example where changes in hydrology may lead to waterlogged archaeological deposits becoming desiccated and degraded. Physical impacts will be avoided as far as reasonably practicable. Where this is not practicable, assets will be appropriately recorded ahead of disturbance, with the results being published as appropriate.

There is also the potential for the operational phase of this development to have an impact on the setting of cultural heritage assets which are present within the surrounding area. Mitigation of setting impacts will be built into the design of the wind farm as far as reasonably practicable.

4.8.5. Cumulative Impacts

The cumulative impacts on cultural heritage and archaeological assets will be assessed with regard to any planned or committed development close to the proposed development, in particular the existing wind farm.

4.9. Traffic

4.9.1. Baseline Description

The construction and operation of a wind farm development will require the transport of large components and plant items that are used to build the infrastructure and to erect the turbines. Quantities of building materials including aggregate and concrete also need to be transported unless sources are batched on site.

There are a number of potential construction traffic routes to site from the A9 and Inverness conurbation namely utilising the A832, A835 and A862 to Marybank. Baseline information will be obtained on all the potential construction routes to site.

It is anticipated that the abnormal load turbine components will be transported by road from the harbour at Invergordon, which is the nearest viable dock to the proposed site for landing the turbine component parts. This harbour is used regularly for the delivery of wind turbine components to wind farm developments in this region. The likely route to site will be leaving Invergordon and travel south along the A9 to the Tore roundabout where the route continues west along the A835 to Conon Bridge. At Conon Bridge the proposed route travels south along B9163, School Road, to avoid travelling through the centre of Conon Bridge, before joining the A862 to Muir of Ord. The route continues west on the A832 to the small village of Marybank where it follows the single track Achonochy Road, which is an unclassified road with passing places which leads directly to the site access track used for the previous wind farm development. This was the chosen route for the successful delivery of the turbine components for the operational Fairburn Wind Farm development. Alternate routes to site for abnormal turbine loads will also be investigated.
4.9.2. Guidance/Legislation

Three levels of policy regarding Roads and Traffic will be consulted:

- National Policy – Scottish Executive White Papers and policy guidance following from these;
- Regional Policy – Regional Transport Strategies devised by the current voluntary partnerships to co-ordinate transport and expenditure issues at a regional level; and
- Local Policy – Local Authorities are recommended to produce a Local Transport Strategy which in general terms outlines the authority’s policies, objectives and strategies for transport and indicates how they contribute to national policies and the Road Traffic Reduction Act.

4.9.3. Proposed Scope of Assessment

The assessment will follow the advice contained in the Institution of Highways and Transportation’s (IHT) document ‘Guidelines for Traffic Impact Assessments’, which recommend that for Environmental Statements relating to large developments, roads and traffic conditions should be assessed in accordance with the Institute of Environmental Assessment’s (IEA’s) ‘Guidelines for the Environmental Assessment of Road Traffic’. The methodology employed therefore focuses on:

- Potential impacts on local roads and the users of those roads; and
- Potential impacts on land uses and environmental resources fronting those roads, including the relevant occupiers and users.

Impacts are likely to be limited to the construction phase of the development specifically the delivery of plant machinery and materials. These will be assessed in two ways, as discussed below:

**Vehicle Accessibility**

The main concern with respect to vehicle accessibility is the delivery of plant, materials and machinery during construction, although account would be taken of the need to replace major components during operation.

To this end, a detailed study will be carried out in terms of assessing the most appropriate mode of transport for moving components, machinery and materials to the site and the capacity of the road network to accommodate such transport. In particular, the study will focus on the requirements for abnormal loads. The most onerous elements to transport are the turbine components. These often form abnormally long or heavy loads. The routes chosen for turbine components will be assessed through swept path analyses via AutoCad computer software. The software package AutoTrack will be used in conjunction with digital Ordnance Survey MasterMap information to model the vehicle swept paths and a bespoke vehicle type will be defined within AutoTrack to replicate the features and dimensions of the relevant blade and tower section transporters. Any enabling works that are required will be agreed with the local authorities and the impact and level of the works assessed. Where any enabling works are required these will be identified and assessed.

Any potential strategic routes already identified will undergo further scrutiny with alternatives considered as necessary. The local routes from the highway network to the turbine positions will be closely examined to minimise the impact on sensitive features. Off the main highway network, existing
tracks and roads will be used where possible with modifications recommended where required to accommodate the swept path of the blade transporters.

Traffic Disruption

It is the nature of wind farms that, during their operational lifespan, they create so few vehicular movements as to have no perceivable impact (approximately one light goods vehicle per month). The operational phase of the wind farm will not therefore be considered in terms of traffic disruption as part of the EIA.

In comparison, the volume of construction traffic will be significantly higher than that associated with operational requirements and therefore the assessment of impacts will focus on the construction element of the proposed development only. The assessment will discuss the types of machinery, materials and components requiring transportation including:

- Turbine components
- Turbine electrical equipment;
- Turbine foundations and crane hard-standings;
- Access tracks, compounds and substation compound aggregates;
- Removal of spoil generated during access track construction;
- Other traffic such as excavators, site huts, fencing; and
- Construction worker vehicles.

The assessment will also identify the types of vehicle needed to transport such loads and potential transportation routes.

The volume of all construction traffic movements will then be quantified along with the projected schedule of movements. This will then be used to determine daily vehicle numbers and the delivery profile.

These volumes will then be assigned to the local highway network in accordance with best estimates for distribution based upon advice from turbine manufacturers, contractors and haulage firms familiar with turbine installation and transport.

Vehicle volumes and times will then be assessed against existing baseline traffic levels, the data for which will be obtained from the Highland Council Roads and Transportation Department and/or Transport Scotland. This will be used to determine the impact of the traffic associated with wind farm construction in terms of increases in traffic flows on the local road network.

4.9.4. Potential Impacts

It is not expected that there will be any significant impacts resulting from operational traffic; the potential impacts are anticipated to be construction traffic impacts upon existing traffic flows along the A9, A832, A835 and A862. Other local roads in the area will also be assessed for traffic impacts with regards to the proposed new development.

Further issues that will require consideration are:

- Disruption to existing traffic flows on the local road network during construction;
4.9.5. Mitigation

Mitigation measures will be adopted to avoid and reduce the adverse traffic and transport effects highlighted in the impact analysis. Typical mitigation measures relating to traffic and transport issues can include, but not limited to, the following:

- Route Selection;
- On-Site Concrete Batching;
- On-Site Borrow Pits;
- Road Maintenance; and
- Traffic Management Measures

4.10. Socio-Economic

The potential for both adverse and positive local effects will be evaluated in the environmental assessment process. This will involve identification of the existing socio-economic baseline conditions in the surrounding area, and consideration of potential direct or indirect effects on employment, recreation and tourism and the local population in terms of community benefit.

4.10.1. Baseline Description

There are a number of settlements in the wider vicinity of the proposed site, the largest of these being Inverness, located about 20km east. Smaller, closer settlements include Dingwall, Contin, Strathpeffer, Muir of Ord, Conon Bridge and Beauly. There are also a small number of properties and small businesses including Fairburn Activity and Conference Centre in the immediate vicinity of the development site. The predominant land use of the area is Estate Management and forestry.

Inverness-shire is an important tourist destination within Scotland.

4.10.2. Guidance/Legislation

There is currently no established EIA methodology for the assessment of socioeconomic impacts. This chapter of the ES therefore will describe the processes and outcomes of a socio-economic impact assessment based on professional experience and EIA good practice (DCLG, 2006).

4.10.3. Proposed Scope of Assessment

The assessment will consider the likely impacts of the proposals on the economic profile of the area (including employment opportunities), tourism and recreation, and public perception of wind farms. The work will also consider socio-economic impacts within other sections of the ES (i.e. noise, landscape and visual, and traffic). Data will be collected on the socio-economic profile of the area (with specific reference to the importance of tourism). This data will be collected from The Highland Council, Visit Scotland and other local tourist information/organisations.
Land take associated with the wind farm development will be minimal and will not interfere with existing land use. It is therefore proposed that this issue will not be considered further during the environmental impact assessment.

4.10.4. Potential Impacts

The potential impacts of the development therefore may include:

- The generation of employment and business opportunities during manufacturing, construction and operational phases of the development;
- Impacts on wild game activity, land value, local tourism and recreational amenity;
- Indirect and direct economic benefits and disbenefits from the proposed scheme; and
- Impact on social capital by the proposed scheme.

4.10.5. Cumulative Impacts

Cumulative impacts upon tourism, employment opportunities or local amenity will be considered.

4.10.6. Mitigation

Thorough communication will take place throughout the development of the project and every effort will be made to fully engage the community. Support will then be given for initiatives that help the community to adopt and support the concept of renewable energy generation.

4.11. Communication Systems

This section will consider the following issues that bear relevance to wind farms and are not covered by other environmental chapters:

- Aviation navigational equipment
- Electromagnetic interference
- Telecommunication
- Television & radio.

4.11.1. Baseline Description

Any large structure, such as a wind turbine, can cause interference with communication systems such as telecommunication systems, television and radar by reflecting and scattering Electro Magnetic signals, depending on the materials used and the structure location, as well as the dimensions and layout of the structure(s). This can cause blocking or distorting of the signal, or reflected signals may be superimposed on the original signal (commonly referred to as ‘ghosting’), with the result that the signal at the receiver will be degraded, decreasing the performance and reliability of the service.

4.11.2. Guidance/Legislation

Scottish Planning Policy, PAN62: Radio Telecommunications (Scottish Executive, 2001) and PAN 4: Renewable Energy Technologies (Scottish Executive, 2002) provide guidance on issues relating to wind farms, including electro-magnetic interference.
4.11.3. Proposed Scope of Assessment

The assessment will comprise a thorough consultation exercise to establish the impacts of the proposals. The following list illustrates those consultees that will be contacted during the course of the EIA:

- Civil Aviation Authority;
- Highlands & Islands Airport Authority
- Ofcom;
- Arqiva;
- National Grid Wireless;
- Cable & Wireless;
- T-Mobile:
- MLL Telecom:
- National Air Traffic Service (NATS);
- Ministry of Defence:
- BBC:
- CCS Spectrum Management; and
- Joint Radio Company.

An analysis will also be performed of the likely impacts on television reception in the surrounding area.

4.11.4. Consultation

A comprehensive desk survey was taken to underline the impact wind turbine generators will have on the proposed wind farm. The responses from the operators can be seen in Table 7 below:

- **Table 7  Responses from Operators**

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Consultee Response</th>
<th>ES Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ofcom</td>
<td>Advised that Cable &amp; Wireless have link in the area.</td>
<td>Contact link operator</td>
</tr>
<tr>
<td>Joint Radio Company</td>
<td>No Objection</td>
<td>None</td>
</tr>
<tr>
<td>Arqiva</td>
<td>No Objection</td>
<td>None</td>
</tr>
<tr>
<td>Atkins</td>
<td>No Objection</td>
<td>None</td>
</tr>
<tr>
<td>Cable &amp; Wireless</td>
<td>Objection dropped</td>
<td>None</td>
</tr>
<tr>
<td>BBC</td>
<td>0 homes will be affected</td>
<td>None</td>
</tr>
</tbody>
</table>

4.11.5. Potential Impact and mitigation – Telecommunications

a) TV Reception

The BBC provides an online assessment tool (BBC, 2009) which is designed to allow developers to assess the impact of wind turbines on TV broadcasts received by nearby homes. The assessment tool highlighted that no homes will be affected by the proposed wind farm. The topology of the wind farm and the location of Rosemarkie transmitter indicates that the main area affected lies to the East of the proposed wind farm. Given that the nearest home to the East is over 20km away the impact of the wind farm is deemed highly unlikely, and therefore a full TV assessment is considered unnecessary. The analogue TV signal in the area
of Fairburn was replaced with a digital signal in October 2010 and a digital signal is less susceptible to interference. This therefore has been scoped out of the assessment.

b) Fixed microwave links

No impact caused by the proposed wind farm

4.11.6. Potential Impact and mitigation – Aviation

Inverness Airport is operated by Highland and Islands Airports Ltd (HIAL). The proposed Fairburn Extension has the potential to impact on operations at the airport.

The easternmost edge of the wind farm is approximately 31km from the airport. Civil Aviation Publication 764 amended January 2012 advises the recommended consultation distances from aviation establishments for wind farm developers to consider. 30km is the consultation zone applicable for HIAL Inverness Airport; however, airports can object to wind developments outside of these ranges. SSER will fully consult with HIAL once a draft layout of the proposed development is available.

The topography of the region suggests that the turbines at the proposed Fairburn Extension may be visible to the primary surveillance radar at Inverness Airport at a wind turbine generator tip height of 149metres and if built on ground higher than 369metres average mean sea level. Once we have undertaken a draft layout and wind farm design we will further assess the impact and consider the requisite mitigation.

4.12. Shadow Flicker

Under certain combinations of geographical position and time of day, the sun may pass behind the rotors of a wind turbine and cast a shadow over neighbouring properties. When the blades rotate, the shadow flicks on and off resulting in an effect known as ‘shadow flicker’. This effect only occurs inside buildings and under a limited set of circumstances, e.g. when meteorological conditions are clear, the sun is low in the sky, and the moving shadow of a turbine is cast onto a narrow window. Due to the movement of the sun, these shadows pass any point quickly and the effect therefore only lasts a short period of time.

The impact of shadow flicker on the local community will be assessed as required by the Scottish Government’s web based renewable advice note on onshore wind turbines9 (which replaces the relevant aspects of Planning Advice Note 45).

4.12.1. Baseline Description

The renewable advice note states that the zone of shadow flicker influence within which properties could potentially be affected is up to 10 rotor diameters of each turbine. In the case of this development, we will use a radius of 1000 m. An initial assessment indicates that there is just one property within 1000 m of the site boundary.

4.12.2. Guidance/Legislation

Other than the renewable advice note, there is no detailed guidance with respect to the assessment of shadow flicker. In addition, there is no guidance within the Scottish planning system on what criteria should be used to determine the need for mitigation of shadow flicker. European practice, however, is discussed in the Wind Energy Development Guidelines 2006 published by the Irish Government Department of Environment Heritage and Local Government\textsuperscript{10}.

4.12.3. Assessment Methodology

A site visit will be undertaken to confirm the location of the known residential property and to establish the presence, if any, of other residential properties within the potentially affected zone. These properties will then be the subject of further assessment to determine shadow flicker effects.

The number of hours of shadow flicker predicted to result from the proposed wind farm will then be calculated using a commercial software programme. This model takes into account the movement of the sun with time of day and time of year and, through the accurate positioning of the wind turbines and potentially affected property, predicts the time and duration that shadow flicker is expected to occur at a representative window within the property, assuming clear, sunny conditions and the required turbine alignment to cause shadow flicker to occur.

The potential for cumulative shadow flicker impacts with the adjacent Fairburn Wind Farm will also be considered.

4.12.4. Potential Mitigation Measures

Potential mitigation measures will be investigated to reduce any identified impacts. These could include modifications to the turbine layout, screening or the use of turbine system control measures which can stop a turbine operating under the specific conditions that would give rise to shadow flicker.

It is likely that Shadow Flicker may be scoped out during the EIA process.

4.13. Waste

A Framework Site Waste Management Plan (SWMP) will be provided within the ES as part of the CEMP. The Framework SWMP will identify all potential waste streams (including peat/other materials excavated in relation to infrastructure) associated with the works. The SWMP will demonstrate;

- How the wind farm development will include construction practices to minimise the use of raw materials and maximise the use of secondary aggregates and recycled or renewable materials;
- Identification of relevant legislation, guidance and guiding principles such as the Proximity Principle and Waste Hierarchy;
- Anticipated quantities and European Waste Code (EWC) descriptions of waste arisings. To include targets for waste generation and recycling;
- Procedures for the recording of waste arising;

How waste material generated by the proposal be reduced and re-used or recycled where appropriate on site;

Identification of procedures to enable compliance with waste duty of care requirements. Procedures will include methods of on-site storage of waste, carriage of waste, duty of care waste transfer notes, consigning of Special Waste, despatch of wastes to consented re-processors and disposal facilities, compliance of contractors with the SWMP and relevant waste legislation, and identification of site staff with waste management responsibilities;

The potential requirement for waste management licences/licensing exemptions in relation to excavated peat which may be classed as waste will be discussed with SEPA at an early stage; and

Copies of waste carriers registration, waste brokers license, waste management licenses for general construction wastes.

4.14. Summary of proposed scope of the EIA

Sections 4.1 to 4.12 of this scoping request outline the proposed approach to the specialist chapters of the Environmental Statement and highlight the likely impacts of the development and their mitigation. The following aspects are those considered to be subject to potentially significant environmental effects which could result from the construction, operation and decommissioning of the proposed wind farm:

- Climate Change, in particular Carbon Balance;
- Landscape and visual effects;
- Ecology, in particular ornithological effects; and
- Hydrology and Hydrogeology.

Table 8 below summarises the potential effects and outlines approaches to mitigation.

<table>
<thead>
<tr>
<th>Table 8 Summary of Potential Effects and Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
</tr>
<tr>
<td>Climate Change</td>
</tr>
<tr>
<td>Landscape &amp; Visual Amenity</td>
</tr>
</tbody>
</table>

Table 8
<table>
<thead>
<tr>
<th>Topic</th>
<th>Potential Effects</th>
<th>Potential Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>Death or injury to a protected species during wind farm construction/maintenance. Displacement through indirect loss of habitat. Direct habitat loss through construction of the proposed wind farm infrastructure. Habitat modification due to change in land cover (e.g. deforestation or impacts on hydrology).</td>
<td>Standard mitigation such as an informed Conservation Management Plan (CMP) may be recommended, alongside a more bespoke strategy agreed in consultation with SNH.</td>
</tr>
<tr>
<td>Ecology - Ornithology</td>
<td>Displacement through indirect loss of habitat. Displacement can also include barrier effects in which birds are deterred from using normal routes to feeding or roosting grounds. Direct habitat loss through construction of the proposed wind farm infrastructure. Habitat modification due to change in land cover (e.g. deforestation or impacts on hydrology). Death or injury through collision with turbine blades, overhead wires, met masts, or fences associated with the proposed wind farm.</td>
<td>Standard mitigation practices such as a Breeding Bird Protection Plan (BBPP) and an informed Conservation Management Plan (CMP) may be recommended, if required, alongside a more bespoke strategy agreed in consultation with SNH.</td>
</tr>
</tbody>
</table>
| Hydrology, Hydrogeology and Geology | Unmanaged erosion/sediment deposition and suspended solids generated from ground disturbance. Oil/fuel pollution (from accidental spillage or incorrect transport, storage or refuelling procedures). Any alteration of natural drainage or subsurface hydrogeological patterns could disturb natural subsurface water flows. The development of new tracks across existing streams and channels has the potential to block water flow. Poorly designed drainage on unstable areas may increase landslip risk on sloping ground. Potential effects on Ground Water Dependent terrestrial Ecosystems. Potential for peat slide. | The design of the mitigation measures will be based on relevant guidance provided by the SNH, SEPA and others, such as CIRIA guidance. It is expected that mitigation will come through appropriate design and layout modifications following consultations with the SEPA and other key stakeholders. Mitigation measures will be included in the wind farm design and within the Framework CEMP and will include:  
- Adoption of best practice pollution prevention, drainage control and waste management procedures  
- Protection of existing land drainage requirements and water course crossings, and;  
- Appropriate design of foundation installation taking into account the presence of peat across the site, the management of soil water levels and the potential to generate excessive quantities of groundwater contaminated with sediments. |
<table>
<thead>
<tr>
<th>Topic</th>
<th>Potential Effects</th>
<th>Potential Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>Potential effects on residential properties.</td>
<td>If required potential mitigation options will be identified and could include positioning turbines at locations where agreed noise limits will be met or setting operational limits for turbines in order to meet agreed noise limits.</td>
</tr>
<tr>
<td>Air Quality</td>
<td>During construction and decommissioning phases the potential air quality impacts from the proposal are:</td>
<td>Dust generation will be mitigated through the application of standard dust mitigation measures on and off site and good housekeeping practices during construction, operation and decommissioning phases. These will be included within the framework CEMP.</td>
</tr>
<tr>
<td></td>
<td>Dust creation during construction/decommissioning.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emissions from construction/decommissioning traffic.</td>
<td></td>
</tr>
<tr>
<td>Archaeology &amp; Cultural Heritage</td>
<td>Construction work has the potential to damage or destroy cultural heritage assets.</td>
<td>Physical impacts will be avoided as far as reasonably practicable. Where this is not practicable, assets will be appropriately recorded ahead of disturbance, with the results being published as appropriate. Mitigation of setting impacts will be built into the design of the wind farm as far as reasonably practicable.</td>
</tr>
<tr>
<td>Traffic</td>
<td>The potential impacts are anticipated to be:</td>
<td>Mitigation measures will be adopted to avoid and reduce the adverse traffic and transport effects highlighted in the impact analysis. Typical mitigation measures relating to traffic and transport issues can include, but not limited to, the following:</td>
</tr>
<tr>
<td></td>
<td>Disruption to existing traffic flows on the local road network during construction;</td>
<td>- Route Selection;</td>
</tr>
<tr>
<td></td>
<td>Accessibility from the port to the development site.</td>
<td>- On-Site Concrete Batching;</td>
</tr>
<tr>
<td></td>
<td>It is not expected that there will be any significant impacts resulting from operational traffic.</td>
<td>- On-Site Borrow Pits;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Road Maintenance; and</td>
</tr>
<tr>
<td>Socio-Economic</td>
<td>The potential impacts of the development may include:</td>
<td>- Traffic Management Measures</td>
</tr>
<tr>
<td></td>
<td>The generation of employment and business opportunities during manufacturing, construction and operational phases of the development;</td>
<td>Thorough communication will take place throughout the development of the project and every effort will be made to fully engage the community. Support will then be given for initiatives that help the community to adopt and support the concept of renewable energy generation.</td>
</tr>
<tr>
<td></td>
<td>Impacts on wild game activity, land value, local tourism and recreational amenity;</td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td>Potential Effects</td>
<td>Potential Mitigation</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td>Indirect and direct economic benefits and disbenefits from the proposed scheme; and</td>
<td>None required</td>
</tr>
<tr>
<td></td>
<td>Impact on social capital by the proposed scheme.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TV Reception</td>
<td>None required</td>
</tr>
<tr>
<td></td>
<td>Assessment has highlighted that no homes will be affected by the proposed wind farm.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The analogue TV signal in the area of Fairburn was replaced with a digital signal in October 2010 and it is known that a digital signal is less susceptible to interference and therefore has been scoped out of the assessment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fixed microwave links</td>
<td>If mitigation is required this could include</td>
</tr>
<tr>
<td></td>
<td>Consultation with operators indicates that no impact will be caused by the proposed wind farm.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nuisance to occupants of residential properties.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It is not expected that there will be any significant impacts resulting from shadow flicker.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Potential effect of waste arisings to landfill sites.</td>
<td>A Framework Site Waste Management Plan (SWMP) will be provided within the ES as part of the CEMP. The Framework SWMP will identify all potential waste streams (including peat/other materials excavated in relation to infrastructure) associated with the works.</td>
</tr>
</tbody>
</table>

In preparing this scoping request an attempt has been made to also identify those issues that are not considered to be relevant to this assessment. These issues, which are not considered to be significant have been highlighted and are proposed to be scoped out of the EIA.

It is therefore requested that Scottish Ministers and consultees consider whether these issues can be scoped out of the assessment. Scoping out irrelevant issues will enable the EIA process to focus on those issues that are potentially of significance. This appraisal has been made by a review of the site, its environmental setting, available baseline information and is based on professional judgement.

Issues proposed to be scoped out of the environmental impact assessment are illustrated within Table 9 below.
## Table 9  
Environmental Issues to be scoped out

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issues to be Scoped Out</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>Traffic noise</td>
<td>Temporary nature of traffic noise</td>
</tr>
<tr>
<td>Transport/traffic</td>
<td>Operational traffic</td>
<td>Operational traffic movements will be minimal.</td>
</tr>
<tr>
<td>Air quality</td>
<td>Impacts on local air quality during the construction/decommissioning phase.</td>
<td>The generation of dust during construction activity is unlikely to have a direct impact on any human receptors and will be controlled by means of best practices to be described within the Environmental Statement but more importantly within the Site Environmental Management Plan. The generation of traffic during construction will be short term and the route will bypass the majority of sensitive receptors.</td>
</tr>
<tr>
<td>Socio-Economic</td>
<td>Land Take</td>
<td>Land take will be minimal and will not interfere with existing land use.</td>
</tr>
<tr>
<td>Shadow Flicker</td>
<td>Nuisance to nearby properties</td>
<td>It is likely that shadow flicker may be scoped out during the course of the EIA.</td>
</tr>
</tbody>
</table>
5. Invitation to Comment

Consultees are invited to comment on the possible significant environmental effects of the Fairburn Extension Wind Farm, the proposed EIA methodologies and the ES structure, as presented within this Scoping Request.

Consultees are also invited to highlight any additional issues that they believe should be addressed within the EIA, and to identify any sources of information which may be relevant to the assessment.

It is SSER’s intention to forward this Scoping Request directly to those consultees listed in Appendix B.

Consultee responses should be directed to the Scottish Government Energy Consents and Deployment Unit at the address below, within three weeks of receipt of this Scoping Request.

Simon Coote
Scottish Government
Energy Consents and Deployment Unit
5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU

It should be noted that consultee responses will not be treated as confidential unless otherwise explicitly stated within the response.
Appendix A  Figures

Figure 1  Site Context and Location
Figure 2  Site Boundary
Figure 3a Conservation Management Plan Units (East)
Figure 3b Conservation Management Plan Units (West)
Figure 4  Phase 1 Habitats
Figure 5  Viewpoint Location Plan and Blade Tip ZTV with Landscape Designations
Figure 6  Interim Peat Probing Results