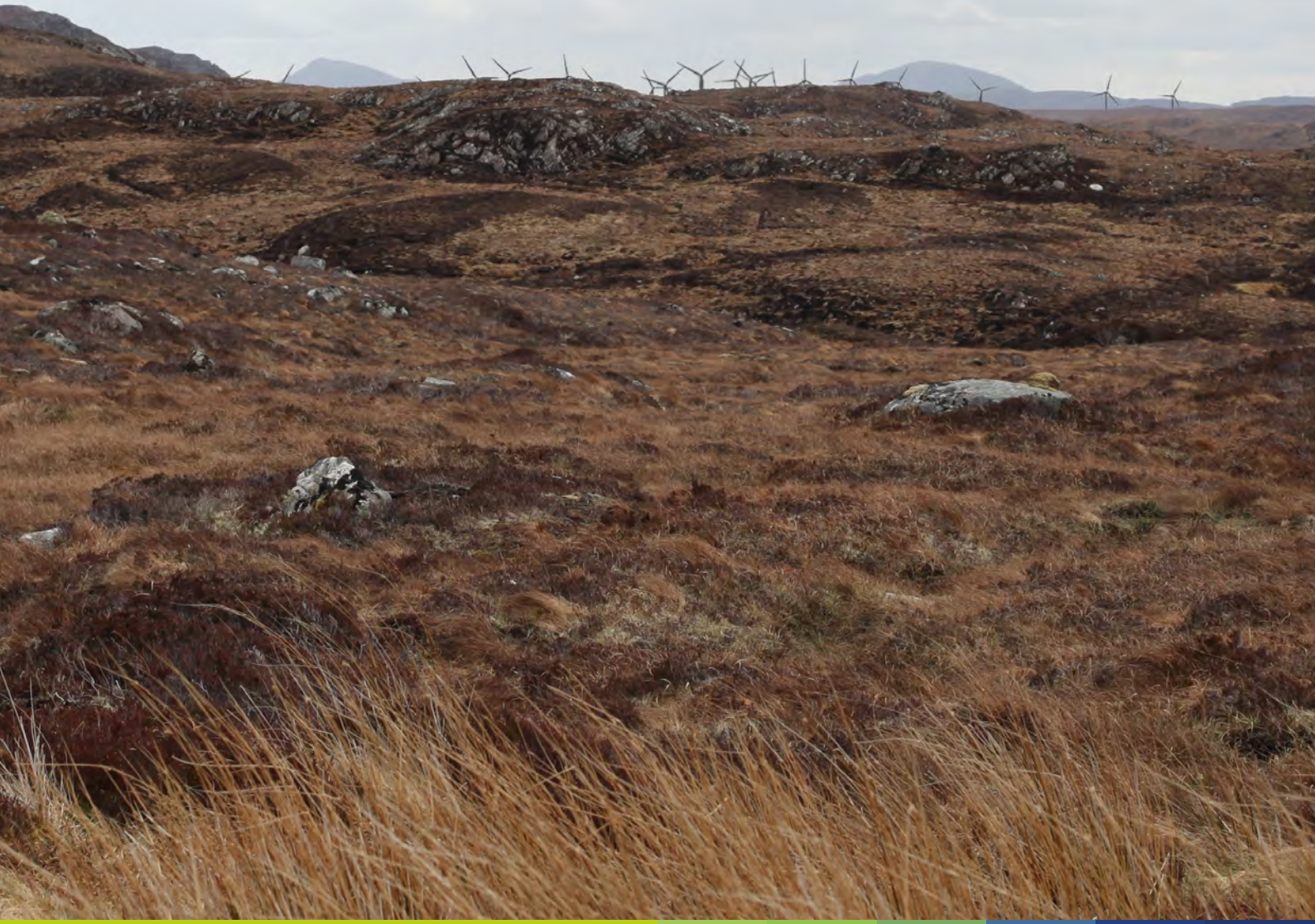
SSE Renewables

Strathy South Wind Farm

Environmental Statement Addendum - July 2013



A0 Preface

A0.1 Environmental Statement Addendum & Other Planning Documents

This Environmental Statement (ES) Addendum is provided in support of an existing application (07/00263/S36SU) for consent under Section 36 of the Electricity Act 1989, made by SSE Generation Ltd ("the Applicant"), to construct and operate a wind farm at Strathy South forest block (hereafter referred to as Strathy South), near Strathy in Sutherland.

The original application remains undetermined pending receipt of additional environmental information as requested by stakeholders in relation to a number of specific matters arising through the application consultation process. To address these matters and to further reduce environmental impact, the Applicant has made some modifications to the original proposals.

This ES Addendum is submitted by the Applicant, SSE Generation Ltd (SSEG), holder of a generation licence. This ES Addendum has been prepared, on behalf of the Applicant, SSEG, by SSE Renewables Developments (UK) Ltd, to address the matters raised by consultees and to report on the changes to the environmental assessment resulting from the modifications made to the scheme.

The ES Addendum comprises four volumes:

- Volume A1: Non-technical Summary (NTS)
- Volume A2: Main Report
- Volume A3: Figures
- Volume A4: Technical Appendices

A design statement is included as Technical Appendix A4.2 to the ES Addendum. Additional documentation that will be submitted includes:

- Planning Statement;
- Access Route Review; and
- The Highland Council Visualisations[1]

A0.2 Notification

The ES Addendum, will be publicised in accordance with Regulation 14A of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 (as amended).
The ES Addendum and associated documents will be available for viewing at the following locations:

The Highland Council Headquarters
Glenurquhart Road
Inverness
IV3 5NX

The Highland Council
Drummuie
Golspie
KW10 6TA

Bettyhill Service Point
NTC
Bettyhill
KW14 7SS

Thurso Library
Davidson's Lane
Thurso
KW14 7AF

[1] Submitted to The Highland Council only.

An electronic version of the submission documents, including the ES Addendum, will be available to download from The Highland Council's 'ePlanning' portal[2].

This document is available at a cost of £450 in hard copy format (including postage and packaging) or on DVD (price £10). Paper copies of the Addendum NTS are available free of charge, on request. Requests for copies of the ES Addendum or Addendum NTS should be made to:

For the attention of Jamie Watt
SSE Renewables Developments (UK) Ltd
200 Dunkeld Road
Perth
PH1 3AQ

Tel 01738 457315

Email: jamie.watt@sserenewables.com
The ES Addendum has been advertised by the Applicant in the following publications:

- The Edinburgh Gazette (in two successive weeks); and
- The Northern Times (in two successive weeks)

A0.3 Commenting on this Development

Any comments you would like to make on this development should be made to the Energy Consents and Deployment Unit at the Scottish Government by email to representations@scotland.gsi.gov.uk or by post to:

Energy Consents and Deployment Unit
Scottish Government
4th Floor
5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU

Representations should be dated. Please include your full name and full return email or postal address.

A0.4 Fair Processing Notice

The Scottish Government Energy Consents and Deployment Unit process applications under The Electricity Act 1989. During the consultation process letters of representation can be sent to Scottish Ministers in support of or objecting to these applications.

Should Scottish Ministers call a Public Local Inquiry (PLI), copies of these representations will be sent to the Directorate of Planning and Environmental Appeals for the Reporter to consider during the inquiry. These representations will be posted on their website with personal email address, signature and home telephone number redacted (blacked out).

Copies of representations will also be issued to the developer on request, again with email address, signature and home telephone number redacted.

You can choose to mark your representation as confidential, in which case it will only be considered by Scottish Ministers and will not be shared with the Planning Authority, the developer, the Reporter (should a PLI be called) or any other third party.

[2] http://www.highland.gov.uk/yourenvironment/planning/eplanning

If you have any queries or concerns about how your personal data will be handled, please email the Energy Consents and Deployment Unit at: energyconsents@scotland.gsi.gov.uk or in writing to Energy Consents and Deployment, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU.

A1 Introduction

A1.1 Overview

In 2007, SSE Generation Limited (hereafter referred to as 'the Applicant') submitted an application to the Energy Consents and Deployment Unit of the Scottish Government (07/00263/S36SU) for Section 36 Consent, under the Electricity Act 1989, for a wind farm known as Strathy South, located near Strathy, in Sutherland (hereafter referred to as the Original 2007 Scheme) (Figure A1.1: Site Location). An Environmental Impact Assessment (EIA) was undertaken in relation to the proposed wind farm in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 (the 'EIA Regulations'), as amended, and an Environmental Statement (hereafter referred to as 'the 2007 ES') was submitted alongside the application. The 2007 application remains undetermined pending receipt of additional environmental information as requested by stakeholders in relation to a number of specific matters arising through the application consultation process.

To address these matters and to further reduce environmental impact, the Applicant has made modifications to the Original 2007 Scheme and, in September 2012 confirmed their intention to produce an ES Addendum for the modified scheme (hereafter referred to as 'the Modified 2013 Scheme'). Therefore, this ES Addendum has been prepared to address the issues raised by consultees and to report on the changes to the environmental assessment resulting from the modifications made to the scheme. Much of the assessment reported within the 2007 ES is still relevant to the Modified 2013 Scheme. Therefore, this ES Addendum does not replace the 2007 ES; rather, the two documents should be read in combination. In all cases, the ES Addendum chapters report how the modifications to the Original 2007 Scheme have affected the conclusions of the 2007 ES (if at all).

This chapter outlines the development context of the scheme, the application details and provides information on the Applicant. This chapter additionally outlines the structure of the ES Addendum. Table A1.1 provides a complete list of the chapters contained within this ES Addendum.

A1.2 Legislative Context

The Applicant is making an application for Section 36 consent to the Scottish Government for permission to construct a wind farm, near Strathy, in Sutherland. The site is located within the Area Planning Office Boundary of The Highland Council (THC). EIA legislation in Scotland follows the 2011 EC Directive (No. 85/337/EEC), as amended, and, with regards to the Modified 2013 Scheme, is transposed into domestic law through the EIA Regulations.

A1.3 The Applicant

This ES Addendum is submitted by the Applicant, SSE Generation Ltd (SSEG), holder of a generation licence. This ES Addendum has been prepared, on behalf of the Applicant, SSEG, by SSE Renewables (UK) Limited, to address the matters raised by consultees and to report on the changes to the environmental assessment resulting from the modifications made to the scheme.

SSEG is a member of the SSE plc (formerly Scottish and Southern Energy plc) group. SSE plc is a FTSE-100 company, formed in 1998 from the merger of Scottish Hydro-Electric plc and Southern Electric plc. The company is headquartered in Perth, and employs around 20,000 people. Core activities include electricity generation, transmission, distribution and supply; gas storage, distribution and supply; the operation of a telecoms network; utility contracting; and electrical and gas appliance retailing. The company has a market capitalisation of around £10 billion, and supplies around 10 million energy customers in Great Britain and Ireland under the Scottish Hydro Electric, Southern Electric, Swalec, Atlantic and Airtricity brands. The Company is co-owner of Scotia Gas Networks, which owns and operates the 'Scotland' and

'South of England' regional gas distribution networks. The gas network business employs around a further 5,000 staff.

SSE's power generation assets total around 11,860 MW, comprising gas and oil-fired capacity; coal-fired capacity; and renewable (including pumped storage, hydro, wind and biomass) capacity.

SSE has over 20 onshore wind farms in operation totalling around 1,300 MW, with over 380 MW under construction and a further 550 MW with consent for development. SSE has also submitted for approval by the relevant planning authorities in the UK and Ireland proposals for onshore wind farms with a total capacity of over 500 MW.

In addition to its onshore capacity, SSE has offshore wind farm capacity in operation or under construction totalling almost 187 MW.

In all, SSE now has a portfolio of 3,240 MW of renewable energy capacity (onshore wind, offshore wind, hydro and dedicated biomass) in operation, under construction or with consent for development in the UK and the Republic of Ireland.

The Company has invested in emerging renewable energy technology and now has interests in companies developing and promoting tidal energy devices and domestic scale wind turbines and solar energy.

A1.4 The Environmental Statement Addendum

A1.4.1 Development Proposals Considered

The Original 2007 Scheme for the proposed Strathy South wind farm comprised 77 wind turbines with associated access tracks, sub-station, borrow pits, control building, construction compounds, anemometry masts and switching station.

The Modified 2013 Scheme has seen a number of changes to the layout presented in the Original 2007 Scheme. The Original 2007 Scheme proposed using a 2.3 MW wind turbine machine. However, a 3.4 MW wind turbine machine has been modelled as the worst case turbine for the proposed for the Modified 2013 Scheme, so that the layout has been developed to reduce the turbine density on site (whilst still delivering the required energy output) and the modifications have been made in order to achieve environmental benefit.

These are set out below:

- 30 turbines have been removed from the Original 2007 Scheme, leaving 47 turbines;
- One lay down area has been removed from the Original 2007 Scheme, leaving two lay down areas;
- Three borrow pits have been removed from the Original 2007 Scheme and two borrow pits have been combined to form only one, leaving four borrow pits;
- All of the remaining turbines have been slightly re-positioned to optimise their location and to take into consideration environmental constraints e.g. ornithology, areas of deep peat and archaeological assets;
- Turbine parameters have been modified for a tip height of up to 135 m, with a modelled tower height of up to 83 m and a modelled rotor diameter of up to 104 m; however the final turbine choice will ensure the tower and rotor combination is within a maximum tip height of 135 m; and
- The remaining network of on-site tracks has been rationalised to accommodate changes in the turbine layout.

Further details of the Modified 2013 Scheme are given in Chapter A4: Development Description.

Since the 2007 ES was submitted, Strathy North wind farm achieved planning consent in November 2011. In addition, a proposal has been submitted for scoping to ECDU for a new

wind farm called Strathy Wood, immediately north of the site. The location of these two wind farms in relation to the Modified 2013 Scheme are presented on Figure A1.2.

A1.4.2 Structure of the ES Addendum

This ES Addendum will address the issues raised by consultees and report on the changes to the environmental assessment resulting from the Modified 2013 Scheme, as they differ from the Original 2007 Scheme. The ES Addendum comprises four separately bound documents:

- Volume 1 - Non-technical Summary;
- Volume 2 – Environmental Statement Addendum (main report);
- Volume 3 – Figures (plans, illustrations and photographs); and
- Volume 4 – Technical Appendices.

The main report (i.e. this document) is structured as follows:

- Chapter A1: Introduction (this chapter) provides a brief introduction to the scheme, the Applicant and the structure of the ES Addendum and presents the rationale for the project;
- Chapter A2: Background: outlines the background to the proposed development in terms of renewable energy policy;
- Chapter A3: Site Selection outlines the modifications made to the Original 2007 Scheme and the evolution of the Modified 2013 Scheme;
- Chapter A4: Development Description provides a detailed description of the Modified 2013 scheme and outlines the principal elements involved in the construction, operation and decommissioning of the wind farm;
- Chapter A5: Environmental Impact Assessment sets out the broad method of approach that has been used in the EIA in order to present the ES Addendum for the Modified 2013 Scheme;
- Chapter A6: Site Context provides an overview of the existing locational and environmental context of the site;
- Chapter A7: Planning Context provides an overview of any changes in relevant climate change, renewable energy and planning policy framework, since the submission of the 2007 ES;
- Chapters A8-A16 contain the detailed technical assessments of the Modified 2013 Scheme, addressing the issues raised by consultees and reporting on the changes to the environmental assessment resulting from the modifications made to the Original 2007 Scheme. Individual chapters report how the modifications to the Original 2007 Scheme have affected the conclusions of the 2007 ES (if at all). In some cases it has been necessary to present a completely revised text – this is explained in the introduction section within the relevant chapters; and
- Chapter A17: Summary presents the overall findings and conclusions of the ES Addendum, with predicted impacts and mitigation measures, additional to those included in the 2007 ES.

To facilitate direct comparison the chapters of the ES Addendum are numbered to reflect the chapter numbers as in the 2007 ES. Figures and appendices are given the same treatment and all have an ‘A’ prefix to differentiate from the 2007 ES. As far as possible the structure of individual chapters mirrors those of the 2007 ES.

A1.4.3 The EIA Project Team

The Applicant has appointed a project team to prepare the ES Addendum. The members of the project team and the technical chapter for which they are responsible are presented listed in Table A1.1.

Table A1.1: Project Team		
Chapter Number	**Chapter Name**	**Author**
A0	Preface	ENVIRON
A1	Introduction	ENVIRON
A2	Background	ENVIRON
A3	Site Selection	ENVIRON/SSER
A4	Development Description	ENVIRON/SSER
A5	Environmental Impact Assessment	ENVIRON
A6	Site Context	ENVIRON/SSER
A7	Planning Context	Jones Lang LaSalle
A8	Landscape	ASH Design + Assessment
A9	Visual Assessment	ASH Design + Assessment
A10	Ecology	RPS and Waterside Ecology
A11	Ornithology	RPS
A12	Noise	Hayes MacKenzie Ltd
A13	Cultural Heritage	Catherine Dagg (independent consultant)
A14	Soil and Water	SLR Consulting and PlantEcol
A15	Traffic	Halcrow
A16	Other Issues	ENVIRON
A17	Summary of Mitigations	ENVIRON

A2 Background

A2.1 Introduction

This chapter presents the rationale for the proposed wind farm development and provides updates to the 2007 ES on the following areas:

- The climate change context;
- Renewable energy policy; and
- Alternative technologies considered to meet the Applicant's renewable obligation.

A2.2 Climate Change

A2.2.1 Causes and Effects

No updates are required to this section.

A2.2.2 Climate Change Programme

In January 2008, the European Commission published the "three 20 targets" package. This included proposals for reducing the European Union's greenhouse gas emissions by 20% and increasing the proportion of final energy consumption from renewable sources to 20%. Both targets are to be achieved by 2020, as set out in the Renewable Energy Directive from the European Commission (Directive 2009/28/EC), which was published in its final form in March 2009.

The EU aims to see 20% of all energy consumed to be from renewable sources. The 20% is split between Member States. For the UK, the European Commission's proposals include 16% reduction in UK greenhouse gas emissions by 2020 and for 15% of all energy consumed in the UK to come from renewable sources by 2020[1].

The UK Government retains control of the overall direction of energy policy including the attainment of UK national targets on renewable energy generation. Since devolution in 1999, some energy policy issues have been devolved to Scotland such as energy efficiency and renewable energy (including consents for generating plants covered by the Electricity Act 1989). Encouraging more electricity generation from renewable sources is an important element of both the UK and Scottish Climate Change Programmes.

A2.3 Renewable Energy Policy

A2.3.1 UK Renewable Energy Strategy (2009)

The UK Renewable Energy Strategy (UKRES) states that the UK needs to radically increase the use of renewable electricity. The document sets out the means by which the UK can meet the legally binding target of 15% of all energy consumption from renewable sources by 2020. This will mean a very substantial increase in the share of renewables within about a decade.

The UKRES contains a 'lead scenario', which suggests that more than 30% of electricity should be generated from renewables in the UK by 2020, which would be up from approximately 5.5% in 2009. The majority of this is expected to come from wind power, both on and offshore. The UKRES states (paragraph 2.38) that the earliest interim target (2011 - 2012) *"will be most challenging".*

The document makes it clear that the UKRES is an integral part of the Government's overall UK Low Carbon Transition Plan and that the Devolved Administrations have a leadership role to undertake. The Strategy was published by the UK Government and the policies to

[1] This 15% figure compares to only 3% in 2009, as confirmed in the National Renewable Energy Action Plan for the UK, page 5, July 2010

meet the 2020 targets will be taken forward in England, Scotland and Wales, Great Britain or on a UK-wide basis as appropriate and in accordance with each devolution arrangement. The document makes it clear that each of the Devolved Administrations are setting out their own plans to increase renewable energy use and that *"the UK Government and the Devolved Administrations are working together to ensure that our plans are aligned" (*UKRES, paragraph 8.18).

A2.3.2 UK Low Carbon Transition Plan (2009)

Along with the UKRES, the UK Government published the UK Low Carbon Transition Plan as a White Paper in July 2009. The plan seeks to deliver greenhouse gas emission cuts of 18% on 2008 levels by 2020 (and over a third reduction on 1990 levels), and emphasises that the UK will need to drive major changes to the way energy is used and supplied.

It seeks to ensure that the UK will get 40% of electricity from low carbon sources by 2020, with policies to produce approximately 30% of UK electricity from renewables by 2020, by substantially increasing the requirement for electricity suppliers to sell renewable electricity.

The White Paper explains that the UK Government has put in place the world's first legally binding target to cut emissions by 80% by 2050 and it has set five year 'carbon budgets' to 2022 to 'keep the UK on track' and which provide a clear pathway for reducing emissions in the future (page 6). The White Paper for the first time sets out how these budgets will be met.

Overall, the White Paper sets out the specific proposals and policies for meeting the UK's carbon budgets. The White Paper also makes the point that the introduction of carbon budgets introduces a new imperative: they are legally binding and must be met.

A2.3.3 The UK Energy Roadmap (July 2011)

The Department of Energy and Climate Change (DECC) issued the 'UK Renewable Energy Roadmap' in July 2011, alongside the Government's Electricity Market Reform White Paper. The foreword explains that the document is "the UK's first Renewable Energy Roadmap" and that it "sets out our shared approach to unlocking our renewable energy potential".
The introduction explains that the goal is to ensure that 15% of UK energy demand is met from renewable sources by 2020. As stated in paragraph 1.3 of the Roadmap, the Government's ambition extends beyond 2020 and the Committee on Climate Change (CCC) has *"concluded that there is scope for the penetration of renewable energy to reach 30 – 45% of all energy consumed in the UK by 2020"* (page 9). The Roadmap sets out a delivery plan to achieve the UK's renewable energy target over the next decade, based upon potential deployment levels and current constraints. In paragraph 3.13, the document makes it clear that there is still a need to tackle challenges to deployment and that new proposals will also be required to come forward to meet the 2020 ambition, as well as longer term decarbonisation objectives.

A2.3.4 The Electricity Market Reform White Paper (July 2011) and the draft Energy Bill (May 2012)

In July 2011 the Government published 'Planning our electric future: a White Paper for secure, affordable and low-carbon electricity'. The White Paper sets out key measures to attract investment, reduce the impact on consumer bills, and create a secure mix of electricity sources including gas, new nuclear, renewables, and carbon capture and storage.
Following on from the publication of this White Paper, the Government published the draft Energy Bill in May 2012. The draft Bill includes measures necessary to reform the electricity market to deliver secure, clean and affordable electricity.

A2.3.5 The Climate Change (Scotland) Act 2009

Part 1 of the Act sets the statutory framework for greenhouse gas emission reductions in Scotland by setting an interim (world leading) 42% reduction target for 2020 and an 80% reduction target for 2050, from the baseline, which for CO2 is based on 1990 emission levels. Part 1 of the Act also requires The Scottish Ministers to set annual targets in secondary

legislation, for Scottish emissions from 2010 to 2050 to ensure that the 2050 target is attained. Part 1 of the Act also requires the Scottish Government to publish a land use strategy by 31 March 2011 setting out land use objectives to aid the achievement of the 2020 and 2050 targets.

Reductions in greenhouse gas emissions for energy generation are a key component to achieve the above targets. The Act places a statutory requirement on The Scottish Ministers to set appropriate levels for energy generation to contribute to meeting the targets.

A2.3.6 The Scottish Renewables Action Plan (2009)

The Scottish Government issued the Renewables Action Plan (RAP) in June 2009. This identifies what needs to happen in the renewables sector in order to achieve Government objectives.
Key objectives of the RAP are summarised as follows:

- To establish Scotland as a UK and EU leader in the field;
- To ensure maximum returns for the Scottish domestic economy; and
- To meet targets for energy from renewables, and for emissions reductions, to 2020 and beyond (RAP, Executive Summary, page 5).

In terms of energy consents and planning, this matter is addressed in section 8 of the RAP and regarding specific actions, there is reference to planning. Actions include the need to:

- Create a supportive planning landscape; and
- Ensure the planning and consenting regimes better support investment in renewables in Scotland.

The document (page 77) explains that onshore wind is expected to provide the majority of capacity in the timeframe for the Government's interim and 2020 renewable electricity targets.

A2.3.7 The 2020 Routemap for Renewable Energy in Scotland (2011)

The Scottish Government published the above document in July 2011 (hereafter referred to as 'the Routemap'). The Executive Summary of the Routemap states that: "The Routemap for Renewable Energy in Scotland 2011 is an update and extension to the Scottish Renewables Action Plan 2009. This updated and expanded Routemap reflects the challenge of our new target to meet an equivalent of 100% demand for electricity from renewable energy by 2020" (page 3).

Chapter 1 of the Routemap is entitled 'Scotland's renewables ambition and paths to delivery'. It is noted that the new renewables target of 100% equates to the equivalent of, circa, 16 GW of installed capacity, which *"is based on the fundamental wealth of renewables resource available, our analysis of deployment trajectories on the onshore side…and our concerted efforts to ensure a supportive policy framework for growth"* (page 17). The Routemap also provides an increase in the Scottish Governments overall renewable energy target to 30% by 2020.

The Routemap specifically recognises the 'scale of the challenge' that requires to be addressed to meet the revised 2020 targets. It is noted that meeting the challenge *"will be heavily dependent on regulatory processes, which we will seek to influence but over which we do not currently have control"* (page 19).

The Routemap provides a 'synopsis of the main challenges' that require to be addressed to meet the 2020 renewables targets, one of which is 'consents and planning'. With respect to consents and planning, the Routemap identifies that a *"Further increase in consenting/deployment rates [is] required…"* (page 19).

Chapter 3 of the Routemap provides a specific routemap for 'Onshore Wind' and is entitled 'Sectoral Routemaps'. The introduction states that: "The Government is committed to the continued expansion of portfolio of onshore wind farms to help meet renewables targets, with

a robust planning system providing spatial guidance, a clear policy framework and together with a timely and efficient processing of Section 36 Electricity Act and planning applications…Onshore wind turbines can make a very large contribution to the progress to Scotland's renewable electricity target, and help establish Scotland's reputation as rapidly becoming the green powerhouse of Europe thanks to its underlying political commitment to make it happen" (page 66).

A2.3.8 Draft Electricity Generation Policy Statement 2012, Scotland - A Low Carbon Society

The Scottish Government issued a Draft Electricity Generation Policy Statement for consultation in early 2012. The consultation period ran until 4th June 2012. It states at paragraph 1 of the Executive Summary that electricity generation and the economic and environmental benefits which could arise from a shift from fossil fuel generation to a portfolio comprising renewable and cleaner thermal generation are matters of considerable importance to the Scottish Government.

The Draft Statement examines the changes necessary to meet the targets which the Scottish Government has established for electricity generation.

In summary, the Government's policy is that Scotland's generation mix should be largely decarbonised by 2030. The Statement sets a number of targets including delivering the equivalent of at least 100% of gross electricity consumption from renewables by 2020 as part of a wider, balanced electricity mix. Achieving the target will require the market to deliver an estimated 14-16 GW of installed capacity (paragraph 27, page 10).

A2.3.9 The Scottish Renewable Energy Routemap Update

On 30th October 2012 the Scottish Government issued an update to the Routemap entitled '2020 Renewable Routemap for Scotland – Update' ("The Update"). The Update contains a Ministerial Foreword which states that the document summarises the progress made in the renewable energy sector, but it also sets out what still needs to be done and the ways in which these tasks are being approached.

(a) New Interim Target for 2015

The Foreword refers to a new interim pre-2020 target that renewable electricity generation should account for the equivalent of 50% of Scottish demand by 2015. It adds that "the vast majority of this new target will still be met by hydro and onshore wind."

Paragraph 1.2 states that given there is a positive trajectory towards the 2020 target: "*the time is now right to set another ambitious but achievable interim target to help map the way towards 2020."* This is set as the equivalent of 50% of Scottish demand for electricity by the end of 2015. Paragraph 1.4 of the Update states that the Government is formally adopting this new interim target *"as the next vital milestone in our journey towards the 2020 target of 100%."*

It further adds that *"the success of onshore wind, coupled with hydro and other renewables, remains a necessary precursor to our developing Scotland's huge offshore renewable potential. Without that success, without the 3GW plus of onshore renewables, we would not have succeeded as we have and would not be where we are poised to play the lead role in Europe in taking forward new forms of renewable energy as a world leader"* (page 3).

The Foreword also makes reference to the Government's intention to update the Electricity Generation Policy Statement (EGPS).

(b) Deployment Update

The Update states that the Government estimates that approximately 35% of Scotland's electricity needs are likely to have come from renewables in 2011, exceeding the 2011 interim target of 31%.

The Update provides estimates on the deployment rates of renewables to achieve installed capacity to 2017, but also sets out projections to 2020. The projections to 2020 are based on various scenarios described at paragraph 1.10 of the document.

Figure 2 in the document illustrates these scenarios. Scenario C is described as a straight-line extrapolation between current installed capacity and the estimated levels of capacity required to achieve 100% of gross consumption from renewables by 2020. It adds that *"this hypothetical line is incorporated to identify and acknowledge the scale of the challenge."*

In contrast to this, Scenario A sets out an extrapolation of the annual deployment levels experienced between 2009 and 2011, adjusted for the improvements in the planning / consent system introduced in recent years (but which have not yet impacted upon actual deployment rates). This shows that in this scenario, less than 11GW of installed capacity is attained by 2020 which is well short of the 14 - 16GW target which needs to be attained by 2020.

The trajectories forecast also make it clear (see section 1.7 of the Update) that there is an expectation that new projects that are consented and completed between November 2012 and 2017 will contribute to the attainment of targets (i.e. the interim 2015 and the 2020 targets) over and above those schemes which are under construction and those which are consented and awaiting construction. It is recognised that not all schemes which are consented will necessarily proceed, and furthermore, construction programmes for some schemes may be delayed.

A2.3.10 Progress to the Scottish 2020 Target

The Routemap states that the 2020 target of delivering the equivalent of 100% of Scottish electricity consumption will demand a significant and sustained improvement over the deployment levels seen historically. The target equates to 16GW. The Routemap explains progress to date, and states on page 3 that in terms of current installed capacity, capacity under construction and capacity consented, the figure amounts to only 7.5GW.

The draft EGPS of 2012 refers to the 2020 target as 14-16GW and to an installed capacity of 4.4GW and a consented but not built capacity, of some 3.3MW, giving a total of 7.7MW.

The 2020 Renewable Energy Routemap Update was published in October 2012. The Update refers to a new interim pre-2020 target; renewable electricity generation should account for the equivalent of 50% of Scottish demand by 2015. It adds that *"the vast majority of this new target will still be met by hydro and onshore wind."*

Figures released from DECC, show that as at December 2012, Scotland had 5.9GW of installed renewable electricity generation capacity, with an additional 4.3GW of capacity either under construction or consented, most of which is expected to come from wind generation, particularly offshore. This equates to 10.2GW of future operational capacity.

Therefore, it remains the case that in light of the latest data released from DECC, there is a significant shortfall against the 2020 renewable electricity generation target. There also remains a significant shortfall against the UK target for 2020 in terms of electricity generation from renewable sources.

A2.4 Alternative Technologies Considered

No updates are required to this section.

A2.5 Summary

This chapter has provided an update to the renewable energy policy and legislative context and the revised renewable energy targets that the UK and Scottish Government has committed to deliver. SSE plc's renewable energy strategy is diverse. In all, SSE plc now has a portfolio of 3,240 MW of renewable energy capacity (onshore wind, offshore wind, hydro and dedicated biomass) in operation, in the UK and the Republic of Ireland. SSE plc

has also invested in emerging renewable energy technology and now has interests in companies developing and promoting tidal energy devices and domestic scale wind turbines and solar energy.

SSE plc is one of several partners in the International Technology & Renewable Energy Research hub led by the University of Strathclyde. SSE plc is further committed to investment in training and skills in the Highlands, with a partnership to the University of Highlands and Islands to collaborate and work together to maximise the benefits to the people of the Highlands from Low carbon energy.

SSE plc also provides a unique facility at its Glasgow base for Electric Vehicle charging offering to the public two charging stations and acts as a base for hiring electric cars along with an electric bicycle hire.

The Modified 2013 Scheme therefore forms part of a broader renewable energy strategy being implemented by the SSE plc in response to UK and Scottish Government policy on renewable energy and climate change and is in line with the vision and ambitions set out in the Routemap Update.

A13 Cultural Heritage

A13.1 Introduction

This chapter considers the likely significant effects on cultural heritage interests arising from the Modified 2013 Scheme. The study has been undertaken by Catherine Dagg (BA, AIfA) and has been informed by an evaluation for the Original 2007 Scheme carried out by CFA Archaeology Ltd (CFA) (included as Chapter 13: Cultural Heritage in the 2007 ES) and correspondence from the Highland Council's Historic Environment Team (HCHET)[1] (refer to Technical Appendix A5.1) in relation to the Original 2007 Scheme.

This ES Addendum chapter returns to the 2007 archaeological survey results and re-evaluates the potential direct impacts on archaeological sites within the study area in the light of scheme changes and changes to national and local planning policy since 2007. Indirect visual impacts , commonly referred to as setting impacts, are also re-evaluated to encompass the Modified 2013 Scheme changes in the form of removal of 30 turbines, some relocation of remaining turbines and the increased tip height up to 135m. Cumulative indirect impacts, incorporating the impacts of other cumulative schemes in the area, are also addressed. This chapter must be read in conjunction with Chapter 13: Cultural Heritage of the 2007 ES. Refer also to ES Addendum Chapter A1: Introduction and ES Addendum Chapter A4: Development Description.

A programme of mitigation, in order to minimise the identified impacts of the Modified 2013 Scheme on cultural heritage is proposed, together with justifications for each proposal and a timetable for actions.

A13.2 Scope of Assessment

A13.2.1 Project Interactions

Any ground disturbance associated with the construction of the Modified 2013 Scheme has the potential to damage or destroy features of cultural heritage interest, both visible features and areas where there is considered to be the potential for sub-surface archaeological remains. This disturbance includes initial tree-felling, temporary lay down areas and borrow pits, as well as permanent built features such as turbines, access roads, cable routes and buildings. This chapter returns to the nine sites of archaeological and cultural heritage sensitivity, identified during the 2007 evaluation and shown in Fig.13.1 of the 2007 ES, and consider more precisely the impacts of the Modified 2013 Scheme elements on each individual feature. It also evaluates the potential for further unidentified features within the site, the need for further survey work and requirements for mitigation before or during the construction phase.

The presence of the Modified 2013 Scheme may also have indirect effects on the setting of sites of cultural heritage interest within the surrounding landscape. In particular, there is potential for the Modified 2013 Scheme to be present in views of and from Scheduled Ancient Monuments (SAMs), Listed Buildings and other cultural heritage features. Although there is a large number of such sites in the vicinity, it was assessed in the Original 2007 Scheme ES that the visual impact on the majority of these receptors would be slight and acceptable. The Highland Council (THC) archaeologist consultation response in July 2012 (refer to Technical Appendix A5.2) concurred with this conclusion, but required that one site, the SAM Ben Griam Beg, be subjected to a more in-depth evaluation of the visual impact and cumulative impact on its setting. This evaluation includes an appraisal of the meaning of setting within the surrounding landscape for this particular site, and the experience of the site by professional and amateur archaeologists and casual visitors. An appraisal of potential increased impacts of elements of the Modified 2013 Scheme, such as increased tip height, is considered within this assessment.

[1] Memorandum from Andrew Puls to Ken McCorquodale: 24/10/2007, Ref: SU-07-263

A13.2.2 Forestry Changes

No changes are required to this section.

A13.2.3 Study Area

The area of study of potential direct impacts on archaeological resources is the entire area within the red line boundary of the site, including the access road linking Strathy South with Strathy North wind farm, the 'Yellow Bog link road'.

Indirect impacts or setting impacts are considered to have been addressed adequately in the Chapter 13: Cultural Heritage of the2007 ES, with the exception of SAM Ben Griam Beg, an important defended hilltop site 7 km south of the southern boundary of Strathy South and occupying the summit of the hill at a height of 580 m OD. Despite the increase in tip height since the 2007 ES, the ZTV for the Modified 2013 Scheme indicates that no new cultural heritage receptors require consideration.

A13.2.4 Updated Scoping and Consultation

The response of HCHET1 to Chapter 13: Cultural Heritage of the 2007 ES is summarised as follows: "Provisional View: In summary we consider that this application will have an adverse impact on a number of known archaeological features and a major impact on the setting of at least one Scheduled Ancient Monument (SAM). On balance, however, it is considered that the threat to both the known and the buried archaeological resource can be successfully mitigated and that the impact on the setting of the SAM, although significant, is not enough on its own to warrant objection, on archaeological grounds, of the application as a whole."

HCHET's response continued with a list of requirements for clarifications or further work, namely "a detailed assessment of the cumulative impacts of the development on the cultural heritage; particular attention should be given to Ben Griam Beg hill fort." More recent discussion with HCHET, carried out in July 2012, resulted in modifications to the requirements for further work and information as set out in Table A13.1.

Table A13.1: Issues Identified during Consultation

Consultee	Issue	Where/How this is Addressed
THC: Memorandum from Andrew Puls, HCHET to Ken McCorquodale (18/07/12)	Inadequacy of evaluation of cumulative impacts. Inadequacy of field survey within forestry areas. Requirement for measured plans. Requirement for watching brief and other mitigation measures.	Section A13.6.4: Cumulative Impacts This section evaluates cumulative impacts of extant or proposed wind farm developments on the key receptor, Ben Griam Beg. Section A13.7: Changes to Mitigation Post-felling field survey will verify obscured cultural heritage features and give opportunity to identify further minor features. No cultural heritage features would be impacted by Modified 2013 Scheme. Section A13.8: Changes to Monitoring Potential for sub-surface features and deposits is considered to be low and no recommendations are made for watching briefs or other mitigation measures.
THC: e-mail from Andrew Puls, HCHET	Requirement for clarification of impact on	Section A13.5 Changes to Baseline

Table A13.1: Issues Identified during Consultation		
Consultee	**Issue**	**Where/How this is Addressed**
to C. Dagg (03/08/12)	Site No. 5. Lack of discussion of potential for buried remains and mitigation. Possibility of programme of coring and targeted watching brief.	conditions No direct impact on site No.5 from Modified 2013 Scheme. Section A13.7: Changes to Mitigation Section A13.8: Changes to Monitoring Potential for sub-surface features and deposits is considered low and no recommendations are made for watching briefs or other mitigation measures.

A13.2.5 Effects to be Assessed

This chapter evaluates the potential direct impacts of the Modified 2013 Scheme on the identified cultural heritage features within the Site and the potential for further unidentified features or areas of cultural heritage interest.
The indirect, setting impact and cumulative setting impact on the SAM Ben Griam Beg is also evaluated.

A13.2.6 Impacts Scoped out of Assessment

The indirect, setting impact and cumulative setting impact on other key receptors of cultural heritage interest are not considered in detail within this assessment. Comparison of Figure A13.1 for the Modified 2013 Scheme with Figure 13.3 of the 2007 ES for the Original Scheme indicates that there would be very limited differences in theoretical visibility and no further information on this subject has been requested by THC.

Subsequent to the Original 2007 Scheme, thirty turbines have been removed and the remainder have been re-sited to take account of additional environmental constraint information, access tracks removed or realigned, laydown areas reduced from three to two and borrow pits reduced from eight to four. Only one switching station and associated welfare building is now proposed. Direct impacts of the removed elements need no longer be considered. New elements which do require consideration are the increase in turbine tip height up to 135 m, revised access and underground cable routes including across the Yellow Bog link road

A13.3 Changes to Policy and Legislative Context

A13.3.1 International Legislation and Policy

There are no relevant changes to International legislation and policy. The Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas (adopted in Xi'an, China by the 15th General Assembly of ICOMOS (International Council on Monuments and Sites) on 21 October 2005) is now taken as the international baseline on standards for understanding and preserving setting, and its definition of setting has been used by the IfA Working Group on the Setting of Cultural Heritage Features: Setting Standards: a Review, in April 2008.

The Xi'an Declaration states "The setting of a heritage structure, site or area is defined as the immediate and extended environment that is part of, or contributes to, its significance and distinctive character. Beyond the physical and visual aspects, the setting includes interaction with the natural environment; past or present social or spiritual practices, customs, traditional knowledge, use or activities and other forms of intangible cultural heritage aspects that

created and form the space as well as the current and dynamic cultural, social and economic context."

A13.3.2 National Legislation and Policy

The statutory framework for heritage in Scotland is outlined in the Town and Country Planning (Scotland) Act 1997, as amended in the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 and as modified by the Historic Environment (Amendment) (Scotland) Act 2011.

The implications of The Ancient Monuments and Archaeological Areas Act 1979 with regard to local government planning policy are described within Scottish Planning Policy (SPP), Scottish Historic Environment Policy (SHEP) and Planning Advice Notes (PAN) for Scotland. SPP Paragraphs 110 to 124, SHEP 'Scottish Historic Environment Policy' and PAN2/2011 'Planning and Archaeology' (Scottish Government 2011) deals specifically with planning policy in relation to heritage. The planning guidance expresses a general presumption in favour of preserving heritage remains in situ. Their 'preservation by record' (i.e. excavation and recording, followed by analysis and publication, by qualified archaeologists) is a less desirable alternative. As stated in PAN2/2011, paragraph 4, "Government policy is to protect and preserve archaeological sites and monuments, and their settings, in situ wherever feasible. Where preservation in situ is not possible, planning authorities should consider applying conditions to planning consents, listed building consents and conservation area consents to ensure that an appropriate level of excavation, recording, analysis, publication and archiving is carried out before and/or during development. The interpretation and preservation in situ of archaeological remains should be seen as a positive resource that can contribute to a sense of place in new development."

SHEP (Historic Scotland 2011) sets out the Scottish Government's policy for the sustainable management of the historic environment. Key principles of the policy note that "there should be a presumption in favour of preservation of individual historic assets and also the pattern of the wider historic environment; no historic asset should be lost or radically changed without adequate consideration of its significance and of all the means available to manage and conserve it" (1.14.b).

A13.3.3 Regional Policy

The Highland Wide Local Development Plan (HWLDP) was adopted in April 2012 and updates and replaces the Highland Council Structure Plan 2001 and the Sutherland Local Plan (2010). Policies included in the HWLDP (2012) pertinent to the built and archaeological heritage include:

- Policy 57 Natural, Built and Cultural Heritage: All development proposals will be assessed taking into account the level of importance and type of heritage features, the form and scale of the development, and any impact on the feature and its setting, in the context of the policy framework detailed in Appendix 2. The following criteria will also apply:
- For features of local/regional importance we will allow developments if it can be satisfactorily demonstrated that they will not have an unacceptable impact on the natural environment, amenity and heritage resource.
- For features of national importance we will allow developments that can be shown not to compromise the natural environment, amenity and heritage resource. Where there may be any significant adverse effects, these must be clearly outweighed by social or economic benefits of national importance. It must also be shown that the development will support communities in fragile areas who are having difficulties in keeping their population and services.
- For features of international importance developments likely to have a significant effect on a site, either alone or in combination with other plans or projects, and which are not directly connected with or necessary to the management of the site for nature conservation will be subject to an appropriate assessment. Where we are unable to ascertain that a proposal will not adversely affect the integrity of a site, we will only allow development if there is no alternative solution and there are imperative reasons of

overriding public interest, including those of a social or economic nature. Where a priority habitat or species (as defined in Annex 1 of the Habitats Directive) would be affected, development in such circumstances will only be allowed if the reasons for overriding public interest relate to human health, public safety, beneficial consequences of primary importance for the environment, or other reasons subject to the opinion of the European Commission (via Scottish Ministers). Where we are unable to ascertain that a proposal will not adversely affect the integrity of a site, the proposal will not be in accordance with the development plan within the meaning of Section 25(1) of the Town and Country Planning (Scotland) Act 1997.

- Policy 57 Natural, Built and Cultural Heritage: In due course the Council intends to adopt the Supplementary Guidance on the Highland Historic Environment Strategy [See below]. The main principles of this guidance will ensure that:
- Future developments take account of the historic environment and that they are of a design and quality to enhance the historic environment bringing both economic and social benefits.
- It sets a proactive, consistent approach to the protection of the historic environment.

Policy 67 Renewable Energy Developments of the HWLDP (2012) also notes that, *"taking into account any mitigation measures to be included, the Council will support proposals where it is satisfied that they are located, sited and designed such that they will not be significantly detrimental overall, either individually or cumulatively with other developments…, having regard in particular to any significant effects on the following: natural, built and cultural heritage features…"*

The Highland Historic Environment Strategy (adopted January 2013) states the purpose of the strategy is *"to define Highland Council's approach to the protection of the historic environment through the planning process."* Strategic Aims relevant to the current site include:

- Strategic Aim 1: To ensure that future management strategies, proposals and decisions affecting the historic environment are based on a thorough understanding of the special features of the heritage assets and associated archaeology, history and architecture of the Scottish Highlands.
- Strategic Aim 6: That listed buildings within Highland are protected from harmful developments, including extension and alteration, which may affect their special architectural and historic interest or their setting and that there is a presumption against the demolition of listed buildings.
- Strategic Aim 13: That scheduled monuments - and their setting - within Highland are protected from harmful developments which may affect their national importance.
- Strategic Aim 16: To ensure that the importance of non-designated archaeological sites and landscapes and their settings are understood and wherever possible are protected from harmful developments.
- Strategic Aim 17: To ensure no asset or its setting is lost or altered without adequate consideration of its significance and of the means available to preserve, record and interpret it in line with national and local policy and Highland Council's Standards for Archaeological Work.

Highland Council's Standards for Archaeological Work (March 2012) seeks to set practical Standards for a consistent approach to the management of the historic environment in Highland. The document details a range of archaeological procedures that may be required as part of the planning process and sets the minimum standards required by the Planning Authority for all fieldwork, reporting and post-excavation procedures.

The Standards are intended for use by all those involved in the planning process and land management – to inform planners and developers of the specific requirements of a particular piece of archaeological work and to ensure historic environment practitioners conduct fieldwork to an acceptable and consistent standard. The document states precisely THC's requirements for a walk-over survey and other specialist archaeological work, evaluation of setting and cumulative impact and reporting.

A13.4 Changes to Methodology

A13.4.1 Overview

The approach to this re-evaluation is informed by the requirements of THC for further information as set out in Section A13.2, as agreed during consultation with HCHET
No significant change in methodology has been applied to this appraisal. Fieldwork carried out subsequent to the Original 2007 scheme ES has informed the evaluation of potential direct impacts

A13.4.2 Baseline Assessment

(a) Desk Surveys

One desk-based survey has been carried out since 2007 which has relevance to the present evaluation: Strathy North Proposed Wind Farm, Farr, Sutherland, Planning Ref. 07/00020/S36SU: Archaeological Desk-Based Evaluation and Walk-Over Survey C. Dagg 2012.

The desk-based element of this report, while intended to inform mitigation proposals for Strathy North, was a broad appraisal of historic settlement and land-use along the Strathy River, based on all available archive sources and is therefore of equal relevance to the Modified 2012 Scheme. The overview of settlement patterns included the area of Strathy South.

In advance of preparing this revised Cultural Heritage chapter, a review of the 2007 ES included an independent desk-based assessment of cultural heritage resources and historical framework within the study area. The proposed access track and link road across the yellow bog, not assessed in the 2007 ES, were subject to a separate desk-based evaluation (C. Dagg, 10.10.12)

(b) Field Surveys

A field survey, carried out on 18.2.13 by C. Dagg revisited some of the sites recorded in 2007 where there was some doubt as to their nature and extent, in order to clarify the potential for direct impacts. Sections of the proposed access road route where there was considered potential for unrecorded archaeological features, notably along the River Strathy, were investigated. One new archaeological feature within the site boundary and three archaeological features adjacent to the access road were recorded. Details are given in Table A13.2. In addition, a site visit was carried out to the Scheduled site, Ben Griam Beg, in order to inform the evaluation of the potential indirect effects and cumulative impacts.

(c) Identification of External Receptors

Although HCHET had stated a requirement only for the setting impact on SAM Ben Griam Beg to be re-evaluated, it was noted that the increased tip height of turbines may alter the results of the 2007 evaluation and therefore this chapter re-evaluates the setting impact on external receptors, using the same criteria and methodology as in the 2007 evaluation.

The settings of sites with statutory and non-statutory designations (e.g. SAMs, Listed Buildings, Historic Gardens and Designed Landscapes and Conservation Areas) are protected under national legislation (1979 Act, 1997 Act, 1992 Order) and by government guidance (Memorandum). . As stated in Section 13.3 above, the principle that underlies planning decision making is that protected sites should be preserved within an appropriate setting.

Given their heights, turbines and meteorological masts may be visible over a wide area thereby potentially affecting the wider landscape settings of cultural heritage sites and monuments. Planning Advice Note 45 (PAN 45; Revised 2002): Renewable Energy Technologies has been revoked and is replaced by online renewable advice, provides a useful framework for evaluating the visual effect of a development. It notes that: Visual effect will be dependent on the distance over which a wind farm may be viewed. It is also dependant on whether the turbines can be viewed adjacent to other features, their visibility in

different weather conditions, the character of the development and the landscape it sits within, and the nature of the visibility.

Figure 8 in PAN 45 provides an assessment of the general perception of a wind farm in an open landscape as follows:

- at distances greater than 15 km a wind farm will generally only be seen in very clear
- visibility as a minor element in the landscape;
- between 5-15 km it will only be prominent in clear visibility – seen as part of the wider landscape;
- between 2-5 km it will be relatively prominent; and
- at distances of less than 2 km it is likely to be prominent.

Taking account of these factors and the effects scoped out as described in Section 13.2, sites with statutory protection in the wider landscape were assessed in the Original 2007 Scheme ES within the following maximum radii:

- 0-15 km - Scheduled Ancient Monuments, Category A, B and C(s) Listed Buildings, and Conservation Areas.
- 0-30 km - Historic Gardens and Designed Landscapes.

A ZTV map, generated for the Modified 2013 Scheme (Figure A9.2), was used to identify those historic environment assets within 30 km of the site from where there is theoretical intervisibility with one or more wind turbines.

The baseline setting of each relevant asset or related group of assets was then characterised on a case-by-case basis. Characterisation of the setting of an asset was based upon its properties and location, and took into account the factors identified in guidance issued by Historic Scotland (2009[2]). The baseline setting of each asset was characterised principally in terms of:

- Archaeological / historical context of the receptor;
- Current landscape and visual surroundings of the receptor; and
- Social value (actual or potential) of the receptor as a recreational / leisure or educational resource.

A13.4.3 Effects Evaluation

(a) Effect Classification

The types of effects of the Modified 2013 Scheme on cultural heritage interests are assessed in the following categories:

- Direct: where there would be a physical effect on a site caused by the Modified 2013 Scheme. Direct effects may be caused by a range of activities associated with the construction of proposed development features. Construction activities may include ground-disturbing excavations for turbine foundations, cable trenches, access roads and borrow pits. In addition, above ground disturbance, such as that caused by vehicle movement, and soil and overburden storage, may produce irreversible effects upon archaeological features. Direct effects on cultural heritage features are normally adverse, permanent and irreversible.
- Indirect: where the setting of a site may be affected. Indirect effects may relate to new development reducing views to or from cultural heritage features with important landscape settings, may result from increased noise or vibration, or may cause increased fragmentation of the historic landscape and the loss of connection between its component parts. Such effects are likely to occur during the construction phase of the development and persist throughout the operational phase.

[2] Historic Scotland (2009). Assessment of Impact on the Setting of the Historic Environment Resource – Some General Considerations, Scoping of Development Proposals, Annex.

- Secondary impacts: impacts that arise as a result of an initial impact of the scheme e.g. changes to the setting affecting tourism as regards heritage sites.
- Uncertain: where there is a risk that the works may impinge on a site, for example where it is not clear where the location or boundaries of a site lie, or where the baseline condition of a site cannot be established satisfactorily. This can occur where a site is recorded as a documentary reference but there is no physical manifestation of the site above ground, or where a documentary source is imprecise as to the location of a site (e.g. where recorded only on maps pre-dating the Ordnance Survey 1st Edition).

Potential effects, direct and indirect, have been assessed in terms of their longevity (permanent /temporary (long or short term)), reversibility and nature (beneficial / neutral / adverse), which allowed the magnitude of effect to be predicted for each receptor.

- Beneficial effects are those that contribute to the value of a cultural heritage site through enhancement of desirable characteristics or the introduction of new, positive attributes. In terms of cultural heritage, beneficial effects include those that add to an appreciation of the cultural heritage site and/or its setting.
- Neutral effects occur where the development can be accommodated comfortably by the receiving environment while neither contributing to nor detracting from the value of the cultural heritage site. In terms of cultural heritage, neutral effects arise from the fact that in general wind farms are permeable developments that do not significantly disrupt an appreciation of the landscape and skylines, particularly with regard to the views from cultural heritage sites that lie at some distance from the Site.. All neutral effects are considered to be not significant.
- Adverse effects are those that detract from the value of a receptor through a reduction in, or disruption of, valuable characterising components or patterns, or the introduction of new inappropriate characteristics. In terms of cultural heritage, adverse effects include those that detract from an appreciation of a cultural heritage site and/or its setting, or compromise important views to or from the site.

(b) Receptor Importance

The assessment of sensitivity of archaeological and heritage assets has been determined from the relative weight given to them in SPP and SHEP. Table A13.2 summarises the relative sensitivity of key historic environment resources. The sensitivity of the individual site is based on a combination of its importance and its status.

Table A13.2: Sensitivity of Historic Environment Assets

Sensitivity	Definition / Criteria
High	Sites of national or international importance, including: ▪ World Heritage Sites ▪ Scheduled Monuments and sites proposed for scheduling (including Non-Statutory Register Sites (NSR Sites)) ▪ Undesignated archaeological sites and areas of likely national importance identified in the Historic Environment Records (HER) ▪ Category A Listed Buildings ▪ Inventory Gardens and Designed Landscapes ▪ Outstanding Conservation Areas
Medium	Sites of regional importance, including: ▪ Archaeological sites and areas of distinctive regional importance ▪ Archaeological Sensitive Areas (ASA) ▪ Category B Listed Buildings ▪ Conservation Areas

Table A13.2: Sensitivity of Historic Environment Assets	
Sensitivity	**Definition / Criteria**
Low	Sites of local importance, including: ▪ Archaeological sites of local importance ▪ Category C(S) Listed Buildings ▪ Non-Inventory Designed Landscapes (NIDLs) ▪ Unlisted historic buildings and townscapes with local (vernacular) characteristics

(c) Assessment of Direct Impacts (Physical Impacts)

Criteria for assessing magnitude of direct impacts, which measures the degree of change to the baseline condition of a feature that would result from the construction of one or more elements of the proposed development, are presented in Table A13.3.

Table A13.3: Magnitude of Direct Impacts	
Level of Magnitude	**Definition**
High	A fundamental change to the baseline condition of the receptor, leading to total or major alteration of character.
Medium	A material, partial alteration of character.
Low	Slight, detectable alteration of the baseline condition of the receptor.
Imperceptible	A barely distinguishable change from baseline conditions.

The sensitivity of the receptor and magnitude of impact of the predicted impacts are used to inform the professional judgement of the likely significance of the direct impact. Table A13.4 summarises the criteria for assigning significance of a direct impact. Major and moderate direct impacts are considered significant in terms of the EIA regulations. Where a direct impact on a feature is likely, the assessment will contain a summary statement of the 'cultural significance' of that feature (following the guidance defined in Annex 1 SHEP).

Table A13.4: Significance of Direct Impacts				
Magnitude of Impact ▼	**Sensitivity of Asset ►**			
	High	**Medium**	**Low**	**Negligible**
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Imperceptible	Minor	Negligible	Negligible	Negligible

(d) Assessment of Impacts on Setting (Indirect Impacts)

For each receptor where a potential impact on setting has been identified, the assessment of possible impacts adopts a four-stage approach:

- Identification of the characteristics of the setting of the receptor (see above).
- Assessment of the sensitivity of that setting.

- Identification of how the presence of the proposed development would affect that setting (magnitude of impact).
- Assessment of significance of impact.

(e) Criteria for Assessing Sensitivity of Setting

Sensitivity of setting has been assessed by considering two factors:

- The relative weight which statute and policy attach to the receptor and its setting; and
- The degree to which the baseline setting contributes to the understanding and / or appreciation, and hence value, of the receptor.

The relative weight that statute and policy attach to the receptor and its setting is determined using the sensitivity of archaeological and heritage resources set out in Table A13.2. The degree to which the baseline setting contributes to the understanding and / or appreciation of the receptor has been assessed according to the criteria set out in Table A13.5.

Table A13.5: Contribution of Setting to the understanding and appreciation of a Historic Environment Receptor

Contribution	Definition
High	A setting which makes a strong positive contribution to the understanding and/or appreciation of the siting and/or historical/archaeological/architectural context of a receptor. (E.g. a prominent topographic location; surroundings that include related monuments in close association; surroundings that are believed to be little changed from those when the receptor was created).
Moderate	A setting which makes some positive contribution to the understanding and/or appreciation of the siting and/or historical/archaeological/architectural context of a receptor. (E.g. surroundings that complement the siting and appearance of a receptor, such as the presence of a feature of the rural past within a more recent farming landscape containing little or no urban or industrial development).
Low	A setting which makes little positive contribution to the understanding and/or appreciation of the siting and/or historical/archaeological/architectural context of a receptor. (E.g. where surroundings only partially complement the siting and appearance of a receptor, such as the presence of a feature of the rural past within a partly urbanised or industrialised landscape).
Negligible	A setting which does not contribute positively to the understanding and/or appreciation of the siting and/or historical/archaeological/architectural context of a receptor. (E.g. immediate surroundings, such as commercial coniferous single species woodland or an industrial development, that is not relevant to understanding the context of the receptor).

These two criteria (sensitivity of receptor and contribution to setting) are combined to assess the overall sensitivity of a setting, as set out in Table A13.6.

Table A13.6: Sensitivity of Setting of a Receptor				
Sensitivity of Asset ▼	**Contribution of setting to value►**			
	High	**Medium**	**Low**	**Negligible**
High	High	High	Medium	Low
Medium	High	Medium	Low	Low
Low	Medium	Low	Low	Low

(f) Identification of Magnitude of Impact on Setting

For the remaining sites, the magnitude of impact on setting has been assessed according to the thresholds presented in Table A13.7.

Table A13.7: Magnitude of Impacts on Setting	
Level of Magnitude	**Definition**
High	Fundamental effects obviously changing the surroundings of a receptor, such that its baseline setting is substantially or totally altered.
Medium	Effects discernibly changing the surroundings of a receptor, such that its baseline setting is partly altered.
Low	Slight, but detectable effects that do not alter the baseline setting of the receptor materially.
Imperceptible	A very slight and barely distinguishable change from baseline conditions

(g) Assessment of Impact Significance

The significance of an impact on setting depends on both the magnitude of impact and the sensitivity of the setting of the receptor. Table A13.8 presents the matrix that will be used to inform the determination of the significance of impacts on setting.

Table A13.8: Significance of Impacts on Setting			
Magnitude of Impact ▼	**Sensitivity of Setting ►**		
	High	**Medium**	**Low**
High	Major	Major	Minor
Medium	Major	Moderate	Minor
Low	Minor	Minor	Negligible
Imperceptible	Negligible	Negligible	Negligible

(h) Significance Criteria

The significance of impacts is classified as Major, Moderate, Slight or Negligible, as defined in Table A13.9. Major and moderate impacts are considered to be significant in terms of the EIA Regulations.

Table A13.9: Significance Criteria	
Level of Significance	**Definition**
Major	A change to the fabric or setting that leads to a substantial effect on the character, quality or context of a receptor.
Moderate	Changes to the fabric or setting that lead to a material effect on the character, quality or context of a receptor.
Minor	Changes to the fabric or setting that lead to a detectable but non-material change effect on the character, quality or context of a receptor.
Negligible	Changes to a setting that lead to, at most, a negligible effect on the character, quality or context of a receptor.

A13.4.4 Limitations of Assessment

The field survey, carried out by CFA for the 2007 ES, was limited by the inaccessibility of the forestry and by weather conditions during the field visits. A further survey in Strathy North (C. Dagg 7.5.2012) reached the same conclusion as the 2007 evaluation that afforested areas were effectively unsurveyable, that archaeological survival within the forest would be very poor and that no further work would be possible until the forest cover had been removed. In addition, as the area is covered in blanket bog, with archaeological features more likely to lie under the accumulated peat layer, these would be more likely to be identified by methodology such as coring or controlled strip during ground-breaking work, which can only be carried out after consent has been gained. Therefore, this work has been included as a proposed mitigation measure. However, this statement is not intended to imply that there is a probability of archaeological in afforested or peat-covered areas.

A13.5 Changes to Baseline Conditions

A13.5.1 Context

The 2007 ES identified nine archaeological sites within the site's red line boundary. These sites comprise: a shieling (1), three mileposts (2, 6, 8), two buildings probably related to hunting (3, 5), two sheepfolds (4, 7), and farmstead / hunting lodge at Lochstrathy (9) as presented on Figure 13.1 of the 2007 ES.

Thirty-five archaeological sites were identified within the originally proposed access route corridor and these are shown on Figure 13.2 of the 2007 ES. They comprise two farmsteads (A1, A33), field clearance (A2), seven tracks (A3, A5, A8, A10, A15, A16, A31), areas of peat cutting (A4), a structure (A6), a well (A7), several enclosures (A9, A30, A34), five field boundaries (A11, A13, A14, A22, A35), a pre-Clearance township (A12), three mileposts (A17, A23, A28), areas of cultivation (A18), several buildings (A19, A20, A27), numerous quarries (A21, A32), a bridge (A24), small cairns (A25), a clearance heap (A26), and a group of hut circles (A29).

The sites identified along the proposed access corridor from Strathy village to Strathy North wind farm are not included in this re-evaluation, as the access is subject to separate consent for the Strathy North wind farm, and is covered by archaeological mitigation as a condition of the consent.

A13.5.2 Designations

The 2007 ES evaluation identified 135 SAMs (several with multiple components), 71 Listed Buildings (6 Category A, 41 Category B, 24 Category C(s)), and two Historic Gardens and Designed Landscapes within 30 km of the centre of the Site. Based upon analysis of the locations of these sites against the ZTV, both for the original 2007 Scheme and the Modified 2013 Scheme , elements of the proposed development would be intervisible with 12 SAMs

and 5 Listed Buildings (one Category B, four Category C(s)). The ZTV for the Modified 2013 Scheme was reviewed and it was confirmed that no new cultural heritage receptors would be intervisible with the scheme.

Following consultation with Andrew Puls of THC on 3.7.12, it was agreed that only one of these SAMs, Ben Griam Beg hill fort, required further analysis of visual and cumulative impacts.

A13.5.3 Proposed Wind Farm Area

Direct impacts on archaeological features are only considered in relation to sites within the red line boundary of the Modified 2013 Scheme and along the preferred and alternative access route corridors revised or added since the 2007 ES.

The status of the nine archaeological features within the site is considered unchanged since 2007.

Fieldwork carried out in 2013 identified four further archaeological features, including one located within the site boundary, namely a constructed ford (10). Site visits to features 2,3, 5, 8 and 9 allowed a more accurate evaluation of their survival, extent and function. Site 9, Lochstrathy, for example, is now considered likely to be a remote settlement pre-dating the clearances of 1818-19. It is becoming increasingly evident that Roy's Military Survey of the 1750s is not comprehensive and omits many of the more remote settlements, so omission from Roy's map cannot be taken as evidence for establishment of this settlement post-dating this survey. Site 5, building can now be seen to be effectively identical to the newly recorded site 11, and both are interpreted as the surviving stonework of temporary, probably wooden, bothies probably associated with road construction around 1875. Sites 2 3 and 8, milestones, would, by comparison with similar milestones on the Sutherland estates, have been roughly shaped and uninscribed, and therefore easily lost when the access road was widened.

A re-evaluation of potential for further archaeological features to be located within the afforested areas is informed by fieldwork carried out in advance of felling for Strathy North wind farm (C. Dagg 2012) which concluded that survival of sites within the forestry was poor to non-existent, and that the probability of the existence within the forestry areas of further archaeological features, not identifiable through desk-based research or fieldwork, was low.

A13.5.4Access Route and Underground Cable Corridor

The revised evaluation area of the Modified 2013 Scheme extends to include a revised access road alignment between Turbine 34 of Strathy North and the existing access road south of the River Strathy, of which there is a preferred route and an alternative route, as shown on Figure A4.1, both crossing the river at the southern boundary of Strathy North wind farm, a 1 km section of existing forestry track linking the two north spurs of Strathy South to be used for underground cables, (Yellow Bog link road) and the preferred and alternative cable routes which run up to the Dallangwell substation in Strathy North wind farm.

Fieldwork carried out in 2013 identified three archaeological sites adjacent to, but not within, the revised access route corridor between Strathy North and Strathy South, comprising a building probably related to road construction (11) shieling huts and enclosure north of the River Strathy (12) and shieling huts south of the River Strathy (13) as presented on Figure A13.1.

No archaeological features were noted along the corridor of the Yellow Bog link road.

A13.5.5External Receptors

As clarified above, HCHET has stated a requirement only for the setting impact on SAM Ben Griam Beg to be re-evaluated. It was however noted that the increased tip height of up to 135 m may alter the results of the 2007 evaluation and therefore this chapter re-evaluates

the setting impact on external receptors, using the same criteria and methodology as in the 2007 evaluation.

A ZTV for the Modified 2013 Scheme indicates that no additional SAMs, Listed buildings or gardens and designed landscapes will be intervisible with the development.

A13.5.6 Modifying Influences

There is no change to this section from the 2007 ES.

A13.6 Changes to Effect Evaluation

A13.6.1 Basis of Assessment

(a) Development Characteristics

The Modified 2013 Scheme (shown on Figure A4.1) would consist of 47 turbines, 4 permanent anemometer masts, connecting access roads, a temporary construction compound / two laydown areas and a switching station and four borrow pits.. A detailed description of the Modified 2013 Scheme is provided in Chapter A4: Development Description.

(b) Assumed Design, Management and Mitigation Measures

Chapter 13: Cultural Heritage of the 2007 ES stated:

The preferred mitigation strategy is to preserve in situ and in an appropriate setting all cultural heritage resources. However, where this is not possible a Written Scheme of Investigation (WSI) for archaeological mitigation works to reduce or offset effects would be prepared prior to the enabling works for the proposed wind farm, for approval by the local planning authority.

Mitigation was proposed only in the case of Site No. 9, Lochstrathy. However, design changes including removal of turbine 33 and re-siting of a laydown area to west of Braestrathy now indicate that there will be no direct impact on this feature.

Other significant sites located close to infrastructure, e.g. Site No. 1, would be fenced off to protect them from disturbance during construction operations. The strategy for this work would be agreed with THC's Archaeology Unit.

An archaeological watching brief and/or monitoring would be carried out in areas of archaeological sensitivity to a strategy to be agreed with THC's Archaeology Unit.

Provision would be made for the excavation and recording of any archaeological remains identified either during watching briefs, or by construction contractors in areas not subject to archaeological monitoring. This provision would include the consequent production of written reports on the findings of the archaeological work conducted, with post-excavation analyses and publication of the results of the work where appropriate.

A13.6.2 Construction Effects

The removal and re-alignment of certain elements from Original 2007 Scheme has reduced the potential direct impact of construction activities on certain cultural heritage features. Examples of this include: deletion of borrow pit B5, and laydown area 3, both adjacent to site 5; and re-location of turbine 33, with track access to turbine 33 now approaching from the north therefore no longer necessitating access through site No. 9.

Table A13.10 shows the nine sites identified within site from the 2007 ES evaluation and four additional sites identified during fieldwork in 2013. This is considered to be a comprehensive reflection of the cultural heritage resource surviving within the site. Importance (National, Regional, or Local) differ slightly from those afforded by CFA in the 2007 ES, who categorised sites as of International/National, Regional, Local or Lesser importance. The sensitivity of the individual site is based on a combination of its importance and its status, as

categorised in Table A13.2. In addition, a site of local importance but in a good state of survival would be afforded a greater sensitivity to the impact of the scheme than a site of regional importance but poor to non-existent survival.

Details of the nine previously identified sites have already been given in the 2007 evaluation and are not repeated here, although relevant status updates provided by recent field study are added.

Table A13.10 Summary of identified cultural heritage features

Site no.	NGR	Site type	Value	Status	Sensitivity
1.	NC 7749 5315	shieling	local	Very denuded remains within an unplanted strip following the burn.	Low
2.	NC 8079 5257	milestone	local	Field survey found no trace of this feature, which can be taken as no longer extant	Low
3	NC 8065 5250	building	local	Field survey detected no trace of this structure, its site now in dense plantation.	Low
4	NC 8055 5168	sheepfold	local	Field survey detected no physical remains of this structure within an unplanted corridor along the Allt Badain.	Low
5	NC 80902 51332	building	local	Recent field survey found that this is the freestanding mortared stone fireplace and chimney to a former temporary wooden bothy probably associated with road building c. 1875. No associated features would be expected	Low
6	NC 8075 5104	milestone	local	Field survey found no trace of this feature, which can be taken as no longer extant	Low
7	NC 7980 5008	sheepfold	local	Field survey detected no trace of this structure, its site now in dense plantation.	Low
8	NC 7996 4969	milestone	local	Field survey found no trace of this feature, which was probably disturbed when the access track was upgraded to a forest road.	Low
9	NC 793 489	settlement	regional	Field survey has now clarified that this is a multi-period site, probably occupied in the 18th century and then re-occupied around 1875 as a shooting lodge and kennels. No additional features apart from peat cuttings were noted to the north and west, with all former enclosed and cultivated fields	Medium

Table A13.10 Summary of identified cultural heritage features					
Site no.	**NGR**	**Site type**	**Value**	**Status**	**Sensitivity**
				immediately south of the lodge and south of the access road, defined by visible low earth banks.	
10	NC 7968 4915	ford	local	Laid cobble road surface below river	Low
11	NC 8118 5526	bothy	local	Mortared stone fireplace and flue of former probably wooden bothy	Medium
12	NC 8120 5552	shielings	local	Two oval turf-walled huts and banked enclosure	Medium
13	NC 8120 5548	shielings	local	Two oval turf-walled huts truncated by forestry	Medium

Of the thirteen sites, eight have been assessed as being of local significance. Five of the nine sites, identified on early maps have been found to no longer survive, whilst two only survive in a very denuded state. Six sites, 5, 9, 10, 11 and 12, survive as visible features in the landscape. . Site No. 9: Lochstrathy multi-period site, has now been given a regional significance, although seen as of local significance by the 2007 evaluation. This change is based on stronger evidence for this being a multi-period site. The destroyed, removed or lost sites have been afforded low sensitivity; those which survive in denuded or damaged state have medium sensitivity; whilst the extant features have high sensitivity to direct impacts.

Table A13.11 shows the potential impact magnitude of temporary or permanent development or construction features on the cultural heritage resource.

Table A13.11: Impact and magnitude				
Site no.	**NGR**	**Site type**	**Impact**	**Magnitude**
1	NC 7749 5315	shieling	This small feature is north of the small stream flowing east from Loch nan Clach, and east of the existing forestry track. Widening of the track at this point should be far enough from the feature to avoid any direct impacts. Removal of the forest cover will reveal whether this feature survives	Low
2	NC 8079 5257	milestone	The milestone is assumed to have been removed and possibly even broken up for aggregate during track improvements. As these milestones were roughly shaped from local stone and uninscribed, retrieval of all or part of the original stone during ground disturbance seems highly unlikely	Imperceptible
3	NC 8065 5250	building	The site of this building, as shown on the 2nd edition OS map, is west of	Low

Table A13.11: Impact and magnitude				
Site no.	**NGR**	**Site type**	**Impact**	**Magnitude**
			the track by possibly as much as 50 m. Tree felling along the corridor of the track may extend to the site, but actual track widening is unlikely to extend this far.	
4	NC 8055 5168	sheepfold	Circular feature shown north of the stream on the 2nd edition OS map, where the existing track runs south of the watercourse. Upgrade of the track will not extend north of the stream. The feature is within open ground, so will be unaffected by tree felling	Low
5	NC 8090 5133	building	This building is shown on the 2nd edition OS map as north of the stream just to the west of its confluence, and east of the existing access track. New cut tracks will divert further away from this feature. The borrow pit site proposed in the vicinity in the Original 2007 Scheme has now been removed from the Modified 2013 Scheme. The feature stands within open ground and should be unaffected by felling	Low
6	NC 8075 5104	milestone	The milestone is assumed to have been removed and possibly even broken up for aggregate during track improvements. As these marker were roughly shaped from local stone and uninscribed, retrieval of all or part of the original stone during ground disturbance seems highly unlikely	Imperceptible
7	NC 7980 5008	sheepfold	The site of this feature, shown on the 1st but not the 2nd edition OS map, is north of the confluence of the streams, of which the west stream forms the site boundary. It is some distance from any built or construction phase feature of the scheme, but may be affected by clear felling of the forestry.	Low
8	NC 7996 4969	milestone	The milestone is assumed to have been removed and possibly even broken up for aggregate during track improvements. As these milestones were roughly shaped from local stone and uninscribed, retrieval of all or part of the original stone during ground disturbance seems highly unlikely	Imperceptible

Table A13.11: Impact and magnitude				
Site no.	**NGR**	**Site type**	**Impact**	**Magnitude**
9	NC 793 489	settlement	The existing track passes through this site, with features recorded on the 1st edition OS map to the south of the track and the lodge, shown on the 2nd edition OS map, to the north. Removal of turbine 34 and a laydown area to west of the site and relocation north of turbine 33 reduces the potential for direct impact. Fieldwork has clarified that no minor associated features lie beyond the recorded features of this site.	Imperceptible
10	NC 7968 4915	ford	Access to features of the development will not include this section of existing track, so no upgrade will be required	Imperceptible
11	NC 8118 5526	bothy	Adjacent to, but not directly within the corridor of the preferred access and cable route and would only be affected directly if the access route moved eastwards	Low
12	NC 8120 5552	shielings	Adjacent to, but not directly within the corridor of the preferred access and cable route and would only be affected directly if the access route moved eastwards	Low
13	NC 8120 5548	shielings	Adjacent to, but not directly within the corridor of the revised access route and should only be affected directly if the access route moved eastwards	Low

Direct impacts on the thirteen archaeological features are assessed as either of low or imperceptible magnitude. The imperceptible magnitude of impact would be on those sites considered to no longer survive or those which survive in denuded state but at some distance from any construction features of the scheme, in open ground which would not be affected by tree felling. The impact of tree felling on sites within the existing forestry cannot be evaluated fully at this stage, as the sites have not been fully located.

Table A13.12 gives the significance of impact on individual sites.

Table A13.12 Significance of Impact			
Site no.	**Sensitivity**	**Magnitude**	**Significance**
1	low	low	negligible
2	low	imperceptible	negligible
3	low	low	negligible
4	low	low	negligible
5	low	low	negligible

Table A13.12 Significance of Impact			
Site no.	**Sensitivity**	**Magnitude**	**Significance**
6	low	imperceptible	negligible
7	low	low	negligible
8	low	imperceptible	negligible
9	medium	imperceptible	negligible
10	low	Imperceptible	negligible
11	high	Low	negligible
12	high	Low	negligible
13	moderate	Low	negligible

A13.6.3 Operational Effects (Effects on Key External Receptors)

(a) Ben Griam Beg: Indirect Visual Impacts

Ben Griam Beg Scheduled Ancient Monument (SAM) is a complex site centred on a defensive feature at the summit of the hill, which has been defined as a Hill Fort and presumed to be of prehistoric date. It is an unusual monument type in the north of Scotland, and as such, it is difficult with certainty to place it within its chronological context and make presumptions about its function and setting. More typical defensive sites dating to the Iron Age, notably brochs, forts and promontory forts, are located both at the entrance to and along the heavily settled Strathnaver and Strath Halladale, both of them important through-routes from the coast. It is possibly significant that no such defensive sites have been located along the Strathy River, not a through-route, although promontory forts are known near the mouth of the river.

It has been suggested (A. Coombs, pers.com) that this site is not a hill fort per se, but a gathering place; its prominent location being a point of contact between several clan areas. If this were the case, it would increase the significance of the relationship of the monument with settlements down the Strathy River and on the coast.

Magnitude of impact is calculated with reference to Table A13.7.

(b) Obstruction or distraction from key views:

Key views from a defensive feature could involve:

- Intervisibility with contemporary settlements: In the case of Ben Griam Beg, if it can be taken to be Iron Age in date, the most obvious contemporary settlements lie to the south and east on the lower slopes of the hill. No Iron Age settlement has been identified along the upper reaches of the River Strathy, the nearest known sites along the river being at Reidhean a Bhainne, some 16 km to the north. The Modified 2013 Scheme would have no impact on the intervisibility with features to the south and east.
- Intervisibility with contemporary but distant defensive sites: There are nine brochs in Strathnaver, five brochs one fort and one promontory fort in Strath Halladale, a broch on the Armadale Burn, and two possible promontory forts at Baligill on the north coast. Some, or all of these may be contemporary with Ben Griam Beg. Most are relatively low-lying, although they stand on locally prominent points, and along each individual strath, most will be intervisible with its neighbour. The natural feature of Ben Griam Beg will undoubtedly be visible from some of these defensive sites, but the sites on the north coast and at the mouth of Strathnaver are at a distance at which this intervisibility can have had no practical application. It is too speculative to suggest that signalling between defensive sites took place, even were there evidence for contemporary occupation of sites. The Modified 2013 Scheme would intervene between Ben Griam Beg and

defensive sites to the northwest, but cannot be considered to impact on a relationship which may not have existed.

- Magnitude of effect in terms of obstruction or distraction from key views is considered medium.

(c) Relationship with landscape features:

- Ben Griam Beg commands views in all directions and functions well as a look-out for potential threats. Writers have noted particularly its command of Strath Halladale and the head of the Strath of Kildonan, and it is these routes running north and south east which are most likely to have been protected by any defensive aspect of the site. The Strathy River basin is not a through-route, nor does it hold resources or settlements which could be considered vulnerable to raids and requiring protection from a site such as Ben Griam Beg. The Modified 2013 Scheme will not impact on the relationship between the site and the natural routes by which potential threats might arrive.
- Magnitude of effect in terms of relationship with landscape features is considered low.

(d) Changes in Prominence:

- The structure on the summit of Ben Griam Beg is undoubtedly a prominent feature, and visibility from key viewpoints, as a statement of power and control of the landscape, its population and resources, will have been a primary consideration in selection of the site. Key viewpoints in the prehistoric period are primarily to the north east and south, along Strath Halladale and Strathnaver. Viewpoints on the north coast and down Strathnaver are distant and the monument is unlikely to have stood out from the natural skyline. The Modified 2013 Scheme would not intervene between Ben Griam Beg and its key viewpoints, and whilst it lies between the SAM and distant viewpoints to the north, it would not obscure the SAM.
- Magnitude of effect in terms of changes in prominence is therefore considered to be low.

(e) Changes in Landscape Character:

- With the exception of large blocks of coniferous plantation, there is probably little difference between the landscape now and that of 2,000 years ago. The hill fort, although now remote and relatively inaccessible, was originally placed in close relationship to the settlements it protected, with a patchwork landscape of woodland and cultivation. Over time, additional anthropogenic elements, including increasing occupation and enclosure with roads and reduction of natural woodland cover, would have been in keeping with the function of the SAM, and the present depopulated landscape is the more unnatural, leaving the SAM surrounded by virtually no signs of settlement and land use. The Modified 2013 Scheme would introduce an obviously modern feature, but there is a beneficial effect from the removal of the present forestry block, restoring this section of the landscape to a more open nature and removing the artificially straight boundaries between open ground and plantations.
- Magnitude of effect in terms of changes in landscape character is considered to be medium.

(f) Duration and Reversibility of Effect

The visual impact of the Modified 2013 Scheme would only last for the fixed duration of the running of the wind farm. The legacy may include some beneficial impact in the form of reduction of forestry cover.

- Magnitude of effect in terms of duration and reversibility of effect is considered to be low.

(g) Appreciation of the Ben Griam Beg SAM

The SAM is approached from the south-east, with no view to the north possible until the summit is reached. The greater part of the monument occupies the steep south west flank, with no view to the north. A small enclosed area on the ridge just west of the summit is the only vantage point from which the northern landscape can be viewed, and it provides an uninteresting patchwork of coniferous planting. The eye is drawn to the angular outlines of the nearest coniferous block. The Modified 2013 Scheme would become one of several modern elements of a modified, semi-natural setting to the north and east. The remote,

wilderness setting of the monument is enhanced by views to the hills to the south and west, which provide a more dominant setting.

The impact of the Modified 2013 Scheme on the appreciation of the hill fort by visitors depends on the subjective attitude of the visitor. The turbines will form a noticeable but distant element in the landscape to the north which, to anyone seeking the experience of unspoilt wilderness, would be seen as adverse, but is only one element in an already modified landscape. Visitors who have primarily climbed the hill to investigate the archaeological remains are unlikely to see the addition of the wind farm development as adverse and, as described above, alteration to the setting of the feature in terms of its relationship to contemporary settlement and landscape features would be to an acceptable level.

- The magnitude of effect in terms of appreciation of the monument is therefore considered to be low.

(h) Magnitude of the Indirect Impact on Ben Griam Beg

Ben Griam Beg is a SAM of National importance and High sensitivity (Table A13.2). The contribution of its setting to the understanding and appreciation of this receptor is High (Table A13.5) and therefore the Sensitivity of the setting is High (Table A13.6).

Table A13.13 summarises the magnitude of the effect of the Modified 2013 Scheme on different aspects of setting of Ben Griam Beg.

Table A13.13: Magnitude of impact on setting of Ben Griam Beg

Evaluation criteria	Magnitude of impact
Obstruction or distraction from key views	Medium
Relationship with landscape features	Low
Changes in prominence	Low
Changes in landscape character	Medium
Duration and Reversibility of Effect	Low
Appreciation of Ben Griam Beg	Low

Ben Griam Beg, by the criteria laid out in Table A13.6, is a receptor of high sensitivity. The significance of the magnitude of impacts, by the criteria of Table A13.8, is shown below in Table A13.14

Table A13.14: Significance

Evaluation criteria	Magnitude of Impact	Significance
Obstruction or distraction from key views	medium	Major
Relationship with landscape features	low	Minor
Changes in prominence	low	Minor
Changes in landscape character	medium	Major
Duration and Reversibility of Effect	low	Minor
Appreciation of Ben Griam Beg	low	Minor

In summary, there would be an indirect visual impact on the setting of Ben Griam Beg. The magnitude of this impact would be predominantly low to medium, and the significance of the setting impact is balanced between minor and major. Overall, the significance of the setting impact can be taken to be minor, as the Modified 2013 Scheme does not distract from or obstruct key views from the monument to contemporary cultural features or significant

landscape features and would effect only a minor change in landscape character and whilst it would be a visible feature in the landscape, this is only from a small part of the Scheduled Area.

A13.6.4 Cumulative Effects

The potential for cumulative effects resulting from the Modified 2013 Scheme and other wind farm developments has been considered. The distance from Ben Griam Beg at which wind farms are visible in clear weather conditions could be up to 60 km to the east, where high ground does not intervene to block views across Caithness. To the south and southwest intervening high ground screens views of wind farms in the Lairg area, but wind farms above Strath Brora, approximately 26 km distant to Ben Griam Beg will be partially visible.

Table A13.15 shows the wind farms included in consideration of cumulative visual impacts.

Table A13.15: Wind Farm Developments in the Planning System

Status	Reference & Name	Location	No. of Turbines	Turbine Geometry
Operational	Forss I	Near Thurso	2	H=62 D=94
	Forss II	Near Thurso	4	H=62 D=94
	Buolfruich	Dunbeath	15	H=44 D=52
	Causeymire	Westerdale	21	H=60 D=80
	Kilbraur	Strath Brora	19	H=70 D=90
	Kilbraur Extension	Strath Brora	8	H=80 D=90
	Flex Hill	Bilbster	3	H=60 D=80
	Achairn	Wick	3	H=60 D=80
	Achany	Lairg	19	H=67 D=70
	Gordonbush	Brora	35	H=67 D=80
	Lairg	Lairg	3	H=59.5 D=80
	Bettyhill	Bettyhill	2	H=80 D=90
Under Construction	Rosehall	Lairg	19	H=55 D=70
	Baillie Hill	Westfield	21	H=70 D=80
	Camster	Bilbster	25	H=80 D=80

Table A13.15: Wind Farm Developments in the Planning System				
Status	**Reference & Name**	**Location**	**No. of Turbines**	**Turbine Geometry**
	Wathegar	Bilbster	5	H=60 D=80
Approved	Causeymire Extension	Westerdale	3	H=60 D=80
	Stroupster	Nybster	12	H=60 D=104
	Burn of Whilk	East Clyth	9	H=70 D=92
	Melness	Tongue	3	H=49 D=52
	Strathy North	Strathy	33	H=70 D=80
	Wathegar 2	Bilbster	9	H=60 D=80
Submitted	Halsary	Mybster	18	H=60 D=80
	Dunbeath	Dunbeath	17	H=80 D=90
	Sallachy	Lairg	22	H=74.5 D=101
	Dalnessie	Lairg	27	H=73.5 D=95
	Braemore	Lairg	24	H=80 D=93
	Limekiln	Dounreay	24	H=98.4 D=52
	Glencassley	Lairg	26	H=80 D=91.2
	Bad A Cheo	Westermire	13	H=65 D=80
	Rumster	Lybster	3	H=50 D=50
Appeal	Forss III	Near Thurso	5	H=55 D=52
Scoping	Strathy Wood	Strathy	28	H=100 D=93

Figure 8 in PAN 45 provides an assessment of the general perception of a wind farm in an open landscape as follows:

- at distances greater than 15 km a wind farm will generally only be seen in very clear visibility as a minor element in the landscape;
- between 5-15 km it will only be prominent in clear visibility – seen as part of the wider landscape;
- between 2-5 km it will be relatively prominent; and
- at distances of less than 2 km it is likely to be prominent.

If these perceived setting impacts are taken as negligible, minor, moderate and major, then only Strathy Wood (Scoping) comes within the 15 km limit as prominent in clear visibility, while all the other schemes, most of which are over 30 km distant, will only be seen in clear visibility as minor elements in the landscape. They do, however, form clusters, which will increase the perception of the setting impact. A cumulative wireline from Ben Griam Beg is presented in Figure A13.3 and cumulative ZTVs and cumulative wirelines (Figures A9.27-A69) illustrate the visual impact of these clusters.

The Caithness wind farms, occasionally visible from the summit of Ben Griam Beg behind the ridge of high ground separating Sutherland from Caithness, are all at a distance of 30 km or over. Intervisibility with the greater part of the hill fort is blocked by the summit of Ben Griam Beg, with only a small enclosure on the ridge having a clear view to the north east. At the distance of 30 km the wind farms have no impact on the setting of the hill fort, although they may be perceived as intrusive modern elements. Equally, Gordonbush and Kilbraur to the south, over 25 km distant, are visible at two points on the south horizon, only in clear weather conditions.

Strathy North (consented wind farm with 33 turbines) and Strathy Wood (at the scoping stage with 28 turbines) form a dense group with Strathy South, extending the area filled with turbines eastwards from Strathy South. This would not greatly increase the impact of the Modified 2013 Scheme on the setting of the Ben Griam Beg (as evaluated above). It has been concluded that Ben Griam Beg's relationship with landscape and settlement features to the south and east formed the most important elements of setting, and that alterations to the landscape to the north, whilst providing an intrusive modern element which would detract from appreciation of the monument by some visitors, would not detract from understanding of the monument in its setting.

Melness, Tongue, (with three turbines), and Bettyhill, Farr (with two turbines)[3], would be visible on the horizon to the west of the Modified 2013 Scheme. Again, landscape and settlement features to the north west of Ben Griam Beg are not considered important elements to its setting and these schemes cannot be considered to detract from an understanding and appreciation of the site in its setting.

The approach to the hill fort on Ben Griam Beg is from the south east, climbing steeply up the south east flank of the hill and passing through a landscape containing elements of a prehistoric landscape probably contemporary with the hill fort. The Modified 2013 Scheme and neighbouring proposed Strathy Wood and consented Strathy North wind farms, would only become apparent once the summit has been reached. The vista of predominantly turbine-free hills and moors to the west and south, except in very clear weather conditions, should allow an appreciation of the scatter of built features to the south of the summit free of the visual distraction of wind turbines.

Using the same methodology and criteria to assess the cumulative setting impacts as the individual impacts of Strathy South, Table A13.16 gives the magnitude of cumulative impacts on Ben Griam Beg.

[3] Bettyhill is now an operational wind farm.

Table A13.16: Magnitude of Cumulative Impacts on setting of Ben Griam Beg	
Evaluation criteria	**Magnitude of impact**
Obstruction or distraction from key views	Medium
Relationship with landscape features	Low
Changes in prominence	Low
Changes in landscape character	Medium
Duration and Reversibility of Effect	Low
Appreciation of Ben Griam Beg	Medium

The significance of the magnitude of cumulative impacts, by the criteria of Table A13.8, is shown below in Table A13.17.

Table A13.17: Significance		
Evaluation criteria	**Magnitude of Impact**	**Significance**
Obstruction or distraction from key views	medium	Major
Relationship with landscape features	low	Minor
Changes in prominence	low	Minor
Changes in landscape character	medium	Major
Duration and Reversibility of Effect	low	Minor
Appreciation of Ben Griam Beg	medium	Major

In summary, the magnitude of cumulative impact would be low for three of the six evaluation criteria and medium in three. The significance of the setting impact would be minor in three cases and major in three. This is mitigated by the main cluster of wind farm developments, including Strathy South, only being visible from a small part of Ben Griam Beg, which does effectively reduce the significance of setting impact to moderate. Overall, the magnitude of cumulative impact would be low to medium, and the significance of setting impact minor to major.

A13.7 Changes to Mitigation

The 2007 ES stated, with reference to mitigation:

The preferred mitigation strategy is to preserve *in situ* and in an appropriate setting all cultural heritage resources. However, where this is not possible a Written Scheme of Investigation (WSI) for archaeological mitigation works to reduce or offset effects would be prepared for approval prior to the enabling works for the Modified 2013 Scheme.

Specific mitigation was outlined for Site No. 9, Lochstrathy in the 2007 ES. This is now considered unnecessary, following design changes which reduce the potential direct impacts of the scheme on this site, and more detailed fieldwork which has clarified the boundary of this receptor.

No new mitigation is advised for the protection of the known cultural heritage sites. On the recommendation of THC, a post-felling field survey is advised in order to identify features previously obscured by trees. This would also provide an opportunity to re-examine the Sites No. 3 and No. 7, known from early mapping but not located during fieldwork for the 2007 ES

A13.8 Changes to Monitoring

The original minimum requirement for monitoring, intimated by THC, was for an archaeological watching brief on all ground breaking work. More recent consultation with THC indicates that targeted watching briefs, together with a programme of peat coring, is likely to be more informative. With reference to the latter, the following extract from the 2007 ES should be considered: "Blanket peat acts as a repository of palaeoenvironmental information. Several palaeoenvironmental studies examining peat core samples taken from the landscape around the proposed development area have examined Holocene vegetation development and/or the date of blanket bog initiation. These include studies of samples taken within the proposed development area at Cnoc a Broillich (NC 810 530; Durno 1958) and Lochstrathy (Gear and Huntley 1991), and other samples taken outside it at Strathy Bogs (NC 800 525; Pearsall 1956) and Cross Lochs (Charman 1992, 1994). In forested areas within the [site], ploughing, planting and drainage will have diminished the value of the blanket bog as a repository of palaeoenvironmental information, whereas better quality sample locations remain in the undisturbed areas of blanket bog within and surrounding the[site]."

This previous work would indicate that further peat coring within the Site is unlikely to produce significantly new information.

Concern was raised by THC that the potential for further features of cultural heritage interest, obscured by the forest cover, may lie within the Site boundary. The conclusion of this evaluation is that the potential is low, that settlement and land use has always been sparse in both the prehistoric and post-mediaeval periods, and that minor features have probably not survived ploughing and planting of conifers. Therefore, no recommendations can be made for specific areas to be targeted by a watching brief.

A13.9 Changes to Summary & Conclusion (Inc. Residual Impacts)

Thirteen sites of cultural heritage significance have been identified by the assessment within the study area boundary using a range of desk-based sources, consultations and field reconnaissance survey. Additional buried and unrecorded remains of archaeological significance may survive across the Site, and are considered more likely to occur in land bordering the River Strathy and minor tributaries where known sites are concentrated.

One site, No.9, located within the site boundary, is defined as a feature of high sensitivity, but predicted to receive a low to negligible impact from the Modified 2013 Scheme, after removal from the design of one turbine, re-location of a laydown area and removal of need for track widening through the archaeological site.

One external receptor, Ben Griam Beg SAM, is predicted to receive residual indirect effects of predominantly low magnitude, with the overall significance of the setting impact predicted to be minor from the Modified 2013 Scheme.

Overall, the magnitude of cumulative impact would be low to medium, and the significance of setting impact minor to major.

Table A13.14: Summary of Potential Impacts of the Modified 2013 Scheme, Mitigation and Residual Impacts

Likely Significant Impact	Mitigation Proposed	Means of Implementation	Significance of Residual Impact
Construction			
Accidental damage to previously unrecorded	A post-felling field survey would be undertaken in advance of	Written Scheme of Investigation (WSI) to be agreed with THC Archaeologist prior to	Negligible

Table A13.14: Summary of Potential Impacts of the Modified 2013 Scheme, Mitigation and Residual Impacts			
Likely Significant Impact	**Mitigation Proposed**	**Means of Implementation**	**Significance of Residual Impact**
archaeological features	construction and a targeted watching brief would be implemented.	commencement of ground works and incorporated into the CEMP. WSI to be communicated to by the construction contractor to all relevant staff, subcontractors and plant operators via the induction and toolbox talks prior to commencement of any ground works.	
Operation			
Low impact on setting of one Scheduled Monument, Ben Griam Beg SAM	None	None	Minor Adverse
Cumulative impact on Ben Griam Beg SAM	None	None	Minor to Major Adverse

A13.10 References

Dagg, C. 2012: Strathy North Proposed Wind Farm Farr, Sutherland 07/00020/S36SU Archaeological Desk-Based Evaluation and Walk-Over Survey

Ralston and Smith, I and J S. 1982: *'Ben Griam Beg (Kildonan p) fort, settlement',* in Discovery and Excavation in Scotland 1982, p.16.

Ralston and Smith, I and J S. 1984: *'High altitude settlement on Ben Griam Beg, Sutherland'*, in Proc Soc Antiq Scot Vol. 113 1983, p.638-8

Table A13.15: Abbreviations Table	
Abbreviations	
THC	The Highland Council
HCHET	Highland Council Historic Environment Team
SAM	Scheduled Ancient Monument
ES	Environmental statement
OS	Ordnance Survey

SSE Renewables

ash
design + assessment

Key

Proposed Strathy South Wind Turbines

Cultural Heritage Sites

0km 500m 1km 1.5km 2km

Scale 1:50,000 @A3

Figure A13.1

CULTURAL HERITAGE SITES

Strathy South Wind Farm
Environmental Statement Addendum