Aultbea to Dundonnell 33kV Overhead Distribution Line Upgrade Environmental Statement

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AULTBEA TO DUNDONNELL 33kV DISTRIBUTION LINE UPGRADE

ENVIRONMENTAL STATEMENT

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PREFACE

Scottish Hydro Electric Power Distribution Plc (SHEPD) are proposing to replace the existing 11,000 volt wood pole overhead distribution network between Aultbea and Dundonnell. The existing overhead line is 58km including the existing spurs and provides electricity to 344 customers. It is one of the last remaining cadmium copper overhead line circuits on the exposed west coast of Scotland and is considered to be a high priority for major refurbishment due to unacceptable physical condition and poor system performance.

The majority of the overhead line was built in 1950 to a light duty, long span specification using 3/.093 (.017sq in) cadmium copper conductors. The circuit is three phase (three wire) for the first few kilometres from Aultbea to Laide and part way along the Opinan 11,000 volt spur. The remainder of the circuit is single phase (two wire). The original line was extended from Dundonnell Forest to Eilean Darroch in 1956 and then on to Dundonnell House in 1958. These sections of line incorporate shorter span lengths and use 3/.104 (.025sq in) copper conductors.

The circuit has suffered 20 faults over the last 5 years. The majority of faults on this circuit relate to age, deterioration and under-design. These statistics exclude the interruption associated with an exceptional circumstance on 11th January 2005 when a severe storm caused multiple faults throughout the circuit. This single incident reinforces an underlying concern that the circuit is no longer fit for purpose when considering its design strength, in context with the weather zone for this area.

It is proposed to replace the original cadmium copper 11,000 volt overhead lines between Aultbea Substation and Dundonnell using the Company's COP7 design specification. In line with the long term strategy, the main line would be constructed using 3x100mm^2 copper conductors and incorporates 33,000 volt insulation. The shorter spur lines would be rebuilt using 2x25mm^2 copper conductors and 33,000 volt insulation with the longer spur lines using 2x25mm^2 copper conductors and 11,000 volt insulation. The latter would be supplied using 33/11kV 'step-down' transformers in the future.

The overall project cost is estimated at £1600k. The completed project would provide an extremely robust circuit providing significantly improved reliability and supply quality to 344 customers along this exposed coastal route.

This Environmental Statement documents the findings of the environmental impact assessments undertaken during the preliminary design of the proposal and during formal assessment of the proposed route and its associated design, construction and management proposals.

CONTENTS

FIGURES

APPENDICES

TABLES

DEFINITIONS

Study Corridor The overall study corridor from Aultbea to Dundonnell is identified in figure 1.1

Study Area Within the overall study corridor, as defined by the parameters and criteria of each topic assessed.

PART ONE - INTRODUCTION AND BACKGROUND

1 INTRODUCTION AND BACKGROUND

1.1 Background to the Scheme

1.1.1 Scottish Hydro Electric Power Distribution Plc (SHEPD) is proposing to replace the existing 11,000 Volt wood pole overhead line (OHL) with a new 33,000 Volt wood pole overhead line between Aultbea and Dundonnell in Ross and Cromarty. (Location Plan: Figure 1.1). This line is one of the last remaining cadmium copper overhead line circuits on the exposed west coast of Scotland and is considered to be a high priority for major refurbishment.

1.1.2 The upgraded overhead line would follow the same general route as the existing line where practical. The existing access gates and tracks adjacent to the A832 would be used to travel to and from the proposed line thereafter moving from pole to pole along the route of the overhead line. It is not proposed to create any new access tracks, however, where there is difficult access due to side slopes it may be required to excavate the land to create a working platform for the machines. If this is required the ground would be returned to its former condition. The poles would be laid out and prepared at a nominated location then the majority of poles would be flown by helicopter to the designated pole positions where a tracked machine would excavate the pole hole and erect the pole. Excavation work would also take place where it is required to install underground cable both for high voltage, as part of the main line, and low voltage to reconnect existing electricity services between the new and existing line. We would also take the opportunity to remove some sections of low voltage overhead line and replace this with underground cable.

1.2 Statutory Obligations

1.2.1 As a Distribution Licence holder under the Electricity Act 1989 (as amended by the Utilities Act 2000), SHEPD is required to meet the following obligations:

1.2.2 Schedule 9 requires that a license holder, when formatting “relevant proposals”:

- shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and
- shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects. (3(1) (a) and (b), Schedule 9, Electricity Act 1989)

1.3 Consent Requirements

1.3.1 Applications under Section 37 of the Electricity Act are subject to the Environmental Impact Regulations (EIA) as applied under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000, Where an electric line is to be installed above ground in a "sensitive area" e.g. a SSSI, a National Park or An Area of Outstanding Natural Beauty, the installation of which (or the keeping installed of which) would require a section 37 consent but which is not schedule 1 development would constitute Schedule 2 development. As such they do not automatically trigger formal EIA. In these circumstances a developer may decide to undertake a formal EIA or may seek a determination from the Scottish Ministers that a formal EIA is required (a "Screening Opinion").

1.3.2 A screening opinion was requested by SHEPD in November 2007. The Scottish Government after consultation with Scottish Natural Heritage (SNH) and The Highland Council responded in March 2008 stating that the project would require an Environmental Statement (ES) under the terms of regulation 4 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000, hereafter referred to as 'The EIA Regulations'.

1.4 The Environmental Statement

1.4.1 The proposal to replace the existing overhead line between Aultbea and Dundonnell has accordingly been subject to a process of environment impact assessment. Following feedback received from consultation with SNH, The Highland Council and Historic Scotland it was agreed that the potentially significant environmental issues requiring review in this ES were as follows:

- A landscape character impact assessment,in relation to impacts upon the National Scenic Area (NSA) in general and the most sensitive section of landscape around Gruinard Bay specifically;
- An assessment of the impacts on the visual amenity where the greatest departures from the existing route were located, namely between Sand and Mungasdale;
- An ecological appraisal, specifically in relation to An Teallach SSSI and ecological mitigation proposals for the whole route; and
- An assessment of impacts on cultural heritage and archaeological mitigation proposals for the whole route.

1.5 The Environmental Statement Requirements

1.5.1 This ES is based on the EIA regulations. The requirements for information to be included in an Environmental Statement for EIA development stipulated in this regulation include the following:

Part 1

1 Description of the development, including in particular-

(a) a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases;

(b) a description of the main characteristics of the production processes, for instance, nature and quality of the materials used;

(c) an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.

2 A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.

3 A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from-

(a) the existence of the development;

(b) the use of natural resources;

(c) the emission of pollutants, the creation of nuisances and the elimination of waste,

and the description by the applicant of the forecasting methods used to assess the effects on the environment.

4 A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.

Part II

1 A description of the development comprising information on the site, design and size of the development.

2 A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.

3 The data required to identify and assess the main effects which the development is likely to have on the environment.

4 The main alternatives studied by the applicant and the main reasons for his choice, taking into account the environmental effects.

1.5.2 The list of requirements noted includes those items that this report seeks to present as this information is considered to be most pertinent to the proposals.

1.5.3 The environmental impact assessment and preparation of the Environmental Statement (ES) has been undertaken by environmental and landscape consultants ASH design+assessment (ASH), on behalf of SHEPD. The core ASH team has been supported by the following organisations, providing specialist inputs as follows;

- WSP- Terrestrial Ecology and Hydrology
- Cathy Dagg- Cultural Heritage

1.6 Structure of the Environmental Statement

Part One: Introduction and Background

1.6.1 This section describes the background to the proposal, its statutory procedures, the requirements of the environmental impact assessment and the format for the ES.

Part Two: Alternatives and the Proposed Route

1.6.2 This section describes the alternatives considered during the development of options. It considers underground cabling and overhead lines. It describes options for structures carrying overhead lines. It describes how alternative routes have been examined in order to arrive at the proposed route.

1.6.3 Specifically, the alignment for the proposed route and the key design components of the proposed distribution line are described, including the principal construction activities.

Part Three: Assessment of Environmental Effects

1.6.4 This section describes the key environmental aspects that would be subject to potential effects as a result of construction and operation of the proposed distribution line.

1.6.5 The environmental topics considered, for the reasons discussed above in 1.4.1 comprise;

- Landscape Character;
- Visual Effects;
- Ecology and Nature Conservation; and,
- Cultural Heritage and;
- Hydrology

Part Four: Summary and Conclusion

1.6.6 This section reviews the proposals in the context of the local environment. It summarises the findings of the various environmental impact assessments and concludes with a statement of the significance of environmental effects likely to result from construction and operation of the proposal in accordance with the requirements of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000.

1.7 Consultations

1.7.1 Consultation with statutory agencies, environmental bodies and other interested parties is an essential part of the assessment process. It provides an important source of environmental data enables concerns and issues to be identified at an early stage and informs decision making during consideration of planning and design options.

1.7.2 Consultation has formed an important part of the assessment for the proposal. Ongoing consultation has been undertaken with agencies by way of telephone discussions, correspondence and meetings.

PART TWO – ALTERNATIVES AND THE PROPOSED ROUTE

2 ALTERNATIVES

2.1 Introduction

2.1.1 It is a requirement of the EIA Regulations that an outline of the main alternatives for achieving the objectives of the proposed development should be described and the basis for the selection of the proposed route should be outlined. The approach taken allows description and explanation of the background investigations that led to the selection of the proposed route.

2.1.2 In the context of this proposal consideration has included:

- That the replacement line would be constructed using wood poles as this was similar construction to the existing line and would therefore be unlikely to create any greater visual intrusion than at present. The use of wood pole overhead lines is entirely typical of the electricity distribution network, particularly in rural locations such as this.
- The overhead line route was selected taking into account the route of the existing overhead line. This route is located where the electricity network is required to supply electricity and allow construction a new line of similar construction minimising any additional impact as a result of our works as well as keeping the overhead line length to the minimum. The new line also offers the opportunity to move sections of the original line to a more suitable location e.g. where existing and future development may be affected by the location of the existing line route. Due to new safety legislation and the local terrain, there are areas where it is no longer suitable to build either adjacent to or along the same route, so an alternative location for the line has been selected. In a limited number of locations where there is no alternative, the line has been placed underground.
- The entire route has been selected to minimise visibility and to use the natural landscape to screen the line as far as possible, which, combined the fact that the existing line is of similar construction and located in a similar location, would all help to minimise any potential adverse impact.

2.1.3 The proposed overhead line route is indicated in Figure 1.1. There is also an additional set of A3 size plans showing the detailed route of the proposed overhead line as surveyed on site (See figures 2.1.1-2.1.9 inclusive, in Appendix 2.1).

2.2 Project Components and Support Structure

2.2.1 The line would be built using a similar construction to the existing wood pole overhead line and would be constructed using Code of Practice 7 - the specification for 11,000 and 33,000 volt single circuit overhead lines on wood poles.

2.2.2 The majority of poles would remain as single poles (Type 12, Figure 2.1) with the requirement for double poles (Type 44, Figure 2.2) being introduced where there is an angle required to change direction. The height of the poles would be no greater than 13 metres. The distance between poles would be greater than at present and this should reduce the overall number of poles; however as some of these may be double poles this may not be a significant reduction.

2.2.3 The overhead conductor would be three individual wires of 100mm Hard Drawn Copper.

2.2.4 The existing spurs would be connected back onto the new line with no changes being required to the construction,

2.2.5 There would be steelwork (cross arms) fitted at the top of the pole. This is used to carry the conductors, they would be no wider than 3 metres with the exception of two poles where the steelwork would be 4.1 metres.

2.2.6 There would be some poles installed with supporting stay - wires to support the structure of the line i.e. to prevent poles being pulled over by the weight of the wires/equipment.

2.2.7 There would be transformers installed at various locations along the route to retain electricity supplies and some would allow us to change the source of electricity and improve the network in some areas.

2.2.8 Operational switches would be required on a number of poles to allow work to be carried out on the network.

2.3 Underground Routing

2.3.1 It is proposed that a 2km stretch of the overhead line should be undergrounded between Gruinard House and the River Gruinard Bridge. The existing overhead line follows a route through a woodland area where the terrain is very rocky and would prove impossible to construct a replacement or new line. There is also approximately 1km of underground cable to be installed between Birchburn and Badfearn at Aultbea, in order to minimise the visual impact and engineering issues associated with the overhead option at the back of the houses in Aultbea. There would be an opportunity to improve the existing networks by removing low voltage overhead lines and replace this with new transformers and underground cables. The cables would be installed in an open trench at the required depth detailed below.

Situation	Cable Voltage/Type			
	33kV	11kV	LV Main	LV Service
Unmade Ground	900mm	700mm	550mm	450mm
Cultivated Ground	900mm	700mm	550mm	450mm
Footpaths	900mm	700mm	550mm	450mm
Roadways	1050mm	700mm	700mm	600mm
Agricultural Land	1150mm	1000mm	1000mm	1000mm
Rock	860mm	750mm	484mm	484mm

2.4 Route Options

2.4.1 Each section of the route options was tested against a combination of environmental and engineering criteria as indicated below:

- Potential changes to impact on landscape character:
- Potential changes to visual impact:
  - Households and settlements;
  - Roads;
  - Skylining; and
  - The difference between existing construction and new construction.
- Potential changes to impact on cultural heritage:
  - Designed landscapes;
  - Listed buildings; and
  - Sites of Archaeological Importance.
- Potential impact on ecology and nature conservation:
  - Birds;
  - Habitats and habitat mosaics; and
  - Wildlife.
- Potential access and safety implications.

2.5 Construction

Access for Materials, Construction Plant and Personnel

2.5.1 The majority of poles and materials would be flown to site to avoid detrimental impact to land; some sections of construction would still require machinery to transport materials and poles to site. It is proposed that existing access routes and tracks adjacent to the main road would be used for the movement of machinery, materials and personnel. The vehicles used would be a low ground pressure tracked machines nominally 7 Tonne and 13 Tonne excavators for the construction of poles, small dumpers to carry materials and land rovers (road vehicles are normally parked safely and personnel would walk to the work location unless operating any of the machines). No new access routes would be created but it may be necessary to establish limited temporary flat platforms at some of the pole locations for safe working of the plant. These areas would be reinstated upon completion.

Installation

2.5.2 The line would be constructed using low ground pressure tracked excavators where the pole position would be excavated, the pole constructed and all materials returned to the same location. The conductor would be strung between poles either by laying on the ground adjacent to the poles and raised on to the top of the poles by hand with ropes or flown by helicopter onto the top of the poles and moved into position by hand, then in both situations pulled to tension using the tracked machines on the ground.

Works Compound

2.5.3 A site location would be identified prior to works starting on site where a welfare site and material storage location would be set up. This site would be used throughout the duration of the works. A suitable site for the location of the poles would be identified and used for the storage of poles; all such areas would be restored upon completion of the project.

Programme

2.5.4 The works would take approximately 12 months to completion from start date. At present the start date is proposed for January 2010. Work would move progressively along the route on a series of sequential phases in order to minimise any potential construction impacts.

2.6 Mitigation Measures

2.6.1 Mitigation measures which have been developed during the environmental impact assessment to reduce the potential adverse impacts of the scheme in relation to each of the environmental topics assessed. These mitigation measures are specific to the various environmental topics and are outlined in the relevant assessment sections.

2.7 De-commissioning

2.7.1 The dismantling of the old line would be carried out in phases; as each section of the new build is energised the old line would be made safe to dismantle. The waste would be removed from site and contained in skips at the site compound for returning to Inverness for disposal. The poles would be left for use by the farmers where requested or removed from site for disposal. All ground would be inspected and made good where necessary.

6 CULTURAL HERITAGE AND ARCHAEOLOGY

6.1 Background

6.1.1 The works involve the replacement of the existing overhead lines (OHL) between Aultbea and Dundonnell in Wester Ross. There is the potential for an impact on the archaeology and cultural heritage of this section of coastline in the following ways:

- Direct impacts: the placing of new poles directly on archaeological features or within areas potentially containing buried archaeological features or deposits. This impact can be reduced or avoided at the design stage, informed by the results of an archaeological desk-based assessment and walk-over survey of the proposed route;
- Indirect Impacts: The placing of new poles and lines within or adjacent to archaeological sites or landscapes in a manner which, while not directly affecting the archaeological record, would have a negative impact on the setting of the site or landscape. This is particularly to be addressed in the case of sites with statutory protections, such as Scheduled Ancient Monuments but also where relict prehistoric or historic landscapes are good or rare examples of their kind which have, so far, escaped the intrusion of modern development;
- Accidental and avoidable impacts: damage to the archaeological sites during work by, for example driving heavy plant over feature for access or the temporary placing of material on features. This impact can be reduced or avoided by, where necessary, the identification and marking out of archaeological features or zones before work commences;

6.2 Methodology

6.2.1 This evaluation consists of a desk-based assessment followed by a walk-over survey of the sections considered most likely to contain previously unidentified archaeological features together with a visit to recorded archaeological sites to verify their location and extent. The resulting information is presented in two ways:

1. A Gazetteer of archaeological sites within 50 metres from the new OHL route to be potentially adversely affected and which may therefore require mitigation; and
2. Historic land-use assessment, dividing the landscape into historic or relict land-use types. The approach to modern development would differ according to the historical significance of each type.

6.3 Baseline Conditions

Historical Background

6.3.1 Little evidence survives for mediaeval settlement. The chapel of Sand at Laide, although substantially rebuilt in 1713 is likely to have been pre-Reformation and located adjacent to the then centre of population. Mungasdale (N. Munks-dalr: monks' dale) suggests another early Christian settlement and also the presence of Norse settlers. Other Norse place names include Udrigill (utarr-gil: outer cleft) Sand (sand-a: sand stream) Gruinard (grunna-fjordr: shallow firth) and Miotag (vik: bay) indicating a strong Norse presence.

6.3.2 The OHL replacement is located in two parishes: Gairloch and Lochbroom, with the boundary along the Little Gruinard River. This boundary has some influence on changing settlement patterns, particularly in the 19th century. While most of the land is in the county of Ross, an area at the head of Little Loch Broom is within Cromartyshire, representing the 19th-20th century land holdings of the earl of Cromartie.

6.3.3 There is unlikely to have been any major change in settlement and land use through the Mediaeval and early Modern periods. The Laigh, or Low ground of Loch Broom, i.e. the strath of the Meikle Gruinard and Gruinard bay, is thought to have held one third of the entire population of Lochbroom up until the end of the 18th century, with an economy based on black cattle, droving and fishing. As the ownership of land gained importance from the 17th century, the lands granted by the Kintail lords to several branches of the Mackenzie clan gradually consolidated into two main holdings: that of Mackenzie of Sand in Gairloch and MacKenzie of Dundonnell in Lochbroom.

6.3.4 Mackenzie of Sand resided at Udrigill and Dundonnell at Achtadonnell and there were probably tacksmen's houses at Mungasdale: a 'mansion house, garden and office houses' in 1744 and at Meikle Gruinard.

6.3.5 Dundonnell was landowner of Gruinard and Mungasdale for the first time in 1726 but sold them on to finance his consolidation of ownership around Little Loch Broom and Scoraig Peninsula. He also was the first to initiate removals of small tenants from Achtascailt in around 1778 to begin improvements and the establishment of the Mains farm. Between 1778 and 1816 the former tenants of the strath were settled along the SW shore of Little Loch Broom. Tenants displaced from the Laigh in 1803 by Davidson of Tulloch were also re-settled, some at Keppoch.

6.3.6 Mackenzie of Sand meanwhile was in financial difficulty and by 1799 had been forced to sell the entire estate to Davidson of Tulloch. Tulloch cleared small tenants to Sand, Laide and First and Second Coast, probably from inland, which was established as a large sheep farm based on Mungasdale. By 1827 Tulloch was also renting the Dundonnell Mains, Auchtascailt and Dundonnell House.

6.3.7 By 1835 sporting interests were taking over from the unprofitable sheep farming ventures. Davidson of Tulloch sold his Gruinard lands to Meyrick Bankes, a southern industrialist. Bankes cleared the townships of Badantsluig (Third Coast) and reduced the number of crofts at Sand but increased the number of holdings at First and Second Coast. At the same date Dundonnell estate was sold to Mackenzie of Ardross. His son Hugh built the house referred to as Dundonnell or Ardross Hermitage (later Eilean Darach Lodge) to live in with his mistress as well as, in 1847, the new farm house and mains at Auchtascailt, now Keppoch Farm Mains, with a corn mill powered from the Altvoulin. Hugh also bought Mungasdale and Meikle Gruinard from Bankes and Tulloch to ensure an inheritance for his natural daughter Mary. The ten cottar families who had been living at Mungasdale alongside the sheep farm were removed to the already congested township of Badluarach.

6.3.8 The rest of the Dundonnell estate underwent improvements around 1850. Ardessie and Gruinard were developed as small mixed arable and sheep farms. Croft holdings were established at Badluarach, Durnamuck, Badcaul-Badbea and Camusnagaul-Ardessie. This, apart from the shift from sheep farming to deerstalking, was the pattern of land use which persisted through the late 19th and 20th centuries.

6.3.9 In 1981 the number of croft holdings were: Badfearn: 4, Laide: 15, Sand: 11, First and Second Coast: 7, Badluarach: 24, Durnamuck: 10, Badcaul-Badbea: 1, Ardessie: 3, Camusnagaul: 4. All the croft townships along the shore of Little Loch Broom have common grazings extending SW from the shore. While the mid-19th century improvements generally laid out conventional croft strips with individual houses, First and Second Coast are unusual in retaining the earlier clustered housing of a traditional clachan although these features are now obscured by modern building or demolished. Little Gruinard, Mungasdale and Keppoch are still run as farms. Meikle Gruinard and Eilean Darach shooting lodges are now private dwellings, while Mungasdale House is still let for shooting parties.

Archaeological Background

Scheduled Ancient Monuments, Listed Buildings and designed landscapes

6.3.10 There are no sites or buildings with statutory protection within or adjacent to the broad corridor of the OHL replacement work. One Scheduled site, Laide, Chapel of sand of Udrigill (Index no. 6322) is within sight of the proposed work, but as here the new line is close to the existing line and within a landscape of mixed traditional and modern elements, including new housing between the SAM and the line, there would be no alteration to the existing level of visual impact on the setting of the chapel.

Recorded Archaeological Sites

6.3.11 A number of listings on the Historic Environment Record for the Highlands (HER) are for the several historical crofting townships. These are not listed below but are

addressed in section 3.3.3. The following individual sites are listed on the HER. Listing is from West to East.

- Gleann Garbh hut circle at NG 953 899. HER ref. no. MHG 49727 (site 10)
- Gleann Garbh, enclosure at NG 9510 8970. HER ref. no. MHG 21658
- Innis Mhic Thomais, enclosure at NG 9500 8950. HER ref. no. MHG 21671
- Gleann Garbh, farmstead at NG 9530 8990. HER ref. no. MHG 21665 (Site 11)
- Glacanrathaid, township at NG 9540 9020. HER ref. no. MHG 121639 (Site 13)
- Creag Mhor Coill an Fhail Hut circle at NG 96247 92719. HER ref. no. MHG 4466 (site 14)
- Creag Mhor two hut circles at NG 9608 9284 and NG 9615 9279. HER ref. no. MHG 7766 (Site 15)

6.3.12 Of these seven sites, three are dated to the Bronze or Iron Age and represent the earliest known settlement in Wester Ross, while four are remains of settlement and land use which were abandoned at the end of the 18th century but which may have been in place since the Mediaeval period or even earlier. Their inclusion on HER is usually a result of having been recorded as visible features on the 1st edition Ordnance Survey map of the 1870s.

6.4 Walk-over Survey

Gazetteer of Archaeological Sites

6.4.1 The following sites were noted along the corridor of the proposed new OHL during a walk-over survey carried out on 29-30 October 2008 in dry and sunny weather conditions:

1. Badfearn: Hut Circle at NG 88060 89136. Occupying a slight rise SW of centre of the enclosed field and visible as a grass-covered circle with few obvious stones. One new pole site is just over the boundary dyke to the north, the second is on the boundary to the east. There should be no direct impact on this site. (Figure 6.1).
2. Badfearn: hut circle (possible) at NG 88253 89171. truncated by a later dyke is the greater part of a stone and earth circle which is likely to be the remains of a hut circle. This is immediately SE of a new pole site. (Figure 6.1).
3. Badfearn: Head Dyke at NG 88337 89255. The unrecorded former boundary of the pre-crofting township, visible as a linear rubble bank. This is crossed by the OHL route.
4. Sand: Farmstead group at NG 9036 9110 a group of standing buildings and enclosures which probably date to the pre-crofting scattered settlement of sand, or to the contraction of crofts in 1835. A new pole site lies in the centre of this group, but not within any of the features (Figure 6.1).

5. Sand: building at NG 90720 91114. Low overgrown rubble footings of a rectangular building, most likely as a barn or byre. This is recorded as roofed on the 1st edition OS map of the 1870s and within the 19th century crofts. This is located directly on the new OHL route. (Figure 6.1).
6. Sand: shelter at NG 91074 91089. two courses of rubble walling extending 1.5m south from a large glacial erratic boulder, probably some form of shieling-type shelter associated with the pre-crofting township. This is close to the new OHL route but unlikely to be directly affected (Figure 6.1).
7. Sand: Head Dyke at NG 9115 9110 A low rubble and turf dyke which is probably the head dyke of the pre-crofting township. This is crossed by the new OHL route and is close to a new pole site but is probably unlikely to be directly affected (Figure 6.1).
8. First Coast: enclosure, dyke at NG 92001 91032. The low, heather-covered bank of the dyke of a roughly rectangular enclosure rising from the roadside. This is most likely a feature of the pre-crofting township. A new pole site is located 1m north of the dyke (Figure 6.1).
9. Second Coast: Building at NG 92677 90711. A rectangular building on an artificial platform on a fairly steep slope at the top of a croft field. This is not recorded on the 1st edition Ordnance Survey map and is likely to post-date the 1870s. This building is located adjacent to the new OHL route and a new pole site (Figure 6.1).
10. Gleann Garbh hut circle at NG 953 899, HER ref. no. MHG 49727. This is an uncertain interpretation and appears to refer to a stony platform on the west side of the small stream, below the raised beach bank along which the OHL runs. It should be unaffected (Figure 6.2).
11. Gleann Garbh, farmstead at NG 9530 8990, HER ref. no. MHG 21665 Low rubble footings of one rectangular building, aligned N-S, to the north of this a large sub-circular enclosure and three small enclosed areas built onto boulders or rock faces. The building and enclosure are recorded on the 1st edition OS map, the building as unroofed. This small farmstead group was probably cleared in 1799 to make way for Davidson of Tulloch's sheep farm. The features lie directly under the OHL but should be unaffected (Figure 6.2).
12. Gleann Garbh: Stone setting, possible cairn at NG 95323 90020. On the end of a narrow ridge immediately overlooking the farmstead is a circular setting of eight stones, four of them upright. Within the circle, south of centre is one upright stone. The circle measures 1.5-2m and to east and west, filling the narrow ridge top, is a scatter of rubble to a diameter of 4m which may be the remains of a cairn. This feature lies on the route of the new OHL and close to a new pole site but should be unaffected (Figure 6.2).
13. Glacanrathaid: Building at NG 95418 90275. Bracken-covered rubble footings of a rectangular building aligned E-W on the south bank of the stream. A tight group of

roofless buildings are recorded on the 1st edition OS map as immediately west of the road. Most of these are likely to have been destroyed during road widening. There is no historical record of a township or farmstead at this location and it is likely that it was cleared around 1799 (Figure 6.2).

14. Creag Mhor Coill an Fhail hut circle at NG 96247 92719. This site was not identified during this evaluation. Its given location is south of the new OHL and it should be unaffected (Figure 6.2.
15. Creag Mhor two hut circles at NG 9608 9284 and NG 9615 9279 HER ref. no. MHG 7766 These two hut circles are visible features on the north facing slope some distance to the north of the new OHL and would not be affected. There are also some traces of walling on this slope, but no features of prehistoric cultivation were noted between these and site no. 14. The ground is now overgrown with heather, which may obscure such features (Figure 6.2).

Summary of Archaeological Sites

Sites Most Likely to be damaged

6.4.2 Sites 2, 4, 5, 8,13 lie on the route of the new OHL and close to new pole sites and therefore are the most likely to be damaged during erection of the poles.

Sites which may be accidentally damaged

6.4.3 Sites 1, 3, 6, 7, 9, 10, 11, 12 are adjacent to the route of the OHL and while they are not likely to be damaged by insertion of poles, there remains the possibility of accidental and avoidable damage by vehicles and plant driving over them, materials being placed on them, stones being removed for other purposes.

Sites unlikely to be damaged but which may indicate associated features

6.4.4 Sites 14 and 15 indicate the possible extent of a prehistoric settlement. Between the visible sites, minor features of land use may be obscured by vegetation and peat growth and may be damaged during insertion of poles.

6.5 Historic Landscape Assessment

6.5.1 Three main land-use types associated with historical settlement within the evaluation area have been identified:

1. **Crofting In-Bye Land (Blue)**: This land forms the holdings of the crofting townships established to absorb the population displaced during the formation of sheep farms at the end of the 19th century and deer forests around 1835. They are almost entirely placed over existing townships or clachans which may date back to the mediaeval period or earlier. In two cases within the evaluation area, First and Second Coast, the closely grouped buildings of the traditional clachan survived but in most cases the former township groups were abandoned in favour of individual houses on each croft

holding. These land-use areas therefore contain relict features of the pre-crofting landscape in the form of buildings, rig cultivation and non-rectilinear field boundaries and field clearance piles. They also contain relict features of early crofting which became redundant with new housing needs and agricultural improvement through the 20th century as well as the decline in population up to about 1980. Preservation of these features is desirable where this does not come into conflict with crofting activities. Where they lie on the route of the new OHL it is recommended that they be preserved and protected from accidental damage as far as is practical (Figures 6.1, 6.2, 6.3).

2. **Relict Pre-Improvement Settlement and Cultivation (Orange)**. These areas generally contain well-preserved landscapes of settlement and farming which were abandoned at known historical dates and have altered very little since. Features would include farmsteads with associated enclosures and non-rectilinear field patterns, areas of rig cultivation and field clearance piles. They may also contain features representing later land use, including sheep fanks, shelters and enclosures, stalkers paths and grouse butts. Preservation of all features of these landscapes is highly desirable and an effort should be made to preserve and protect from accidental damage (Figures 6.1, 6.2)
3. **Improved Fields (Yellow).** These fields were mostly laid out during the establishment of improved farms at the beginning of the 19th century. A feature of their establishment would have been the removal of features of previous land use, re-using the stones from buildings in drystone dykes for example. The land would have been drained by the insertion of field drains and ploughed regularly over the following 150+ years. Survival of archaeological features from any period is low and intervention to protect the archaeological record is not necessary (Figures 6.2, 6.3).

6.6 Mitigation

6.6.1 It is recommended that of the individual archaeological features listed in section 4, those within 50 metres of the proposed new distribution line be marked out before work commences to prevent accidental damage.

6.6.2 A methodology should be set in place to ensure that minor features, not listed individually, are not damaged more than necessary. This should include avoiding driving over stone banks and piles, setting down material on stone piles or banks, building footings etc, removing material from these for any reason.

6.6.3 Work within the area between sites 14 and 15 may require an archaeological watching brief to identify and record sub-surface archaeological features.

6.7 Residual Impacts

6.7.1 The new OHL is replacing an existing line and as such would not alter the settings of cultural features except in locations where the new route significantly deviates from the old. Damage to individual archaeological sites identified during the walk-over survey can be avoided or minimised with good work practice. An archaeological watching brief may be advisable in the area between archaeological sites 14 and 15 identified as likely to contain features of prehistoric settlement and cultivation. To this end, a qualified local archaeologist should be appointed under the supervision of the Environmental Manager (See above 5.6.4).

Crofting Landscape, Aultbea

Relict Pre-Improvement Settlement and Cultivation, Bedfearn

Archaeological Feature 1

Archaeological Feature 2

Archaeological Feature 4

Archaeological Feature 5

Archaeological Feature 6

Archaeological Feature 8

Archaeological Feature 9

Figure 6.1

Key

- Study area
- Relict Pre-Improvement Settlement and Cultivation
- Crofting In-Bye Land
- Improved Fields
- Route of Proposed Replacement Overhead Line
- Route of Existing Overhead Line
- Route of Proposed Buried Cable
- Archaeological Features

SHEET 1 | SHEET 2 | SHEET 3

N

0m 500m 1km

SCALE 1:25,000

Client: Scottish and Southern Energy Power Distribution

Project: **Aultbea to Dundonnell 11kV to 33kV OHL Upgrading**

Title: Cultural Heritage Sheet 1

Drwg No.	Date	Rev.	Drwn.	App'd
108015/6.1	Jan '09	B	DU	JT

ash design + assessment

Figure 6.2

Key

- Archeological Study Area
- Relict Pre-Improvement Settlement and Cultivation
- Crofting In-Bye Land
- Improved Fields
- Route of Proposed Replacement Overhead Line
- Route of Existing Overhead Line
- Route of Proposed Buried Cable
- Archaeological Feature

SHEET 1 | SHEET 2 | SHEET 3

0m 500m 1km

SCALE 1:25,000

Archaeological Features 10 11 12

Client: Scottish and Southern Energy Power Distribution

Project: **Aultbea to Dundonnell 11kV to 33kV OHL Upgrading**

Title: Cultural Heritage Sheet 2

Drwg No.	Date	Rev.	Drwn.	App'd
108015/6.2	Jan '09	B	DU	JT

ash design + assessment

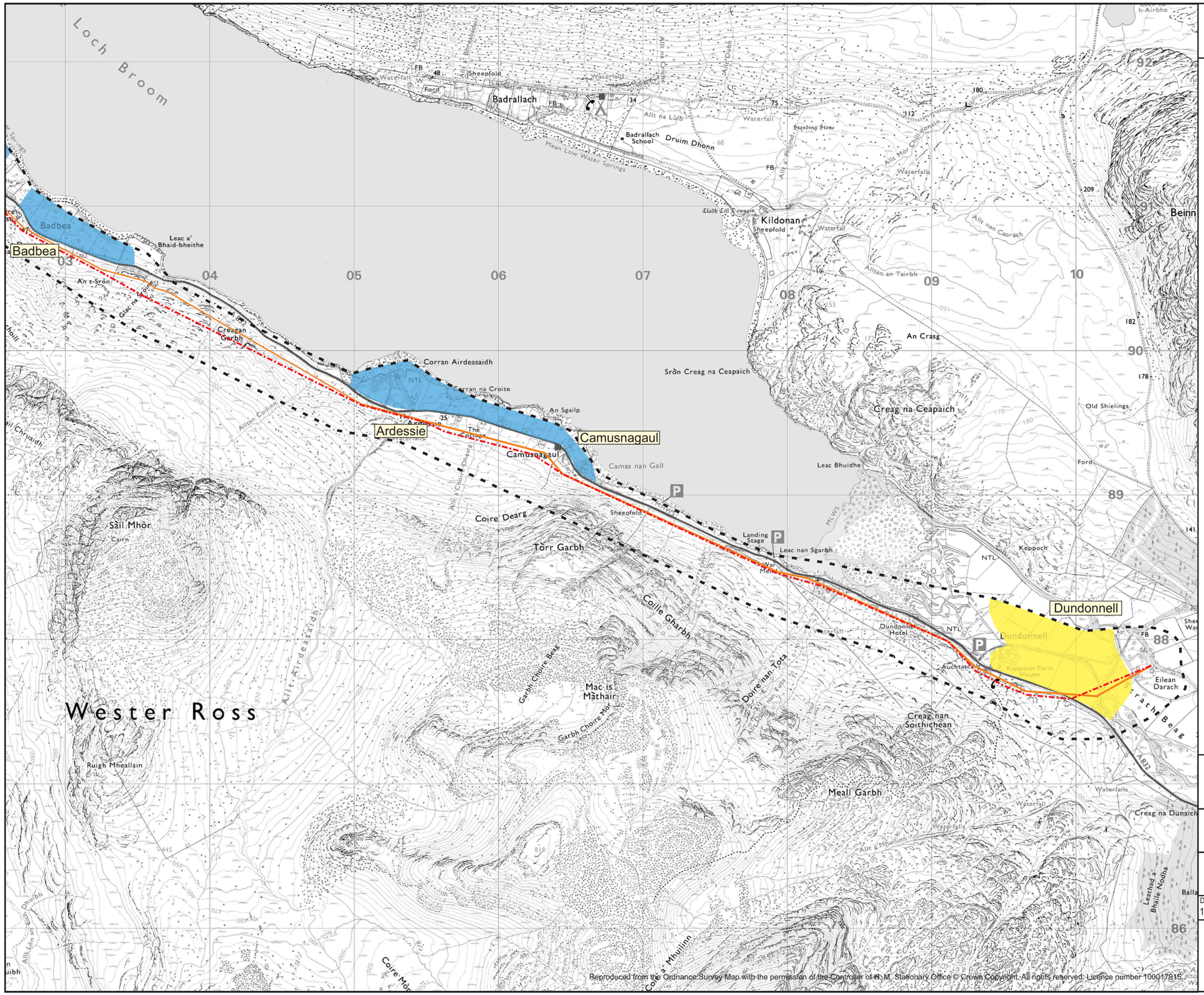

Figure 6.3

Key

- Archeological Study Area
- Relict Pre-Improvement Settlement and Cultivation
- Crofting In-Bye Land
- Improved Fields
- Route of Proposed Replacement Overhead Line
- Route of Existing Overhead Line
- Archaeological Feature

SHEET 1 | SHEET 2 | **SHEET 3**

0m 500m 1km

SCALE 1:25,000

Client: Scottish and Southern Energy Power Distribution

Project: **Aultbea to Dundonnell 11kV to 33kV OHL Upgrading**

Title: Cultural Heritage Sheet 3

Drwg No.	Date	Rev.	Drwn.	App'd
108015/6.3	Jan '09	B	DU	JT

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