Bad a' Cheò Wind Farm

ENVIRONMENTAL STATEMENT
VOLUME 1 (OF 4): NON-TECHNICAL SUMMARY

June 2012

Sinclair Knight Merz
OneSixty
160 Dundee Street
Edinburgh
EH11 1DQ
Tel: +44 (0) 131 222 3530
Fax: +44 (0) 131 222 3531
Web: www.skmconsulting.com

COPYRIGHT: The concepts and information contained in this document are the property of Sinclair Knight Merz (Europe) Ltd. Use or copying of this document in whole or in part without the written permission of Sinclair Knight Merz (Europe) Ltd constitutes an infringement of copyright.

LIMITATION: This report has been prepared on behalf of and for the exclusive use of Sinclair Knight Merz (Europe) Ltd’s Client, and is subject to and issued in connection with the provisions of the agreement between Sinclair Knight Merz (Europe) Ltd and its Client. Sinclair Knight Merz (Europe) Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

REGISTERED ENVIRONMENTAL IMPACT ASSESSOR: Sinclair Knight Merz are Registered Environmental Impact Assessors with the Institute of Environmental Management and Assessment (IEMA), a leading international organisation dedicated to the promotion of sustainable development and to the promotion of best practice standards in environmental assessment and management.

The Registered Environmental Impact Assessor status (or membership) is awarded to organisations capable of producing environmental statements in accordance with current best practice standards. It is a status which reflects ability in environmental impact assessment work and has been awarded on the basis of a measure of the quality of work produced by Sinclair Knight Merz.
This page is intentionally blank
Table of Contents

1  Bad a’ Cheò Wind Farm  1
2  Environmental Statement  1
3  Non-Technical Summary  2
4  RWE Npower Renewables Limited  2
5  Site Selection  3
6  Project Overview  3
7  Planning Policy  5
8  Consultations  6
9  Ecology  7
10 Ornithology  7
11 Landscape and Visual Amenity  8
12 Noise  10
13 Hydrology, Hydrogeology & Geology  11
14 Cultural Heritage  11
15 Transport and Traffic  12
16 Socio-Economic  13
17 Telecommunications, Aviation and Defence  13
18 Carbon Assessment  14
19 Lead EIA Consultant  15
20 Viewing and purchase of ES  15
21 Further Information  15

Figures:
Figure 1  Site Location Plan
Figure 2a  Site Layout (Ordnance Survey)
Figure 2b  Site Layout (Aerial Photography)
Figure 3  Typical Turbine Elevation
Figure 4  Viewpoint 7 - A9(T) Rangag
Figure 5  Viewpoint 3: A9(T), Spittal
This page is intentionally blank
1 Bad a’ Cheò Wind Farm

RWE Npower Renewables Ltd (RWE NRL) is applying for detailed planning permission for a development called Bad a’ Cheò Wind Farm to be located at a site approximately 17.5km south of Thurso and 19km west of Wick, in Caithness (see Figure 1). Planning permission is sought for a 25 year operational period by RWE NRL. The application will be determined by The Highland Council.

Causeymire Wind Farm, operated by RWE NRL, lies immediately to the northwest of the proposed development.

The overall site covers approximately 230.9ha, of which approximately 196.6ha is peatland and the remainder is forestry. The site lies in open moorland with some isolated hills to the south and west, and more continuous high ground occurring on the western edge of the area.

Historically, the site has been subject to commercial peat cutting since 1991. A large part of the site was subject to drainage works in preparation for extraction of the peat.

Peat has therefore been a key consideration in relation to the layout, design and assessment of the proposed development, and the Environmental Impact Assessment (EIA) undertaken for the project addresses in detail a range of impacts related to the presence of peat, including ecology and nature conservation, hydrology, hydrogeology, peat depth and peat stability. An integrated habitat restoration plan is proposed on certain areas of the site.

The plantation forestry in the northern part of the site consists of a variety of trial plots which were planted in the 1960’s to assess the performance of different tree species when grown in peat. The experimental aspect of this activity has now ceased and Forestry Commission Scotland policy is now not to restock on sites with a peat depth of more than 0.5m.

The proposed development will comprise thirteen turbines with a capacity of up to 2.5 MW each, giving a total installed capacity of up to 32.5 MW. The proposed layout is shown in Figure 2a and Figure 2b against ordinance survey mapping and aerial photography.

A drawing illustrating the maximum blade height to tip dimension of the turbines which would be used for the wind farm is provided in Figure 3. Illustrative views of the wind farm are provided in Figures 4 and 5, these providing an indication of how the wind farm would appear in combination with the existing operational Causeymire Wind Farm from the A9 at Rangag to the south and from the A9 at Spittal to the north.

To accompany the application for planning permission submitted to The Highland Council, RWE NRL has commissioned an independent EIA of the proposed development and presented the findings within an Environmental Statement (ES).

2 Environmental Statement

The Bad a’ Cheò Wind Farm Environmental Statement (ES) is the formal written statement of the findings of the EIA of the proposed development.

The ES addresses the predicted positive and negative impacts on the environment during the construction, operation and decommissioning of the proposed development. The ES comprises four separate volumes:

- Volume 1: Non-technical Summary (NTS) (this document);
- Volume 2: ES Main Text;
- Volume 3: ES Figures; and
- Volume 4: Appendices
Supporting documents for the ES which will accompany the planning application submission include:

- Visualisations of the Wind Farm prepared in accordance with the requirements of The Highland Council;
- Pre-Application Consultation Report;
- Design and Access Statement; and
- Report to Inform the Habitats Regulations Appraisal.

Details on how to view or purchase copies of the ES are provided at the end of this document.

In recognition of the EIA as a fundamental and integral component of the wind farm design process, the design for the proposed development has evolved based on the findings of the EIA studies.

The ES describes the nature of the proposed development and evaluates the likely significant environmental impacts. It therefore acts to aid the decision-making process and to present information in a readily accessible form.

Through the publication of the ES, local communities are encouraged to contribute to the consenting phase through active participation in the planning application consultation process, and which follows on from local communities participation in the pre-application consultation process.

3 Non-Technical Summary

This NTS has been prepared to summarise, in non-technical language, the findings of the EIA undertaken for the proposed development.

The publication and circulation of this NTS is hoped to further assist local communities and stakeholders in the understanding of the impacts of the proposed Bad a’ Cheò Wind Farm in relation to its surrounding environment.

4 RWE Npower Renewables Limited

RWE NRL is the UK subsidiary of RWE Innogy and is one of the UK’s leading renewable energy developers and operators. The company is committed to developing and operating wind farms, hydro and biomass plants to produce sustainable electricity. RWE NRL currently operates 19 hydroelectric power plants and 26 wind farms in the UK.

The company currently operates approximately 611 MW of installed wind power capacity comprising 461MW of onshore wind farm capacity and 150MW of offshore wind farm capacity.

In Scotland, RWE Npower Renewables operates nine onshore wind farms including the following sites in the Highland Council Area:

- Farr Wind Farm (opened 2006);
- Causeymire Wind Farm (opened 2004);
- Novar Wind Farm (opened 1997).
5 Site Selection

RWE NRL considers a range of environmental, technical, policy and economic factors when investigating opportunities for onshore wind farm developments. When assessing the suitability of sites, RWE NRL expects potential sites to meet the following criteria:

- Anticipated high wind speeds;
- Sufficient scope to locate a wind farm development outside national and international statutory designations for landscape and nature conservation;
- The potential site is supported by relevant planning policy;
- The potential site is not within close proximity to residential receptors;
- Direct impacts on nationally designated features of cultural heritage (such as Scheduled Ancient Monuments and listed buildings) can be avoided;
- Access for the delivery of turbines and associated infrastructure is possible;
- Economic grid connection is feasible;
- The potential site is outside any known technical constraint areas associated with civil and defence aviation.

Any potential wind farm development must also have the support and agreement of the relevant landowner(s).

The site met the above feasibility criteria and was considered to accord with local and national planning policy. Therefore RWE NRL decided to progress to a planning application.

6 Project Overview

6.1 Layout and Design

The layout of the wind farm (Figure 2a and Figure 2b) and turbine height has been carefully considered in light of discussions with The Highland Council and other consultees such as Scottish Natural Heritage (SNH).

The layout of the wind turbines was designed to minimise potential visual impacts whilst also giving consideration to other environmental, technical and engineering constraints.

The finish and colour of the wind turbines and blades will be light grey as this is the most inconspicuous colour under most lighting conditions and when the turbines are viewed against a sky backdrop. The final design of the proposed development has followed an iterative process that has taken into consideration technical and environmental constraints. The peatland habitats at the site, separation distances (e.g. setback distance of 200m from the A9 trunk road), noise and the landscape and visual impact of the proposed development (in combination with the existing Causeymire Wind Farm and other proposed wind farm developments in the area) were key considerations.

6.2 Wind Farm Components

There are a number of different components associated with the construction and operation of the wind farm. The main permanent components (the above ground elements of which will only be present during the 25 year life of the project) and the temporary components (present during the construction phase) are identified on Figure 2a and Figure 2b and are listed below:
Permanent Components

- Thirteen wind turbines, each with one transformer located outside and adjacent to the turbine tower. Each turbine will have a maximum blade tip height of 105m (Figure 3).
- New access from the A9 (T)
- Approximately 6.9km of new access tracks on site, single track of 5m in width. Running alongside the length of the tracks will be a trench for underground power and control cables.
- Thirteen crane pads to erect the turbines;
- A single 60m wind resource monitoring mast; and
- One Control Building and Substation Compound (estimated size – 45m x 28.5m)

Temporary Components

- One construction compound including lay-down area, temporary accommodation, car parking and material storage facilities (estimated size 50m x 50m);
- Up to two temporary wind monitoring masts, to be removed prior to operation; and

6.3 Grid Connection

The grid-connection will be the subject of a separate consent obtained by the electricity network operator under a separate consenting regime and is therefore not assessed as part of the planning application for the proposed development.

RWE NRL has submitted a grid connection application to the Transmission Operator for a 33kv connection at the proposed Spittal Hill substation to the north or the existing Mybster substation to the north west. The connection is likely to be made via a single wood-pole overhead line.

6.4 Habitat Management Plan

An Outline Habitat Management Plan (OHMP) has been submitted as an Appendix to the ES. A more detailed plan will be produced and agreed with The Highland Council, in consultation with Scottish Natural Heritage and Scottish Environment Protection Agency, following planning consent and prior to development commencing.

The aim of the OHMP is to establish the key objectives and principles by which the site would be managed to the benefit of biodiversity.

The objective of the proposed Habitat management Plan is to activity restore the water levels in particular areas of the site in order to encourage the restoration of peatland habitat across the site.. This will include ditch blocking and the re-use of all peat excavated during wind farm construction

The areas have been identified for restoration of peatland hydrology, as follows:

- The area currently forested, (an area of about 36 ha will be managed); and
- areas of old peat workings with peat deposits in excess of 2m deep (an area of about 50ha will be managed).
6.5 Potential Benefits

Wind Farm Yield and Carbon Dioxide Displacement
Output predictions for the wind farm take into account the variable nature of the wind, down time of the turbines due to maintenance and losses that are inherent in the wind farm design. Modern wind farms generate approximately 80% of the time although not always at maximum output.

The proposed development 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 (see also Section 18 of this document).

Employment and Community Benefits
During its construction, the proposed development has the potential to place significant contracts for services and materials, supporting local employment. These impacts are summarised in Section 16 of this NTS and addressed in more detail in the Socio-economic assessment in the ES.

7 Planning Policy

Wind power, together with other renewable forms of energy is seen as an essential element of the strategies of the UK Government and European Union in tackling climate change.

7.1 Climate Change Policy and Renewable Energy Targets
The Climate Change (Scotland) Act 2009 put in place a legislative framework in Scotland to pursue a reduction in emissions associated with the unsustainable use of fossil fuels and placed duties on public bodies to reduce emissions. Further to this Act, The Scottish Government's has committed to a target of meeting the equivalent of 100 per cent of Scotland's gross annual electricity consumption and the equivalent of 11% of Scotland's heat demand from renewable sources by 2020.

The route map for renewable energy in Scotland recognises the very important role that onshore wind will have to play in order for Scotland to achieve its 2020 targets.

Electricity Generation Policy Statement 2012
The Electricity Generation Policy Statement, which was published in March 2012, sets out the Scottish Government’s position on the respective roles of renewable generation and fossil fuel thermal generation in Scotland’s future energy mix. It reinforces the importance of renewables in the light of the Scottish Government's 100% target mentioned above. The development of the proposed Bad a’ Cheò Wind Farm is consistent with this requirement.

7.2 Highland Council Planning Policy
The current development plan covering the site is the Highland wide Local Development Plan (HwLDP) which was adopted by the Highland Council in April 2012. The Plan identifies that the Highland area has great potential for renewable energy production.

Draft Supplementary Guidance on Onshore Wind Energy published by The Highland Council for the Planning Environment & Development Committee on 14 March 2012
This policy supersedes parts of the strategy and planning guidelines of The Highland Renewable Energy Strategy and Planning Guidelines (HRES) relating to on-shore wind energy.
The Council has drafted this new guidance to follow Scottish Planning Policy and more generally to provide advice on the development of onshore wind energy of all scales in Highland.

According to this draft supplementary guidance groupings of 8 or more turbines will be considered ‘large scale’ regardless of output or height, therefore the proposed development comprising 13 turbines will fall into this grouping.

Map – Stage 3 – Areas of search in the draft guidance are directly relevant as they identify areas within which appropriate proposals are likely to be supported subject to detailed consideration on the HwLDP. This map highlights that the proposed development has a potential favourable location as it will fall within this area.

8 Consultations

During the EIA, the project team have consulted widely with statutory consultees and stakeholders, including The Highland Council, Scottish Natural Heritage, SEPA, and community councils.

The consultation activities undertaken includes the preparation of a scoping report submitted to The Highland Council in February 2011; a public exhibition held in September 2011 and discussions with key consultees.

The following organisations have been consulted:

- Scottish Government;
- Scottish Natural Heritage;
- Scottish Environment Protection Agency;
- Scottish Water;
- Health and Safety Executive;
- Highland Council Transport Environment and Community (TEC) Services;
- Highland Council Archaeology Unit;
- Ministry of Defence;
- NATS (National Air Traffic Control);
- NERL Safeguarding;
- Highlands and Islands Airports Limited;
- JMP (Term Consultant Transport Scotland);
- Ofcom (Telecommunications);
- Atkins (on behalf of the water industry);
- Arqiva (broadcast, satellite and mobile communications);
- JRC (on behalf of the UK fuel and power industry);
- Forestry Commission Scotland;
- RSPB;
- Historic Scotland;
- Caithness District Salmon Fisheries Board;
- Halkirk District Community Council;
Latheron, Lybster and Clyth Community Council; and

Watten Community Council.

9 Ecology

Information was obtained from a range of sources relating to protected and notable species and habitats in the vicinity of the site, and designated nature conservation sites within 10 km of the site. In addition, a number of ecological surveys were carried out in 2011 including a Phase 1 habitat survey and more detailed (National Vegetation Classification) botanical survey, bat surveys and surveys for a range of protected mammal species.

There are sixteen statutory designated sites within 10km of the site. Of these the River Thurso Special Area of Conservation (SAC), the Caithness and Sutherland Peatlands SAC/Ramsar Site and Blar nam Faoileag SSSI are located adjacent to the site, all generally to the south.

The site itself is dominated by wet modified bog, much of which has been historically subject to peat cutting. Other habitats present on and adjacent to the site include coniferous plantation and blanket bog. Notable faunal species recorded in the vicinity of the site include common lizard, otter and water vole. Very low numbers of common pipistrelle bats were recorded during bat surveys.

The River Thurso SAC is designated for Atlantic salmon and the potential for pollution from construction activities to have negative impacts on the riverine habitat in the SAC was identified during the EIA. However, the SAC is located 100m from the closest infrastructure and the closest works affecting tributaries entering the SAC are over 1.5km away. Once the proposed mitigation measures are taken into account, which in the main consist of water and drainage management measures during construction, no significant impacts on the SAC are predicted.

Caithness & Sutherland Peatlands SAC/Ramsar Site and Blar nam Faoileag SSSI are over 100m from the closest wind farm infrastructure and are separated from the site by the Little River, which is considered to act as a barrier to potential construction impacts. No significant impacts on these designated sites are therefore predicted.

The proposed development will result in the loss of an estimated 4.47 ha of peatland habitats (blanket bog, modified bog and bare peat) with an estimated further 24.63 ha potentially subject to disturbance either during construction or subject to hydrological change. An Outline Habitat Management Plan has been produced which sets out proposals for the restoration of conditions suitable for the re-establishment of blanket bog at the site, including ditch blocking and the re-use of all peat excavated during wind farm construction. This will compensate for any negative impacts on peatland habitats and should result in a significant positive impact.

The proposed development is predicted not to have a significant impact on common lizard, otter, water vole and red squirrel, pre-construction surveys will be carried out and mitigation implemented as required to ensure compliance with relevant legislation during construction and decommissioning.

10 Ornithology

Ornithological surveys of the site and appropriate buffer zones were carried out between April 2010 and August 2011. Surveys followed current Scottish Natural Heritage guidance and included breeding bird surveys (over two breeding seasons), wintering bird surveys and 17 months of vantage point (VP) observations to quantify bird flight activity. An extensive desk-based study was also undertaken which included review of relevant data for the adjacent Causeymire Wind Farm and proposed Halsary Wind Farm.
The site is adjacent to the Caithness and Sutherland Peatlands Special Protection Area (SPA), Ramsar Site and Shielton Peatlands SSSI. Caithness Lochs SPA/Ramsar Site is located 7.5km to the north-east. No bird species listed in Schedule 1 (of the Wildlife & Countryside Act 1981) or Annex 1 (of the EC Birds Directive) were recorded breeding within the site, although merlin (1 pair), golden plover (0-2 pairs), greenshank (1 pair) and common crossbill (0-1 pairs) all bred within 2km of the site boundary. Relatively low numbers of birds were present at the site in winter and the only Schedule 1/Annex 1 species recorded during walkover surveys were hen harrier (maximum one bird), golden plover (maximum seven birds) and common crossbill (maximum three birds). The number of flight-lines recorded for bird species of particular concern (target species) during VP watches throughout the survey period was relatively low (85 flight lines over 204 hours VP survey from each of two VPs).

Adopting a precautionary approach, it is possible that the construction of the proposed development could result in the disturbance and displacement of one pair of greenshank for the duration of construction (one breeding season). The likelihood of disturbance occurring is uncertain because of the lack of species specific research. If this occurred, it would represent a significant negative impact on a population of local importance. No other significant impacts due to disturbance/displacement are predicted.

Collision Risk Modelling has been undertaken for whooper swan, greylag goose, osprey and golden plover. For all other target species the number of recorded flights at risk height (i.e. flying between 10 and 130m height and within 200m of the outer turbine locations) was so low that collision risk is very unlikely to be significant. The modelling predicted 0.24 collisions per year for whooper swan, 0.25 collisions per year for greylag goose, 0.02 collisions per year for osprey and 0.38 collisions per year for golden plover. The predicted level of collisions will not have a significant impact on the populations of any of these species.

Mitigation measures will be employed during construction and decommissioning to prevent inadvertent damage or destruction of active nests and to avoid disturbance to the nests of any Schedule 1 species. During wind farm operation the measures set out in the Outline Habitat Management Plan will result in the creation of habitats which should benefit breeding waders and should compensate for the possible impact on greenshank.

An appraisal of potential impacts on the Caithness and Sutherland Peatlands SPA/Ramsar Site and the Caithness Lochs SPA/Ramsar Site has been carried out as required under the Habitats Regulations (The Conservation (Natural Habitats &c.) Regulations 1994). This included an assessment of cumulative impacts in association with other [developments, including other proposed and consented wind farms]. No significant impacts were identified for qualifying species for either SPA/Ramsar Site, either alone or in combination [with other wind farms].

11 Landscape and Visual Amenity

The effects of the proposed development on landscape and visual amenity have been considered as part of the EIA, as well as its cumulative effects of all known wind farms within the study area to the proposed Bad a’ Cheò Wind Farm.

The assessment involved both field work and desk study and the preparation of visibility mapping in addition to visualisations of the proposed development including views from 17 viewpoints. Two of the visualisations prepared for the assessment are presented in Figures 4 and 5 of this NTS. These provide an indication of how the wind farm would appear from the A9 at Rangag to the south, and from Spittal to the north of the wind farm.

Landscape and Visual matters have been a key consideration in the development of the wind farm layout so as to minimise as far as practicable effects on sensitive receptors. To this end, a number of key design principles were adopted at an early stage, e.g. an appropriately scaled development, the use of similar turbine size and spacing to promote a positive visual relationship with Causeymire Wind Farm and limit effects on the Flow Country and Berriedale
Coasts Special Landscape Area (SLA) to the south, and the Flow Country Search Area for Wild Land (SAWL). This mitigation through design resulted in the reduction of potential landscape and visual effects within the study area.

From the outset of the EIA process, it was clear and the landscape assessment took account of the fact, that the proposed development would effectively be viewed, in visual terms, as an extension to Causeymire Wind Farm and that effects would be incurred in the context of the influence on receptors already imposed by the Causeymire development.

11.1 Landscape Assessment

Landscape effects are defined as changes to landscape elements, characteristics, character, and qualities of the landscape as a result of development. The proposed development lies within an area of landscape character identified as the Flat Peatlands.

Key landscape receptors were identified as being the Sweeping Moorland and Flat Peatland LCTs, the Flow Country and Berriedale Coast SLA, and the Flow Country SAWL. The assessment identified that the proposed development would result in some localised significant effects on these receptors, their key qualities and determining characteristics, i.e. their open, ‘wild’ exposed nature, simplicity and general absence of man-made elements. However, these receptors already experience a degree of influence on their characteristics as a result of existing wind farms including the Causeymire development.

11.2 Visual Assessment

Visual effects are concerned wholly with the effects of the proposed development on views and general visual amenity and also the cumulative visual effects of this wind farm in combination with other wind farm developments.

Key visual receptors were determined at an early stage as comprising users of the A9(T) and residents at nearby Mybster/Spittal, both of whom will experience short distance views of the proposed development.

The assessment identified that views in the region of the proposed development are currently heavily influenced by Causeymire Wind Farm, the existing turbines constituting prominent elements within views. The proposed development will add to the level of development and extend the duration of views of wind turbines along the A9(T) for a relatively short distance. This will lead to localised significant effects on visual amenity from the carriageway and will affect southbound views of the Flow Country for a short distance, however open views are regained and views out across the moorland landscape possible. The assessment of effects on visual amenity from settlements identified that effects would be of the greatest magnitude in the region of Mybster and Spittal where short distance views, looking south onto the proposed development would be possible from some locations and result in some limited significant effects on visual amenity.

The assessment of cumulative effects on landscape and visual receptors was undertaken following review of visibility mapping and wireframe views to all wind farms identified within the Study Area, and the identification of schemes which would give rise to the greatest potential for significant cumulative effects.

The assessment indicated that the Sweeping Moorlands, Flat Peatlands, Small Farms and Crofts, and the Mixed Agriculture with Settlement landscape types were most likely to experience greater influence and change in relation to the proposed development. In addition, effects on the Flow Country and Berriedale Coast SLA and the Flow Country SAWL were indicated as having the potential for change associated with the introduction of the proposed development. The pressure on the defining qualities of these receptors results not only from the addition of the proposed development to the existing Causeymire development, but also the potential scenarios featuring the wind farms currently awaiting planning permission at Dunbeath, Halsary, Latheron and Spittal Hill.
11.3 Cumulative Assessment

In combination with Dunbeath, Latheron and Spittal, the introduction of proposed development would increase the influence of wind energy development on the SLA and SWAL through the creation of a larger wind farm cluster in association with Causeymire Wind Farm. However it would not result in significant cumulative effects, as the addition of these other sites as distinct, separate developments will create a greater visual change.

In the cumulative scenario comprising the proposed Halsary Wind Farm, a single large wind farm cluster would be created. In that scenario, Bad a’ Cheò, Causeymire and Halsary would comprise one large cluster; Bad a’ Cheò appearing as a relatively modest ‘infill’ site between the two larger Causeymire and Halsary Wind Farms. Analysis of the relationship that the proposed development would have with the Halsary Wind farm was undertaken through the use of wireframe views and visibility mapping as with the other cumulative sites. In determining the nature of effects, consideration was also given to the proposed restoration plan associated with Halsary and the restoration plan for Bad a Cheò. If implemented, both plans will result in positive landscape change through the removal of areas of commercial forestry which, in combination with the habitat management plan, will benefit the region in the long term.

With regard to cumulative effects on visual amenity, key receptors would comprise users of the A9(T) and residents of Mybster and Spittal. These receptors would experience a greater effect on visual amenity as a result of the proposed development but again it would be regarded as a cluster with the Causeymire Wind Farm and would exert only slightly greater influence generally except for Viewpoint 8 on the A9(T) which is located in a layby on the northbound side of the A9, and which has immediate views over the application site and the Flow Country to the south and south west. Visitors to this viewpoint would experience substantial change in visual amenity at this location and a significant effect in all possible planning scenarios, in addition to views from Spittal and Mybster in combination with Spittal only. In combination with Halsary, the proposed development would constitute a relatively modest addition within a pocket of land falling between two larger developments resulting in a moderately denser wind farm cluster, Halsary constituting the greater visual effect on receptors at Spittal and Mybster.

12 Noise

TNEI Services Ltd carried out the noise assessment of the proposed development, taking into account the potential cumulative impact of the proposed development operating in conjunction with other operational, consented and proposed schemes in the area. These included Causeymire (operational) / Causeymire Wind farm Extension (permitted), and the proposed Halsary Wind Farm (immediately to the north east) and Spittal Hill Wind Farm (to the north).

In line with Scottish Government guidance, noise assessment was carried out in accordance with "The Report, "The Assessment and Rating of Noise from Wind Farms" (Final Report, Sept 1996, DTI), (ETSU-R-97),

The three noise sensitive receptors used in the original noise assessment for the operational Causeymire Wind Farm were confirmed by the Environmental Health Officer of THC, as being representative of the properties located closest to the proposed development and the other wind farm schemes (Halsary and Spittal Hill).

The cumulative assessment was undertaken in stages to represent the different scenarios associated with schemes currently being considered by The Highland Council. Predictions of wind turbine noise were made, based upon the sound power level data for the candidate turbines for the proposed wind farms and using data for the installed turbines at Causeymire Wind Farm. The noise prediction model is considered to provide a realistic impact assessment.
The predicted wind turbine noise levels compared with measured background noise levels indicate that at the noise assessment locations neighbouring the proposed wind farms, wind turbine noise should not exceed the lower quiet daytime fixed minimum limits and night-time Noise Criteria established in accordance with ETSU-R-97 when Causeymire (including extension), Bad a’ Cheò and Spittal Hill Wind Farms operate concurrently and should not exceed the upper quiet daytime fixed minimum limits and night-time noise criteria when Causeymire (including extension), Bad a’ Cheò, Halsary and Spittal Hill Wind Farms operate concurrently.

13 Hydrology, Hydrogeology & Geology

The hydrology assessment considers the potential impacts of the proposed development on the surface water and groundwater environment in terms of both quality and quantity, and provides an assessment of flood risk and likely changes to existing flood risk patterns. In addition, it also addresses the potential impact of the proposed development on soil and geology across the site.

A review of baseline conditions was undertaken comprising an information review, a site visit, to identify local hydrology, water features and private water supplies, and consultation with the SEPA and local Environmental Health departments. A study of the peat resources and their hydrology has also been undertaken, a peat stability report produced and carbon assessment undertaken (see below).

Potential impacts associated with the construction, operation and decommissioning of the proposed development have been identified and assessed. A level of risk associated with each potential impact has been assigned in relation to environmental receptors within, surrounding or downstream of the site, according to best practice guidance within the EIA.

Mitigation to address potential impacts on sensitive environments has been integral to the design and layout of the proposed development. This has included providing a minimum of 50m buffer zones around the significant watercourses of Little River, Allt Aikergill and Causeymire Burn. Management of surface water runoff will be through the implementation of a temporary drainage plan during the construction phase, prior to a long term drainage plan, integral to the proposed habitat management plan. Management of runoff will ensure minimal disruption to existing runoff regimes during the construction process and will ensure the potential for sediment to become entrained within watercourses is controlled. Where avoidance of impact has not been possible, mitigation measures will be utilised to offset significant impacts.

Overall the potential impacts of the proposed development on the water environment after mitigation is taken into account are considered minor, with the impacts being limited to changes in surface water runoff, short term increased sediment loading to runoff, a potential for pollution from spillages of substances during construction and decommissioning and changes to peat hydrology. With the adoption of a comprehensive Construction Environmental Management Plan, the peat restoration measures to be included in the Habitat Management Plan, the incorporation of good practice techniques and with the avoidance measures already taken into account in the design of the proposed development, the changes to the water environment are not predicted to be significant. No cumulative impacts with other wind farms will be experienced with respect to the hydrological environment.

14 Cultural Heritage

The potential impacts of the proposed development upon both the physical fabric and setting of cultural heritage assets has been considered. The assessment has drawn on the results of desk-based and field studies.
Potential Construction impacts due to the construction of an access track along an existing track are predicted for one cultural heritage site within the planning site boundary, Torran Farmstead. However these can easily be avoided and have been assessed to be of negligible significance.

There is low potential during the construction phase for impacts on previously unrecorded cultural heritage features within the planning application boundary. A programme of archaeological works will be agreed with the Highland Council Archaeologist, which would likely include monitoring of construction excavations, and in the event any features are uncovered, measures to mitigate such impacts through preservation by record.

Potential operational impacts upon the setting of cultural heritage sites in the surrounding area have been considered. No significant effects have been identified.

15 Transport and Traffic

The proposed development has been assessed with reference to ‘Guidelines for the Environmental Assessment of Road Traffic published by the Institute of Environmental Assessment and with consideration for comments received from The Highland Council and Transport Scotland.

The likely traffic generated by the proposed development during its construction, operation and decommissioning phases has been identified and the site access proposals, including the routeing of construction traffic and specifically abnormal indivisible loads, have been discussed. The preferred port for turbines deliveries is Wick Harbour. The turbine components (abnormal loads) will then be delivered by road to the site, the preferred route is via the A99 and then the A9 (northbound).

It is predicted that very low levels of traffic will be generated during the operational phase, and is therefore the impact is assessed as being insignificant.

As such, it is the environmental impacts on the A9(T) and local road network as a result of traffic generated during the construction phase of the proposed development that have formed the focus of the assessment.

The potential impacts relating to traffic, severance, accidents and road safety, driver delay and pedestrian amenity, fear and intimidation have been assessed and where the impact has been identified as slight or greater, mitigation measures such as temporary signing have been identified.

Temporary mitigation measures required to accommodate the movement of abnormal loads along the proposed route (such as the use of escort vehicles) have been identified and the principles agreed with the relevant Road Authorities. Details will be agreed post planning.

Residual impacts relating to traffic generated by the construction of the proposed development have been reviewed and summarised. This assessment shows that the impacts of additional traffic during the construction phase are mainly insignificant with the exception of Accidents and Road Safety and Driver Delay where the impacts have been classified as slight relating in particular to the movement of civil / mechanical works heavy goods vehicle traffic. These impacts will be kept to a minimum by the adoption of an appropriate traffic management plan.

Proposals for other wind farm developments, in the local and wider area, notably Halsary, have been identified and an assessment of any cumulative impacts has been undertaken and reviewed. The assessment shows that the road network is sufficient to accommodate all anticipated construction traffic, even given a worst case scenario where all developments are constructed simultaneously.
16 Socio-Economic

The socio-economic effects from the proposed development have been assessed during the construction and operational phases of the project based on data and experience of previous RWE NRL projects in the Highland region.

The development of a wind farm and its contribution to the growing renewable energy generation capacity both in Caithness, and the wider Highland region, will have a positive impact in terms of socio-economic impact in a number of areas.

It would have an overall positive impact on the local economy in terms of temporary employment created during the construction phase. In addition, there would be an input to the local economy due to the increase in the use of local services by contractor workers accessing the local area during the construction phase.

Local contractors will be able to bid for construction, civil and electrical installation work. Based on previous experience with the Causeymire and Novar 2 Wind Farm construction projects, and the skills base available in Caithness, it is reasonable to assume that a significant proportion of these contracts have the potential to be awarded to Scottish based companies, and in particular locally based companies. Predicted employment information from RWE NRL, looking at other similar schemes, estimates the number of potential construction jobs at 20.

The impact of economic investment is deemed to be a positive impact and of benefit to the local community.

Employment opportunities during operation would be limited due to the relatively small number of staff employed in O&M activities. There are five full time equivalent (FTE) jobs associated with the operational Causeymire Wind Farm. It is estimated that there is the potential to create up to five FTE operational and maintenance positions once the proposed development is operational.

The impact on long term employment is therefore assessed as minor and positive, noting that there is the loss of 0.5 FTE associated with a business that includes peat cutting activities. The overall impact on jobs during operation is seen as minor, positive.

A community fund to support local community projects will be set up for the duration of the operational life of the development. The annual income from the community fund will be dependent on the installed capacity of the wind farm; the total amount will therefore depend on final turbine selection.

The impact of economic investment is deemed to be a positive impact and of benefit to the local community.

No significant effects on tourism activities are anticipated.

17 Telecommunications, Aviation and Defence

The potential impacts that the proposed development may have on existing telecommunications, aviation and defence interests have been considered. Appropriate consultation has taken place with various government and other relevant agencies and stakeholders, including the Ministry of Defence and Civil Aviation Authorities.

Wind turbines, as with any large structure, can interfere with electromagnetic signals. This can affect television reception, radio communication networks and the various systems associated with aviation and national defence.

The proposed development is predicted to have insignificant impacts on telecommunications.

The proposed development is predicted to have insignificant impacts on television reception. A standard planning condition may be imposed by The Highland Council to ensure that, in the
event of the proposed development degrading television reception, signal quality will be restored by the developer.

The proposed development is predicted to have insignificant impacts on low flying military aircraft. The proposed development will be marked on aeronautical charts to enable aircrew to avoid the development horizontally or vertically.

The proposed development will have no impact on air traffic control, air defence or Meteorological Office radar equipment.

The proposed development will have no impact on civil aviation including operations at Wick Airport.

18 Carbon Assessment

One of the drivers for onshore wind farms is the reduction in net greenhouse gas emissions by displacing electricity produced from conventional fossil fuel sources. However, no form of electricity generation is completely carbon free; there will be emissions as a result of manufacture of wind turbines and construction materials, as well as emissions from construction activities and transport.

In addition to the lifecycle emissions from the wind farm infrastructure, where a wind farm development is located on carbon rich soils such as peat, there are potential impacts resulting from direct action of removing peat for construction and also the indirect changes to hydrology that can result in losses of stored carbon. The footprint of a wind farm can also have a small impact on future carbon sinks.

The carbon payback for the proposed development was estimated using the Scottish methodology titled ‘Calculating potential carbon losses and savings from wind farms on Scottish Peat lands: a total life cycle perspective’. This methodology currently represents the best available methodology for sites across the British Isles.

The results of the carbon calculator show that the proposed development itself is estimated to produce annual carbon savings in the region of 36,700 tonnes of CO₂ per year through the displacement of grid electricity (based on an emission factor of 0.43 kg CO₂/kWh). The assessment of the carbon losses has estimated a total lifetime loss of around 111,500 tonnes of CO₂ due to the construction of the wind farm and the impact of drainage on the peat. The estimated payback period of the proposed development is therefore in the order of 3 years.

The key area of anticipated carbon loss is from soil organic matter, in particular the CO₂ loss from removed peat. Mitigation measures such as using excavated peat for restoration works of habitat areas as described by the Outline Habitat Management Plan should reduce these losses.

It should be noted that the estimated payback period is considered a conservative estimate due to the nature of the existing peat extraction operation. Large areas of the site have already been subject to man-made drainage in order to de-water the peat, prior to extraction. In the absence of the proposed development, it is assumed the current peat extraction operation would continue with the majority of the peat on the site being extracted over time. As such, the majority of the emissions resulting from the construction of the proposed development are likely to occur even if the proposed development does not proceed, albeit over a longer period of time as and when the extracted peat decomposed and the stored carbon is released.
19  Lead EIA Consultant
SKM Enviros was appointed by RWE NRL to carry out the EIA and prepare the ES for the proposed Bad a’ Cheò Wind Farm.

SKM Enviros is part of Sinclair knight Merz, an independent professional services consultancy firm with over 6,500 staff world-wide and offices throughout the UK. SKM Enviros has considerable experience in the development, construction and operation of wind farm developments throughout the UK, including the assessment of their environmental impacts.

SKM Enviros is a Registered Environmental Impact Assessor with the Institute of Environmental Management and Assessment (IEMA), a leading international organisation dedicated to the promotion of sustainable development and to the promotion of best practice standards in environmental assessment and management.

The SKM Enviros EIA team has been supported by the following consultants in undertaking specific parts of the assessment.

- Mike Wood Consultants Ltd – Landscape and Visual Assessment
- Headland Archaeology(UK) Ltd – Archaeological Assessment
- TNEI Services Limited – Noise Assessment
- Caithness Renewables Ltd – Socio Economic Assessment
- RPS Group Plc – Peat Slide Risk Assessment and Ecological Survey
- AMEC Environment and Infrastructure UK – Bird Survey

20  Viewing and purchase of ES
During the statutory consultation period, the Bad a’ Cheò Wind Farm Wind Farm ES may be viewed at the following locations:

- ePlanning Centre, The Highland Council, Glenurquart Road, Inverness, IV3 5NX.
- The Highland Council, Service Point, 16 High Street, Thurso
- The Highland Council, Area Planning Building Standard office, Market square, Wick, KW1 4AB

Hard copies of the ES can be purchased from Karen Fox of RWE, and are available for a charge of £300 or £25 on CD (including VAT). Copies of the NTS are available free of charge. All documents can be obtained by writing to:

RWE Npower Renewables Ltd.
East Lodge,
Stanley Mills, Stanley
Perth, Perthshire
PH1 4QE

21  Further Information
For further details on the Bad a’ Cheò Wind Farm Wind Farm ES, please contact Karen Fox at the above address.
This page is intentionally blank
BAD A’ CHEÒ WIND FARM

NTS FIGURE 2b
SITE LAYOUT

KEY:
- Application Boundary
- Turbine and Base
- Scoping Boundary
- Permanent Anemometry Mast
- Access Tracks
- Substation
- Indicative Crane Hardstanding
- Construction Compound
- Permanent Water Crossing Points

LOCATION: K:\United Kingdom\Edinburgh\JEIA\Projects\JE30383\Technical\GIS\MXD\Final Figures\NTS Figure 2b Site Layout Aerialphoto background.mxd

SCALE 1:12,000 @ A3
PROJECT NO. JE30383
CONTENT SITE LAYOUT
DRAWN PM
CHECKED PM
DATE MAY 2012

© Getmapping plc.