

Consultation Document

Alignment Selection

Inveraray to Crossaig 275 kV Overhead Line

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CONTENTS

GLOSSARY AND ABBREVIATIONS	1
PREFACE	4
EXECUTIVE SUMMARY	5
1. INTRODUCTION	6
1.1 Purpose of Document	6
1.2 Project Background	6
1.3 Indicative Design	7
1.4 Structure of the Report	9
2. SHE TRANSMISSION ROUTEING PROCESS	10
2.1 Overview of Routeing Process	10
2.2 Stage 1 – Corridor/Route Options – Identification and Appraisal	11
2.3 Stage 2 - Alignment Options Identification and Appraisal	11
3. COMPARATIVE ALIGNMENT ANALYSIS	16
3.1 Introduction	16
3.2 Deviation 1: Balantyre Wood (AT1 – AT4)	17
3.3 Deviation 2: Achnagoul (AT6-AT8)	18
3.4 Deviation 3: Craignure Mine (AT11-AT14)	19
3.5 Deviation 4: A'Chruach Windfarm Infrastructure (AT14-AT17)	20
3.6 Deviation 5: Loch Glashan to Achnabreck (AT17-AT19)	21
3.7 Deviation 6: Achnabreck Tee-Off (AT18-AT19)	23
3.8 Deviation 7: Crinan Canal (AT19-AT20)	25
3.9 Deviation 8: Inverneill (AT22-AT24)	26
3.10 Deviation 9: Meall Mòr and Artilligan (AT24-AT31)	27
3.11 Deviation 10: Tarbert (AT31-AT37)	29
3.12 Deviation 11: B8001 (AT37-AT41)	31
4. PREFERRED ALIGNMENT AND NEXT STEPS	33
4.1 Summary Preferred Alignment	33
4.2 Next Steps	33
ANNEXES	
Annex A: Figures	

GLOSSARY AND ABBREVIATIONS

132 kV	132 kilovolt (132,000 volt) operating voltage electrical circuit.
275 kV	275 kilovolt (275,000 volt) operating voltage electrical circuit
Alignment	A centre line of an overhead line, along with the location of key angle structures.
AOD	Above Ordnance Datum
Baseline Alignment	The Baseline Alignment aims to provide the optimal alignment within the Proposed Route, taking account of Technical criteria. The Baseline Alignment is also considered to represent the base cost option.
BGS	British Geological Survey
CAWL	Core Areas of Wild Land – extensive areas of high wildness as defined by Scottish Natural Heritage.
Conductor Gallop	An oscillation of single or bundled conductors due to wind action on an ice or wet snow deposit on the conductors. When a wind pressure acts on the iced conductors, it causes uplift and consequent galloping, or jumping motion occurs.
Corridor	A linear area which allows a continuous connection between the defined connection points. The corridor may vary in width along its length; in unconstrained areas it may be many kilometres wide. A corridor should also take account of any pinch points along its length where subsequent design development may be subject to fundamental restrictions which may limit the eventual viability of a project or gaining consent. The Corridor precedes the development of a Route.
Deviation	An alignment alternative proposed where there are different ways to avoid a localised constraint(s). For the purposes of this report all deviation options refer to deviations from the Baseline Alignment.
EIA	Environmental Impact Assessment. A formal process codified by EU directive 2011/92/EU, and subsequently amended by Directive 2014/52/EU. The national regulations are currently set out in <i>The Electricity Works (EIA) (Scotland) Regulations 2017</i> . The EIA process is used to systematically identify, predict, assess and report on the likely significant environmental impacts of a proposed project or development.
Envirocheck	The Envirocheck Report, by Landmark Information Group, is a desk study service providing accurate and up to date data describing potentially contaminative land use, geology, natural environmental hazards and areas of environmental sensitivity from national, regional and local data providers.
GDL	Garden and Designed Landscape, as listed on the Inventory of Gardens and Designed Landscapes held by Historic Environment Scotland.
GWDTE	Groundwater Dependent Terrestrial Ecosystem
HES	Historic Environment Scotland

Holford Rules	A set of 7 rules, first developed in 1959 by Sir William Holford, which define the principles of route selection for overhead lines and which continue to inform transmission line routeing in the UK
IBA	Important Bird Areas are designated by Birdlife as places of international significance for the conservation of birds and other biodiversity ¹ . They are a non-statutory, international designation.
LCT	Landscape Character Type
LiDAR	Light Detection and Ranging. A method used for surveying overhead lines that measures distance to a feature by illuminating that feature with a pulsed laser light, and measuring the reflected pulses with a sensor.
OHL	Overhead line. An electric line installed above ground, usually supported by lattice steel towers or wooden poles.
Planning application	An application for planning permission under the Town and Country Planning (Scotland) Act 1997, as amended by the Planning etc. (Scotland) Act 2006. It should be noted that consent under section 37 of the Electricity Act 1989 usually carries with it deemed planning permission from the Scottish Ministers under Section 57 of the Town and Country Planning (Scotland) Act 1997.
Preferred alignment	An alignment for the overhead line taken forward to stakeholder consultation following a comparative appraisal of alignment options.
Preferred Route	A route for the overhead line taken forward to stakeholder consultation following a comparative appraisal of route options.
Proposed Alignment	An alignment taken forward to consent application. It comprises a defined centre line for the overhead line and includes an indicative support structure (tower or pole) schedule, also specifying access arrangements and any associated construction facilities.
Proposed OHL	The proposed new 275 kV overhead transmission line between Inveraray Switching Station and Crossaig Substation.
Proposed Route	A route taken forward following stakeholder consultation to the alignment selection stage of the overhead line routeing process. The Proposed Route for the purposes of this report is the route which was arrived at from the Environmental Route Options Report (ASH, 2014).
Route	A linear area of approximately 1 km width (although this may be narrower/wider in specific locations in response to identified pinch points / constraints), which provides a continuous connection between defined connection points.
SAC	Special Area of Conservation - designated under <i>Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora</i> (known as - The Habitats Directive).
Section 37 (s37) application	An application for development consent under section 37 of the Electricity Act 1989.

¹ www.birdlife.org

SEPA	Scottish Environment Protection Agency
SHE Transmission plc	Scottish and Southern Electricity Networks (SSEN), operating as Scottish Hydro Electric Transmission plc under licence, is responsible for maintaining and investing in the electricity transmission network in the north of Scotland.
SNH	Scottish Natural Heritage
SPA	Special Protection Area – designated under <i>Directive 2009/147/EC on the Conservation of Wild Birds</i> (the Birds Directive)
SSSI	Site of Special Scientific Interest – designated by SNH under the <i>Nature Conservation (Scotland) Act 2004</i>
Study Area	The area within which the corridor, route and alignment study takes place.
Tower Spotting	Determining structure locations along an alignment.
Wayleave	Agreement between a landowner and the network operator, which grants the network operator rights to install, maintain and operate lines or cables over a defined route. The Agreement is negotiated between SHE Transmission and a landowner whereby they undertake to grant a Wayleave, to be followed by a Deed of Servitude upon construction of the overhead line. A Necessary Wayleave is granted by The Scottish Ministers on behalf of a landowner if it is deemed expedient that such a wayleave should be granted, but only sought in circumstances where that landowner will not grant a Wayleave voluntarily.
WLA	Wild Land Area, as classified by SNH (2014)
ZTV	Zone of Theoretical Visibility - the theoretical visibility of an object in the landscape.

PREFACE

This Consultation Document has been prepared by Ramboll Environ on behalf of Scottish Hydro Electric Transmission plc (SHE Transmission plc) to seek comments from all interested parties on the Preferred Alignment identified for the proposed Inveraray to Crossaig 275 kV Overhead Line project.

Public consultation events detailing the proposals described in this document will be held in Autumn 2017, these events will be advertised publicly via traditional printed media, social media and through postal notification.

Comments on this document should be sent to:

Neil Anderson, by email at neil.anderson@sse.com, or by post to Inveralmond House, 200 Dunkeld Road, Perth, PH1 3AQ.

SHE Transmission request that all consultation responses on this Alignment Selection Consultation Document are received by 21st July 2017.

EXECUTIVE SUMMARY

This Consultation Document invites all interested parties to comment on the Preferred Alignment selected by SHE Transmission plc (part of Scottish and Southern Electricity Networks) for a new 81 km double circuit 275 kilovolt (kV) overhead line (OHL), supported by steel lattice towers, to connect between Inveraray Switching Station and Crossaig Substation, in Argyll, Scotland.

The existing transmission network serving eastern Argyll and the Kintyre Peninsula was originally designed to serve a rural area with low demand for electricity. Requests from renewable generation developers to connect to the electricity network in this area exceeds the capacity of the existing transmission system. As a result, a new OHL is required. The new OHL would replace the existing 132 kV OHL.

SHE Transmission is following a three-stage approach to routeing, as follows:

- Stage 1: Corridor/Route Selection;
- Stage 2: Alignment Selection; and
- Stage 3: Consenting Process.

Stage 1 has been completed and a 200 m wide Proposed Route was selected, based on earlier studies and consultation. This Consultation Document describes the Stage 2: Alignment Selection process, which has been used to develop a Preferred Alignment for the OHL.

The Preferred Alignment is considered to represent the optimum balance of technical, economic and environmental considerations, and has been developed with reference to SHE Transmission's license obligations under the Electricity Act 1989. Moving forward, all comments received will inform further consideration of the Preferred Alignment (Stage 2), and the selection of an Indicative Proposed Alignment (Stage 2). The Indicative Proposed Alignment will be taken forward into Stage 3: Consenting Process for more detailed environmental assessment, prior to submission of an application for consent for a Proposed Alignment under section 37 of the Electricity Act 1989.

The purpose of this Consultation Document is to inform stakeholders of the project need, summarise the process followed to arrive at the Preferred Alignment and how and why the Preferred Alignment was selected by SHE Transmission.

INTRODUCTION

1.2 Purpose of Document

- 1.2.1 SHE Transmission plc (part of Scottish and Southern Electricity Networks) is developing proposals to construct and operate a new 275 kilovolt (kV) overhead transmission line (OHL) between Inveraray Switching Station and Crossaig Substation to replace the existing 132 kV overhead line from Inveraray to Crossaig.
- 1.2.2 This Consultation Document has been prepared to invite all interested parties to comment on the Preferred Alignment selected. Moving forward, all comments received will inform further consideration of the Preferred Alignment, and the selection of an Indicative Proposed Alignment. The Indicative Proposed Alignment will be taken forward into the Consenting Process for more detailed environmental assessment prior to submission of an application for consent for a Proposed Alignment under section 37 of the Electricity Act 1989.

1.3 Project Background

- 1.3.1 SHE Transmission plc is the transmission license holder in the north of Scotland and has the following duties under Section 9 of the Electricity Act 1989:
- to develop and maintain an efficient, coordinated and economical system of electricity transmission; and
 - to facilitate competition in the generation and supply of electricity.
- 1.3.2 SHE Transmission also has obligations to offer non-discriminatory terms for connection to the transmission system. As such, SHE Transmission has a legal duty to provide connections for new electricity generators wishing to connect to the transmission network in its licence area under the terms of its statutory and licence obligations. SHE Transmission is obliged to make its transmission network available for these purposes and ensure the system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity.
- 1.3.3 The existing transmission network serving eastern Argyll and the Kintyre Peninsula was originally designed to serve a rural area with low demand for electricity. Requests from renewable generation developers to connect to the electricity transmission network in this area exceed the capacity of the existing transmission network. As a result, a new OHL is required between Inveraray Switching Station, in the north, and Crossaig Substation in the south, a distance of approximately 81 km (see Figure 1.1 – 1.6). The new OHL would replace the existing 132 kV OHL.



Photo 1: Inveraray to Crossaig existing tower design (PL16 tower suite)

1.4 Indicative Design

- 1.4.1 The new OHL would be supported by galvanised steel lattice towers. Each tower will have three arms on each side, each supporting an insulator string carrying two conductors (12 conductors in total). An earth wire, containing an optical fibre composite overhead ground wire, would be strung between the tower peaks.
- 1.4.2 The specific tower design and span length will vary to account for detailed engineering requirements. Typical tower heights will range from approximately 46 m to 55 m above ground level (agl), with a typical span length of approximately 300 m.



Photo 2: Inveraray to Crossaig proposed tower design (L8 tower suite)

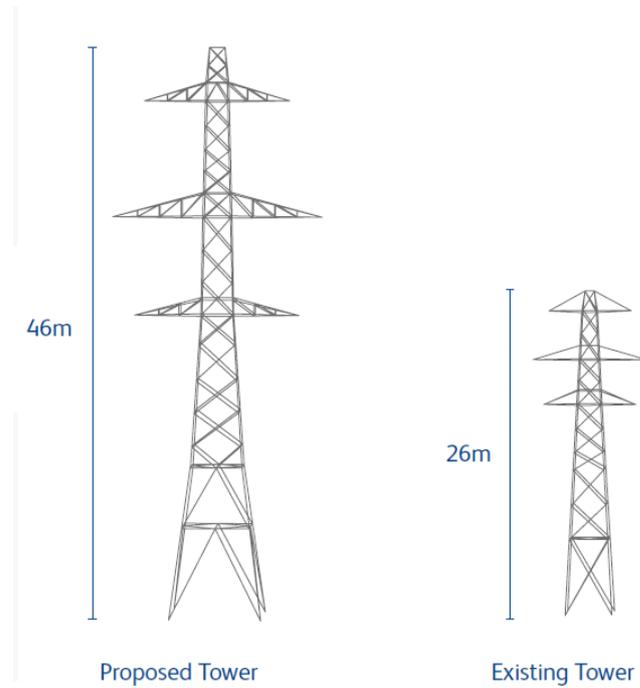


Diagram 1: Proposed tower design compared to existing tower design

1.5 Structure of the Report

1.5.1 The remaining sections of this report are structured as follows:

- Section 2 describes the overall SHE Transmission routeing process and provides a brief overview of the methodology used to select the Preferred Alignment.
- Section 3 describes the Baseline Alignment selected within the Proposed Route, and highlights where alternative alignments (deviations) were considered with reference to environmental, technical criteria and cost criteria.
- Section 4 describes the Preferred Alignment and provides a rationale for the selection with reference to environmental, technical and cost criteria.

SHE TRANSMISSION ROUTEING PROCESS

1.6 Overview of Routeing Process

1.6.1 In the development of this project, SHE Transmission is following a three-stage approach, as follows:

- Stage 1: Corridor/Route Selection;
- Stage 2: Alignment Selection; and
- Stage 3: Consenting Process.

1.6.2 Stage 1 has been completed and a 200 m wide Proposed Route was selected, based on earlier studies and consultation. This Consultation Document describes the Stage 2: Alignment Selection process, which has been used to develop a Preferred Alignment for the OHL.

1.6.3 Each stage in the SHE Transmission routeing process is iterative, bringing cost, technical and environmental considerations together in a way which seeks the best balance at each stage. The Preferred Alignment is considered to represent the optimum balance of technical, economic and environmental considerations, and has been developed with reference to SHE Transmission's licence obligations under the Electricity Act 1989. SHE Transmission is now seeking feedback on the Preferred Alignment through the publication of this document, before concluding Stage 2. The conclusion of the Stage 2: Alignment Selection will result in the confirmation of an Indicative Proposed Alignment to be taken forward for Environmental Impact Assessment (EIA).

1.6.4 The three-stage approach is illustrated in the flow chart in Diagram 2.

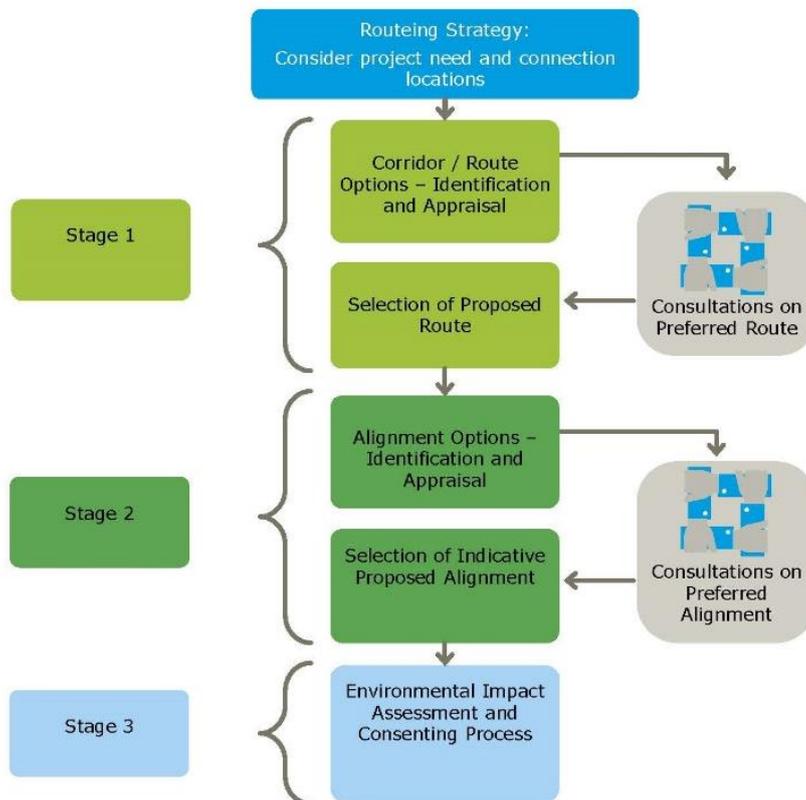


Diagram 2: Overhead Line Routeing Process Flowchart

1.7 Stage 1 – Corridor/Route Options – Identification and Appraisal

- 1.7.1 The route selection process was carried out in 2014 and subsequently consulted on in March 2015. From this process, a Proposed Route was selected to be brought forward to the alignment selection stage. A 'Proposed Route' according to the SHE Transmission OHL Routeing Guidance is defined as "a route taken forward following stakeholder consultation to the alignment selection stage of the overhead line routeing process".
- 1.7.2 The results of the route selection stage environmental assessment are described in Environmental Route Options Report (ASH, 2014).

1.8 Stage 2 - Alignment Options Identification and Appraisal

Overview

- 1.8.1 The alignment selection has been completed with the aim of developing a Proposed Alignment, within the Proposed Route, which is technically feasible and economically viable and which causes the least disturbance to the environment; and those living in it, working in it, visiting it or using it for recreational purposes.
- 1.8.2 The approach adopted in developing and accessing alignment options is consistent with relevant SHE Transmission guidance²
- 1.8.3 The guidance recommends appropriate application of the "Holford Rules" to inform routeing. The Holford Rules³ were first developed in 1959 by Sir William Holford and continue to inform transmission line routeing in the UK. These rules advocate the application of a hierarchical approach to routeing which first avoids major areas of highest amenity, then smaller areas of high amenity, and finally considers factors such as backdrop, woodland and orientation.
- 1.8.4 In this case, the Holford Rules have been applied to the identification and evaluation of alignment options, from which a Proposed Alignment will be defined. It should be noted that the Holford Rules apply the term 'amenity' to refer to environmental designations and classifications such as Natura 2000 sites, Sites of Special Scientific Interest (SSSI), Scheduled Monuments, Listed Buildings, National Parks.
- 1.8.5 The guidance also recognises that the key effect of OHLs is visual and it advises that the routeing of OHLs should consider the types of mitigation or screening that could offset any visual effects.
- 1.8.6 The Holford Rules are reproduced in Box 1.

² Scottish Hydro Electric Transmission Ltd (SHETL) (2004): Electricity Transmission Development Proposals in Scotland: Appendix 1: The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines with NGC 1992 and SHETL 2003 Notes

³ The Holford Rules were reviewed circa 1992 by the National Grid Company (NGC) Plc (now National Grid Transmission (NGT)) as owner and operator of the electricity transmission network in England and Wales, with notes of clarification added to update the Rules. A subsequent review of the Holford Rules (and NGC clarification notes) was undertaken by Scottish Hydro Electric Transmission Limited (SHETL) in 2003 to reflect Scottish circumstances.

Box 1: The Holford Rules

Rule 1: Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence;

Rule 2: Avoid smaller areas of high amenity value or scientific interest, by deviation; provided that this can be done without using too many angle towers (i.e. the more massive structures which are used when line change direction);

Rule 3: Other things being equal, choose the most direct line, with no sharp changes of direction and thus fewer angle towers;

Rule 4: Choose tree and hill backgrounds in preference to sky background wherever possible and when the line has to cross a ridge, secure this opaque background as long as possible and cross obliquely when a dip in the ridge provides an opportunity. Where it does not, cross directly, preferably between belts of trees.

Rule 5: Prefer moderately open valleys with woods, where the apparent height of the towers will be reduced and the views of the line will be broken by trees.

Rule 6: In country which is flat and sparsely planted, keep the higher voltage lines as far as possible independent of smaller lines, converging routes, distribution lines and other masts, wires and cables so as to avoid a concatenation or 'wirescape'.

Rule 7: Approach urban areas through industrial zones where they exist and where pleasant residential and recreational land intervenes between the approach line and substation, go carefully into the costs of undergrounding, for lines other than those of the highest voltage.

1.8.7 The alignment selection study (Stage 2 in the overall routeing process) has comprised a three-step approach, as detailed below:

- Step 1: Identification of Baseline Alignment within the Proposed Route
- Step 2: Review of Baseline Alignment with reference to environmental and technical criteria
- Step 3: Comparative Alignment Analysis
 - Step 3a: Description of Deviations from Baseline Alignment
 - Step 3b: Alignment Option Comparative Analysis and Identification of Preferences

1.8.8 The methodology employed within each of these stages is detailed below.

Step 1: Identification of Baseline Alignment

1.8.9 Following the route options appraisal undertaken in October 2014⁴, a 200 m wide Proposed Route was established as the starting point for developing the alignment options.

1.8.10 A Baseline Alignment was developed with the objective to provide the technical (engineering) preference for the OHL based on:

- An initial desktop analysis of provisional angle points; and
- An on-site assessment of the Baseline Alignment and angle points.

1.8.11 The Baseline Alignment aims to provide the optimal alignment within the Proposed Route, taking account of technical criteria (listed in Table 2.1). The Baseline Alignment is also considered to represent the base cost option.

⁴ SHE Transmission (2014) Inveraray to Crossaig 132 kV Overhead Line, Route Options Appraisal, October 2014

Table 2.1: Alignment Options – Technical Appraisal Criteria	
Environmental Design	<ul style="list-style-type: none"> Review of altitude, with a preference for lower altitude within the Proposed Route.
Topography	<ul style="list-style-type: none"> Review of topography, with a preference for lower gradients and avoiding slope gradients >25% where possible. Review of topography to identify the potential for ‘galloping’ through laminar wind flow.
Ground Conditions	<ul style="list-style-type: none"> Review of the subgrade ground conditions based on desktop study or borehole data and geological mapping information. Site survey to avoid unfavourable ground, such as peat, extensive areas of rocky outcrops and wet areas and water courses/ bodies.
Access	<ul style="list-style-type: none"> Identification of potential access points from the main asphalt roads, requirements for gates, culverts and bridges on the proposed access routes. Preference for alignment close to existing access routes for ease of operational maintenance of the proposed OHL.
Existing Infrastructure	<ul style="list-style-type: none"> Review of buildings, roads, public footpaths, existing services and existing LV and HV overhead lines. Provision of 100 m exclusion zone where possible from all properties.
Existing Network	<ul style="list-style-type: none"> Provision of at least 50 m separation from the existing 132 kV OHL between Inveraray and Crossaig to allow for the construction of the new line without the need for outages on the existing 132 kV OHL.
Operational	<ul style="list-style-type: none"> Provision of appropriate clearances to various features and crossings at 275 kV voltage. Provision for connections to be made to planned future wind farms.

1.8.12 The Baseline Alignment was identified largely within the Proposed Route, based on the technical criteria set out in Table 2.1. In five areas, the Baseline Alignment selected is outside the Proposed Route. The specific sections that are outside the Proposed Route are listed in Table 2.2 below along with the reason for the alignment selection outside the Proposed Route.

1.8.13 The Baseline Alignment is shown in Figure 1.1-Figure 1.6.

Table 2.2: Baseline Alignment – Deviations outside the Proposed Route	
Section 4 to 5	Proposed Route runs through Steallaire Ban Loch with difficult ground conditions expected in the vicinity. Baseline Alignment is moved outside of the corridor away from Loch up the embankment where ground conditions are expected to be more favourable for foundations.
Section 7 to 9	Diversion from the Proposed Route is required to connect to existing tower 46 (IPW) to tie into the substation for connection to An Suidhe wind farm.
Section 14 to 17	New line to divert to existing tower 92 (IPE) to tie into Crarae substation for connection to A’Chruach wind farm.
Section 24 to 29	The diversion from the proposed route is selected to avoid crossing over mountain peaks with excessively steep terrain and difficult access.
Section 30 to 34	The Proposed Route oversails houses. Following landowner consultations by SHET in the Tarbert areas there was a need to revise the potential corridors. Two new corridors were presented one to the west side of Loch Fhinn and one to the East side of Loch Fhinn.

Step 2: Review of Baseline Alignment

1.8.14 A review of the Baseline Alignment was completed based on criteria set out in Table 2.1. The technical and environmental features considered in completing the review of the Baseline Alignment are shown on Figure 2.1-Figure 2.12.

1.8.15 In areas where no obvious benefits can be derived from alignment options, the Baseline Alignment is proposed as the Preferred Alignment. This has occurred at the following sections: Section 5; Section 9; Section 10; and Section 21.

1.8.16 By following the SHE Transmission OHL routeing process and Holford Rules, the areas of highest amenity value were avoided in the route selection stage⁴. As a result, the environmental criteria listed below are proportionate to the detail required at alignment selection stage. In some instances buffers have been applied to designations where the proposed OHL could have an indirect effect on an environmental criterion, for example an OHL could cause setting effects on a scheduled monument from 6 km away. The size of the buffer applied to designations varies according to the area in which indirect effects may occur on the designation.

Table 2.3: Alignment Options – Environmental Appraisal Criteria and Buffers Applied	
Natural Heritage	<p>Designations:</p> <ul style="list-style-type: none"> • Special Areas of Conservation (SAC) (direct-unless connectivity potential); • Special Protection Areas (SPA) (direct and 10 km buffer-depending on notification); • Ramsar Sites (direct); • Sites of Special Scientific Interest (SSSI) (direct and 10 km buffer-depending on notification); and • Ancient Woodland Inventory (AWI) (direct). <p>Ornithology surveys for protected bird species were undertaken during the alignment selection process and the results to date were considered in the selection of the alignment.</p> <p>Protected species (animal and plant) will be considered at the EIA stage following complete field surveys.</p>
Cultural Heritage	<p>Designations:</p> <ul style="list-style-type: none"> • Scheduled Ancient Monuments (direct and 6 km buffer); • Listed Buildings (Category A and B (direct and 6km buffer)); • Conservation Areas (direct); and • Gardens and Designed Landscapes (GDL) (direct and 2 km buffer).
People	<ul style="list-style-type: none"> • Avoid settlements of Inveraray, Lochgilphead and Tarbert. • Provision of 100 m exclusion zone where possible from all properties.
Landscape	<p>Designations</p> <ul style="list-style-type: none"> • National Scenic Area (NSA) (10 km buffer); and • Areas of Panoramic Quality (APQ) (10 km buffer) • Wild Land Areas (10 km buffer); and • Sensitive Landscape Character Types.
Land Use	<ul style="list-style-type: none"> • Minimise direct effects on all woodland, and semi-natural and Ancient Woodland in particular. • Minimise direct effects on Core Paths, Sustrans Cycle Routes, Scotland’s Great Trails and navigable waterways. • Minimise visual effects perceived by users of roads and public rights of way.
Planning	<ul style="list-style-type: none"> • Argyll and Bute Local Development Plan (LDP). • Consideration of other proposed developments (that are subject of a valid planning application or consent) which may have a cumulative effect on the environment when considered alongside the proposed OHL.

Step 3: Comparative Alignment Analysis

Step 3a: Description of Deviations from Baseline Alignment

- 1.8.17 Following the identification of the Baseline Alignment, amendments were suggested (hereafter referred to as 'deviations'). These options were suggested to address environmental, landowner discussions and technical issues, identified during stakeholder and public consultation and the Baseline Alignment review.

Step 3b: Alignment Option Comparative Analysis and Identification of Preferences

- 1.8.18 The suggested deviations were assessed against the Baseline Alignment in line with the technical and environmental criteria outlined in Table 2.1 and Table 2.3.
- 1.8.19 In addition, the appraisal included a consideration of the potential difference in cost between the options, based on a unit cost per kilometre of overhead line, taking the Baseline Alignment to represent the base cost.
- 1.8.20 The option (deviation or Baseline Alignment) which, on balance, would represent the optimum balance of cost efficiency, technical feasibility and environmental considerations was identified for each deviation.
- 1.8.21 Although cost efficiency is a consideration when determining options and final alignment, for the majority of deviations the cost differences between the Baseline Alignment and the various Options has not proven to be the determining factor in selection of a chosen deviation option over the baseline.

COMPARATIVE ALIGNMENT ANALYSIS

1.9 Introduction

- 1.9.1 As described in Section 2, the comparative analysis of deviations to the Baseline Alignment (Step 3) was undertaken by means of the following stepped process:
- Step 3a: Description of Deviations from Baseline Alignment – the potential need for a deviation was identified and suggested deviations from the Baseline Alignment mapped.
 - Step 3b: Alignment Option Comparative Analysis and Identification of Preferences – a comparative analysis of Baseline Alignment and identified deviations against environmental, technical and cost criteria to identify the optimal alignment option.
- 1.9.2 A detailed review of the comparative analysis of deviation options is reported under separate cover. For the purposes of this consultation document, a brief description is provided to summarise the reasons for selecting the Preferred Alignment in Table 3.1 to Table 3.11. The description of each deviation is made with reference to the Angle Tower (AT) points, as annotated in Figure 3.1 to Figure 3.11.
- 1.9.3 In each case the preferred alignment option (either baseline or deviation) was selected following a review of the optimal balance of cost efficiency, technical feasibility and environmental considerations. Overall, it is noted that the alignment options appraisal is based on a comparative analysis of the options. In the next stage (Consenting Process) the EIA Report will consider the likely significance of environmental effects (in terms of the EIA regulations).
- 1.9.4 The following sections provide a description and further information on the suggested deviations from the Baseline Alignment and the reasoning for their suggestion. The deviations are ordered systematically traveling from north to south along the Baseline Alignment and numbered accordingly.

1.10 Deviation 1: Balantyre Wood (AT1 – AT4)

Table 3.1: Deviation 1: Balantyre Wood (Figure 3.1)	
Need	Request from landowner to seek alignment that avoids or reduces the potential loss of mature non-native specimen conifer trees, planted in circa 1888, in an area known as Balantyre Wood.
Baseline Alignment (AT1-AT4)	<p>Environmental – AT1 and AT2 and approx. 2.9 km of baseline alignment located within Ancient Woodland. Baseline alignment traverses Balantyre Wood.</p> <p>AT1 and AT2 located within Inveraray Castle GDL, although baseline alignment does not cross any key features of GDL.</p> <p>Property approximately 86 m from AT2.</p> <p>Views from Inveraray Castle (ground level) and A819 screened by intervening vegetation and topography. The 'large scale' landscape could accommodate baseline alignment.</p> <p>Technical – Five angle/tension towers and 19 suspension towers required. AT1-AT4 is 6,010 m in length. Technical constraints: Property 86 m from AT2 and 11 kV OHL and A819 road crossings required.</p>
Deviation 1 Option 1 – Changes from Baseline Alignment	<p>Deviation 1 Option 1 extends the baseline alignment further west from AT2, beyond the extent of Inveraray Castle GDL before running south west outside the boundary of Balantyre Wood.</p> <p>Environmental – Reduced extent within Ancient Woodland (1.5 km); however would require felling of good quality oak woodland, which is of higher ecological value than non-native specimen trees.</p> <p>An established golden eagle territory is located west of Deviation 1 Option 1 and due to the proximity to this territory, there is potential for effects upon golden eagles with this option.</p> <p>Towers would be further from Inveraray Castle and back-clothed in key views within the GDL.</p> <p>Maintains 100 m set back from all properties, though predicted visual amenity effects on High Balantyre property.</p> <p>Views from Inveraray Castle (ground level) and A819 screened by intervening vegetation and topography. The 'large scale' landscape could accommodate deviation 1, option 1.</p> <p>Technical – Seven angle/tension towers and 19 suspension towers required. Deviation 1 Option 1 is 6,407 m. Technical constraints: Crossing of 11 kV OHL and A819 crossing required.</p> <p>Cost – 107% of baseline cost.</p>
Deviation 1 Option 2 – Changes from Baseline Alignment	<p>Deviation Option 2 moves the alignment between 15-70 m east of the baseline alignment.</p> <p>Environmental – Maintains 100 m setback from property close to AT2 but moved within 66 m of Low Balantyre property.</p> <p>Deviation 1 Option 2 is designed to avoid the specimen trees within Balantyre Wood.</p> <p>Low Balantyre property likely to be screened by roadside vegetation. No other significant environmental changes from baseline alignment.</p> <p>Technical – Six angle/tension towers and 17 suspension towers required. Deviation 1 Option 2 is 6,077 m. Technical constraints: Crossing of 11 kV OHL and A819 crossing required.</p> <p>Cost – 101% of baseline cost.</p>
Summary of preferred alignment	<p>Environmental – All three options can be accommodated in landscape and visual terms. Deviation 1 Option 2 is preferred in ecological terms as it avoids the majority of routeing through good quality oak woodland, and avoids potential effects on an established golden eagle territory. Preferred Alignment. Deviation 1 Option 2 also avoids the majority of the specimen trees in Balantyre Wood.</p> <p>Technical – Deviation 1 Option 2 preferred as it is the shortest option.</p> <p>Cost – Deviation 1 Option 2 is economically feasible, but the baseline alignment is most economical.</p> <p><i>Deviation 1 Option 2 is the preferred option. Deviation 1 Option 2 is the technically and environmentally preferred option. Therefore, as Deviation 1 Option 2 is also economically viable, the selected option on balance is Deviation 1 Option 2.</i></p>

1.11 Deviation 2: Achnagoul (AT6-AT8)

Table 3.2: Deviation 2: Achnagoul (Figure 3.2)	
Need	The baseline alignment would pass through a section of Ancient Woodland close to the Douglas Water. A deviation was considered to divert around the Ancient Woodland and avoid felling of this woodland.
Baseline Alignment (AT6-AT8)	<p>Environmental – AT7 is located approx. 15 m south west of Ancient Woodland; approx. 175 m of baseline alignment runs through Ancient Woodland.</p> <p>Technical – Three angle/tension towers and six suspension towers required. AT6-AT8 is 2,569 m. Technical constraints: Crossing of Douglas Water watercourse and a LV line. AT8 is positioned on the existing 132kV Inveraray to Port Ann alignment in order to connect into An’Suidhe substation. A short outage and/or temporary diversion will be required to construction this tower and string conductor sections to the existing tie in tower.</p>
Deviation 2 Option 1 – Changes from Baseline Alignment	<p>Deviation 2 Option 1 introduces an additional angle tower in order to move the point at which the alignment crosses the Douglas Water further south.</p> <p>Environmental – Avoids Ancient Woodland.</p> <p>Technical – Four angle/tension towers and six suspension towers required. Deviation 2 Option 1 is 2,568 m. Technical constraints: Crossing of Douglas Water watercourse and a LV line. Additionally, there would be a requirement to build a 486 m section of the new alignment on the existing 132 kV Inveraray to Port Ann OHL which introduces difficulties in construction sequencing and it would be necessary to review the planned outage windows of the existing 132 kV OHL to determine if a temporary diversion would be required to facilitate the works.</p> <p>Cost – 99.96% of baseline cost.</p>
Summary of preferred alignment	<p>Environmental – Deviation 2 Option 1 avoids Ancient Woodland entirely and as a result is the environmental preference.</p> <p>Technical – The baseline alignment is preferred as it has fewer angle towers and reduces the extent of new OHL built on the existing 132kV Inveraray to Port Ann line hence reducing the outage and/or temporary diversion requirements for construction.</p> <p>Cost – Deviation 2 Option 1 is the most economical but the baseline alignment is also economically feasible.</p> <p><i>The baseline alignment is preferred from a technical perspective and is also considered economically feasible; therefore, it has been selected as the preferred option on balance. Deviation 2 Option 1 is the most economical option and also avoids Ancient Woodland therefore is the preferred option from both a cost and environmental perspective. However, technically, Deviation 2 Option 1 would require a lengthy outage and/or temporary diversion on the existing 132kV Inveraray to Port Ann line which would result in greater disruption to customers.</i></p>

1.12 Deviation 3: Craignure Mine (AT11-AT14)

Table 3.3: Deviation 3: Craignure Mine (Figure 3.3)	
Need	The baseline alignment would run through Craignure Mine, a geological SSSI. Avoidance of this designation was required and a deviation was suggested to avoid the SSSI.
Baseline Alignment (AT11-AT14)	<p>Environmental – The baseline alignment runs through Craignure Mine SSSI for approx. 134 m. The baseline alignment was selected within the Proposed Route to follow the 132 kV Inveraray to Port Ann OHL.</p> <p>Baseline alignment located approx. 167 m from property at Gallanach.</p> <p>Technical – Four angle/tension towers and 17 suspension towers required. AT11-AT14 is 5,704 m. No technical constraints.</p>
Deviation 3 Option 1	<p>Deviation 3 Option 1 runs south west from AT11 directly to AT14, avoiding Craignure Mine SSSI.</p> <p>Environmental – Avoids Craignure Mine SSSI.</p> <p>Deviation 3 Option 1 alignment located approx. 210 m from a property at Gallanach.</p> <p>Technical – Two angle/tension towers and 18 suspension towers required. Deviation 3 Option 1 is 5,601 m. No technical constraints.</p> <p>Cost – 98% of baseline cost.</p>
Summary of preferred alignment	<p>Environmental – Deviation 3 Option 1 is preferred as it avoids Craignure Mine SSSI, avoiding direct effects on this designation. Deviation 3 Option 1 also increases the distance from the property at Gallanach.</p> <p>Technical – Deviation 3 Option 1 preferred as it is the shorter, more direct alignment requiring fewer angle towers.</p> <p>Cost – Deviation 3 Option 1 is the most economical solution.</p> <p><i>Deviation 3 Option 1 is the preferred option from an environmental, technical and cost perspective and therefore has been selected as the preferred option.</i></p>

1.13 Deviation 4: A'Chruach Windfarm Infrastructure (AT14-AT17)

Table 3.4: Deviation 4: A'Chruach Windfarm Infrastructure (Figure 3.4)	
Need	A'Chruach is a 21 turbine windfarm located in Kilmichael Forest approximately 4 km west of Minard. A deviation was proposed to avoid a 33 kV wood pole line connecting A'Chruach windfarm to Crarae substation which intersects the baseline alignment.
Baseline Alignment (AT14-AT17)	<p>Environmental – Within 2 km of Crarae GDL. AT16 located approx. 0.9 km west of Crarae GDL.</p> <p>Technical – Four angle/tension towers and eight suspension towers required. AT14-AT17 is 3,199 m. This section must meet the technical requirement to connect into Crarae substation. Technical constraints: baseline alignment crosses the 33 kV wood pole OHL which connects A'Churach windfarm to Crarae substation. An outage of the 33 kV line would be required for stringing the new OHL. The entry angle into existing junction tower at Crarae substation is exceeded and therefore the baseline is not a feasible design.</p>
Deviation 4 Option 1 – Changes from Baseline Alignment	<p>Deviation 4 Option 1 moves further south of AT16 to avoid the 33 kV wood pole line and create a feasible entry angle into the existing junction tower at Crarae substation.</p> <p>Environmental – Deviation 4 Option 1 runs through approx. 462 m of semi-natural woodland and moves the alignment between 60-115 m closer to Crarae GDL compared to the baseline alignment.</p> <p>Technical – Four angle/tension towers and eight suspension towers required. Deviation 4 Option 1 is 3,344 m. Provides technically feasible design for junction tower to Crarae substation. Avoids intersecting the 33 kV wood pole OHL, removing the need for outages.</p> <p>Cost – 105% of baseline cost.</p>
Summary of preferred alignment	<p>Environmental – The baseline alignment is preferred as it does not affect semi-natural woodland and is further from Crarae GDL.</p> <p>Technical – Deviation 4 Option 1 is preferred as it eliminates the critical technical constraints associated with the baseline alignment which would impose design and construction issues.</p> <p>Cost – The baseline alignment is the most economical option.</p> <p><i>Deviation 4 Option 1 is the selected as the preferred option. Although the baseline alignment is preferred from an environmental perspective and represents the most economical solution, Deviation 4 Option 1 is the selected option on balance as it avoids intersecting with the existing 33 kV wood pole OHL, thus avoiding the requirement for outages on the A'Chruach Windfarm connection. Deviation 4 Option 1 also provides a technically feasible solution to the existing junction tower at Crarae substation.</i></p>

1.14 Deviation 5: Loch Glashan to Achnabreck (AT17-AT19)

<p>Need</p>	<p>Loch Glashan is a well-known and popular recreational resource promoted for a range of recreational pursuits. A deviation (Deviation 5 Option 1) was proposed to reduce the impact on visual amenity of an alignment running close to the loch from key viewpoints. Deviation 5 Option 2 was suggested to reduce the impact on Auchoish chambered cairn Scheduled Monument located north east of AT19. The baseline alignment runs through a section of commercial forest. Deviation 5 Option 3 was suggested by the land owner to minimise the loss of productive crop and minimise the impacts on forestry operations and land management.</p>
<p>Baseline Alignment (AT17-AT19)</p>	<p>Environmental – Small number of Red-throated diver flight lines around Loch Glashan. White Tailed Eagle observed at Loch Glashan.</p> <p>Potential for effects on visual amenity on users of Loch Glashan and potential for indirect effects where the baseline alignment may be prominent when viewed from neighbouring Rocky Mosaic and Loch interior.</p> <p>The smaller scale linear landscape of Crinan valley has increased sensitivity to the type of proposed development.</p> <p>Technical – Three angle/tension towers and 37 suspension towers required. AT17-AT19 is 12,851 m. No technical constraints.</p>
<p>Deviation 5 Option 1 – Changes from Baseline Alignment</p>	<p>Deviation 5 Option 1 moves approx. 500 m north west of the baseline alignment, further from Loch Glashan.</p> <p>Environmental – Reduces potential effects on birds associated with Loch Glashan.</p> <p>Auchoish chambered cairn is located 315 m north west of Deviation 5 Option 1; this option would introduce towers which would be ‘skylined’ in views from the chambered cairn.</p> <p>Avoids sensitive and highly visible loch-side locations, drops many towers below the skyline and allows for the retention of forestry along the north western side of Loch Glashan, aiding the retention of its character and amenity.</p> <p>Introduction of tower (Deviation Point 1c) on the floor of the Crinan Valley would likely result in some direct and indirect effects on Crinan valley Rocky Mosaic landscape.</p> <p>Technical – Five angle/tension towers and 35 suspension towers required. Deviation 5 Option 1 is 12,785 m. No technical constraints.</p> <p>Cost – 99% of baseline cost.</p>
<p>Deviation 5 Option 2 – Changes from Baseline Alignment</p>	<p>Deviation 5 Option 2 follows Deviation 5 Option 1 but moves south east away from it upon approach to Auchoish chambered cairn before re-joining the baseline alignment just before AT19.</p> <p>Environmental – Reduces potential effects Auchoish chambered cairn, no towers would be present on the skyline in views from the chambered cairn with Deviation 5 Option 2.</p> <p>Avoids sensitive and highly visible loch-side locations, drops many towers below the skyline and allows for the retention of forestry along the north western side of Loch Glashan, aiding the retention of its character and amenity.</p> <p>Requires the shortest crossing across the Crinan Valley with consequent minimisation of angle towers, limiting the direct and indirect effects of the Crinan valley Rocky Mosaic landscape.</p> <p>Technical – Seven angle/tension towers and 34 suspension towers required. Deviation 5 Option 2 is 12,873 m. No technical constraints.</p> <p>Cost – 100.2 % of baseline cost.</p>
<p>Deviation 5 Option 3 – Changes from Baseline Alignment</p>	<p>Deviation 5 Option 3 follows Deviation 5 Option 2 but at Deviation Point 3a it moves south west before turning to meet AT19 to minimise both the loss of productive crop and the impact on the commercial viability of the productive forest.</p> <p>Environmental – Runs through approx. 100 m of Ancient Woodland.</p> <p>Reduces effects on Auchoish chambered cairn, no towers would be present on the skyline in views from the chambered cairn with Deviation 5 Option 3.</p> <p>Avoids sensitive and highly visible loch-side locations, drops many towers below the skyline and allows for the retention of forestry along the north western side of Loch Glashan, aiding the</p>

Table 3.5: Deviation 5: Loch Glashan to Achnabreck (Figure 3.5)

	<p>retention of its character and amenity.</p> <p>Introduction of an angle tower (Deviation Point 3c) on floor of Crinan valley would likely result in some direct and indirect effects on Crinan valley Rocky Mosaic landscape.</p> <p>Visually, Deviation 5 Option 3 is likely to result in a greater extent of visibility/prominence to properties in the Crinan valley due to the relatively exposed position of Deviation 5 Option 3.</p> <p>Technical – Eight angle/tension towers and 32 suspension towers required. Deviation 5 Option 3 is 12,888 m. No technical constraints.</p> <p>Cost – 100.3 % of baseline cost.</p>
<p>Summary of preferred alignment</p>	<p>Environmental – Deviation 5 Option 2, on balance, represents the best option from a natural heritage, landscape and visual and cultural heritage perspective. Deviation 5 Option 2 offers reduced effects on birds and also landscape and visual improvements for Loch Glashan and its recreational receptors. Additionally, it provides the required visual separation between the proposed towers and the Auchoish chambered cairn Scheduled Monument.</p> <p>Technical – The baseline alignment is preferred as it requires the fewest angle towers and runs closest to the existing 132 kV Port Ann to Crossaig OHL resulting in the requirement of a shorter OHL connection to tie in to Port Ann substation. The substation connection is reviewed further in Deviation 6 below.</p> <p>Cost – Deviation 5 Option 1 is the most economical option, however, due to the marginal differences in cost, all options are considered economically feasible.</p> <p><i>Deviation 5 Option 2 is the preferred option from an environmental perspective and is also considered technically viable. Although the baseline alignment is preferred from a technical perspective it is likely to result in adverse effects from both a natural heritage and landscape and visual perspective. Additionally, while Deviation 5 Option 1 has some benefits over the baseline the solution is likely to result in adverse effects from a cultural heritage perspective.</i></p>

1.15 Deviation 6: Ach nabreck Tee-Off (AT18-AT19)

Need	A connection is required from the proposed OHL to tie in to Port Ann substation. Three tee-off options, which connect to the options considered for Deviation 5, were considered for the substation connection. Deviation 6 Option 1 and Deviation 6 Option 2 represent technically feasible solutions identified by SHE Transmission. Deviation 6 Option 3 was suggested to minimise the loss of productive crop and minimise the impact on forestry operations and land management. There was no baseline tee-off identified at Ach nabreck.
Baseline Alignment	As a baseline tee-off was not identified at Ach nabreck, the three deviation options for Deviation 6 are compared against each other rather than a baseline.
Deviation 6 Option 1 – Changes from Baseline Alignment	<p>Deviation 6 Option 1 extends south as a tee-off from Deviation 5 Option 3 to connect to the existing Port Ann substation connection.</p> <p>Environmental – Deviation 6 Option 1 would require felling of approx. 1.2 km of woodland. It would be visible on the skyline from receptor locations within the interior of the Crinan valley. It would concentrate development within the large scale forested uplands, rather than the smaller scale and more sensitive Crinan valley. It would be visible from receptor locations within the interior of Crinan valley, but would be seen distantly relative to Deviation 6 Option 3.</p> <p>Technical – Five angle/tension towers and four suspension towers required. Deviation 6 Option 1 is 1,241 m. Technical constraints: Requires installation of a temporary tower/mast to facilitate construction of new on-line build tower. Requires three long single circuit outages or one long double circuit outage for an online build of a new connection tower with temporary diversions.</p> <p>Cost – As the longest connection, the cost for Deviation 6 Option 1 is taken to be the worst case and 100% for comparison purposes.</p>
Deviation 6 Option 2 – Changes from Baseline Alignment	<p>Deviation 6 Option 2 extends south as a tee-off from Deviation 5 Option 2 to connect to the existing Port Ann substation connection.</p> <p>Environmental – Deviation 6 Option 2 would require felling of approx. 1.0 km of woodland. It would be visible on the skyline from receptor locations within the interior of the Crinan valley. It would concentrate development within the large scale forested uplands, rather than the smaller scale and more sensitive Crinan valley. It would be visible from receptor locations within the interior of Crinan valley, but would be seen distantly relative to Deviation 6 Option 3.</p> <p>Technical – Five angle/tension towers and three suspension towers required. Deviation 6 Option 2 is 990 m. Technical constraints: Requires installation of a temporary tower/mast to facilitate construction of new on-line build tower. Requires three long single circuit outages or one long double circuit outage for an online build of a new connection tower with temporary diversions.</p> <p>Cost – 80% of Deviation 6 Option 1 (taken as baseline cost).</p>
Deviation 6 Option 3 – Changes from Baseline Alignment	<p>Deviation 6 Option 3 extends south east as a tee-off from AT19 to connect to the existing Port Ann substation connection.</p> <p>Environmental – Deviation 6 Option 3 would require felling of approx. 250 m of woodland. One property is located 85 m north of Deviation 6 Option 3.</p> <p>The connection would be located almost entirely within the highly sensitive Crinan valley and the Rocky Mosaic LCT and would add considerable complexity to the valley when seen in conjunction with the proposed 275 kV alignment. This would affect the simplicity and scale of the valley. Deviation 6 Option 3 would be prominent and largely skylined from receptor locations within the Crinan valley interior.</p> <p>Technical – Four angle/tension towers and three suspension towers required. Deviation 6 Option 3 is 967 m. Technical constraints: Located within 85 m of a property. Requires two short single circuit outages or one short double circuit outage for connections to existing line.</p> <p>Cost – 78% of Deviation 6 Option 1 (taken as baseline cost).</p>
Summary of preferred alignment	Environmental – Deviation 6 Option 1 and Option 2 are similar from an environmental perspective and although they would require woodland removal, this is preferred on balance as the OHL would be contained within forest in the less sensitive Upland Forest Moor Mosaic

Table 3.6: Deviation 6: Achnabreck Tee-Off (Figure 3.6)

	<p>landscape which has greater capacity for development. The preference also reflects the visual simplicity of these two options and relative distance from key receptor locations within the Crinan Canal valley when compared to Deviation 6 Option 3 which would be skylined and seen as prominent within the valley interior.</p> <p>Technical – Both Deviation 6 Option 1 and Option 2 would require a long double circuit outage and/or single circuit outages and temporary diversions of the existing 132 kV Port Ann to Crossaig OHL to facilitate the connection. Deviation 6 Option 3 would require a shorter outage. Deviation 6 Option 2 is the technically preferred option as it stays outside of residential buffer zones and has fewer suspension towers than Deviation 6 Option 1.</p> <p>Cost – Deviation 6 Option 3 is the most economical solution.</p> <p><i>Deviation 6 Option 2 is the overall preferred option. Deviation 6 Option 3 is the most economical solution and would reduce the requirement for woodland removal; however on balance the potential for increased adverse environmental effects overall with Deviation 6 Option 3, particularly visual effects, is considered to outweigh the economic benefit and the benefit in reduced woodland removal. Deviation 6 Option 1 and Deviation 6 Option 2 were both environmentally preferred options.</i></p>
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1.16 Deviation 7: Crinan Canal (AT19-AT20)

<p>Need</p>	<p>The Crinan Canal is considered a sensitive receptor location. The Scheduled Monument canal is promoted by SNH, Scottish Canals, Sustrans and Argyll and Bute Council for its recreational amenity value, heritage value and scenic qualities. The canal is cited in the Argyll and Bute Local Development Plan 2015 as a ‘key asset’ in contributing to the ‘outstanding natural and built heritage’ of Mid Argyll. The baseline alignment crossing of Crinan Canal was reconsidered from a landscape and visual perspective in order to suggest a deviation which would minimise the effects on the canal and its receptors.</p>
<p>Baseline Alignment (AT19-AT20)</p>	<p>Environmental – Approx. 2.1 km runs through semi-natural woodland. Effects on landscape character would be localised and generally experienced from the A816 corridor and Crinan Canal. The Rocky Mosaic LCT is unlikely to be significantly affected overall but the baseline alignment is arguably positioned at a ‘gateway’ to Glen Crinan. This would compromise the flatness and modest scale of the glen, especially as it would be seen descending the glen side into the glen interior from a number of key locations. Visually, it would be visible from the interior of Glen Crinan, the A816 corridor and the Crinan Canal, as well as sections of the A83 corridor. The baseline alignment would affect views from the interior and fringes of Lochgilphead, and would position large scale towers relatively close to Badden properties. Towers would be prominent and appear on the skyline. Crosses Sustrans NCR78.</p> <p>Technical – Four angle/tension towers and five suspension towers required. AT19-AT20 is 2,425 m. Technical constraints: Crossing of Crinan Canal and A813 road. The baseline alignment allows for the crossing of both in a single span. Tension towers required either side of the canal due to design limitations with using a suspension tower in an uplift loading condition.</p>
<p>Deviation 7 Option 1 – Changes from Baseline Alignment</p>	<p>Deviation 7 Option 1 crosses Crinan Canal approx. 400 m north west of the baseline alignment crossing. It extends south west for approx. 1.3 km m before turning south east to meet AT20.</p> <p>Environmental – Runs through approx. 950 m of Ancient Woodland, however this woodland is predominantly classified as category 1a and 2a and referred to as plantation on ancient woodland sites (PAWS) and therefore is of lower sensitivity in terms of cultural or biodiversity value.</p> <p>The separation of Deviation 7 Option 1 from the A816 corridor and much of Glen Crinan would reduce the effect of the alignment as it climbs the glen side. Visually, there is potential for formation of forest cut on the skyline. Effects would be most apparent from the A816 corridor and a very short section of Crinan Canal. This option would have reduced effects on the interior of Glen Crinan and potentially reduced effects on the visual amenity from the interior and fringes of Lochgilphead.</p> <p>Technical – Six angle/tension towers and five suspension towers required. Deviation 7 Option 1 is 2,979m. Technical constraints: Crossing of Crinan Canal and A813 road. Tension towers required either side of the canal due to design limitations with using a suspension tower in an uplift loading condition.</p> <p>Cost – 123% of baseline cost.</p>
<p>Summary of preferred alignment</p>	<p>Environmental – Deviation 7 Option 1 is preferred due to the significant landscape and visual improvements it offers. These improvements are considered to outweigh the requirement for increased woodland removal on PAWS.</p> <p>Technical – The baseline alignment is preferred as it allows for Crinan Canal and the A816 road to be crossed in a single span and it also requires fewer towers and is shorter in length.</p> <p>Cost – The baseline is the most economical option.</p> <p><i>Deviation 7 Option 1 is considered to provide a significant reduction in potential landscape and visual effects and as such has been selected as the overall preferred option. The baseline alignment is preferred from both a technical and cost perspective.</i></p>

1.17 Deviation 8: Inverneill (AT22-AT24)

Table 3.8: Deviation 8: Inverneill (Figure 3.8)	
Need	West of Inverneill settlement, a deviation was considered as an alternative to the baseline in an effort to reduce the effects on Ancient Woodland. Deviation 8 Option 1 moved further west from the baseline alignment.
Baseline Alignment (AT22-AT24)	<p>Environmental – AT22 and AT23 are located within Ancient Woodland. Approx. 800 m of the baseline alignment runs through Ancient Woodland and approx. 940 m runs through semi-natural woodland.</p> <p>Technical – Three angle/tension towers and seven suspension towers required. AT22-AT24 is 2,497 m. Technical constraints: Crossing of B8024 road, underground 33 kV cable and multiple LV lines.</p>
Deviation 8 Option 1 – Changes from Baseline Alignment	<p>Deviation 8 Option 1 moves up to 65 m west of the baseline alignment and introduces an additional angle/tension tower to minimise Ancient Woodland felling.</p> <p>Environmental – Runs through 415 m of Ancient Woodland and approx. 625 m of semi-natural woodland.</p> <p>Technical – Four angle/tension towers and six suspension towers required. Deviation 2 Option 1 is 2,504 m. Technical constraints: Crossing of B8024 road, underground 33 kV cable and a LV line.</p> <p>Cost – 100.2% of baseline cost.</p>
Summary of preferred alignment	<p>Environmental – Deviation 8 Option 1 is preferred as it runs through less Ancient Woodland and semi-natural woodland when compared to the baseline alignment.</p> <p>Technical – The baseline alignment is preferred as it has fewer angle towers and is marginally shorter in length.</p> <p>Cost – The baseline alignment is the most economical, however Deviation 8 Option 1 is also considered economically feasible.</p> <p><i>The preferred option on balance is Deviation 8 Option 1. Although the baseline alignment represents the preferred option from a technical perspective, Deviation 8 Option 1 offers environmental improvements upon the baseline alignment in terms of effects on Ancient Woodland and is also considered economically feasible.</i></p>

1.18 Deviation 9: Meall Mòr and Artilligan (AT24-AT31)

Table 3.9: Deviation 9: Meall Mòr and Artilligan (Figure 3.9)	
Need	<p>A section of the baseline alignment, between AT24 and AT29, would go through an established golden eagle territory. In this section, a deviation to the east (Deviation 9 Option 1) was suggested to avoid the golden eagle territory and reduce the risk of bird collisions.</p> <p>This deviation to the east meant the alignment would pass through Artilligan and Abhainn Srathain Burns SSSI and Tarbert Woods SAC. Artilligan and Abhainn Srathain Burns Biological SSSI is notified for upland oak woodland and Tarbert Woods SAC is designated for Western acidic oak woodland. As a result, this section of the deviation was carefully considered to reduce the impact on these designations. At this point, the deviation was designed to allow the alignment to span over the designations without the need for removal of the protected oak woodland.</p> <p>Further to the south, between AT29 and AT30, the baseline alignment would pass through the southern section of Artilligan and Abhainn Srathain Burns SSSI and Tarbert Woods SAC. To avoid these designations and Ancient Woodland, it was suggested the deviation was moved westwards before connecting into AT31.</p>
Baseline Alignment (AT24-AT31)	<p>Environmental – Approx. 396 m of baseline alignment runs through Ancient Woodland. The baseline alignment routes through an established golden eagle territory which would result in high collision risk and possible disturbance and displacement of the eagles here. AT30 is located 0.5 km west of Stonefield Castle GDL.</p> <p>From a landscape perspective, the baseline alignment is further inland, thus avoiding the more sensitive coastal and seascape locations. It is straighter with fewer angle towers which reduces visual impact.</p> <p>Technical – Eight angle/tension towers and 22 suspension towers required. AT24-AT31 is 9,046 m. Technical constraints: Crossing of a LV line and difficult access, helicopters are likely to be required for construction.</p>
Deviation 9 Option 1 – Changes from Baseline Alignment	<p>From AT24, Deviation 9 Option 1 follows the existing 132 kV OHL around the coast. Just north of AT29 it crosses the baseline alignment to move inland to avoid the southern section of Artilligan and Abhainn Srathain Burns SSSI and Tarbert Woods SAC before connecting to AT31.</p> <p>Environmental – Approx. 609 m of Deviation 9 Option 1 routes through Ancient Woodland. This alignment remains outside the eagle territory.</p> <p>The OHL can cross the SSSI/SAC without towers within the designated sites or felling/pruning of oak trees. Avoids southern section of SSSI/SAC.</p> <p>Located approx. 1.0 km from Stonefield Castle GDL at closest point.</p> <p>Potential visual effects from A83, although transient and filtered by vegetation and as it follows the existing 132 kV OHL, Deviation 9 Option 1 would not appear as an entirely new element in the landscape, however the structures would be taller than the existing 132 kV OHL. It is considered that the landscape has the capacity to accommodate the higher towers.</p> <p>Technical – Ten angle/tension towers and 21 suspension towers required. Deviation 9 Option 1 is 9,448 m. Technical constraints: Crossing of a LV line. Runs along very steep side slopes requiring differential tower leg extensions.</p> <p>Cost – 104% of baseline cost.</p>
Summary of preferred alignment	<p>Environmental – Deviation 9 Option 1 is preferred as it would reduce the effects on golden eagles. It also offers improvements from a cultural heritage perspective and the landscape and visual analysis notes the landscape has the capacity to accommodate Deviation 9 Option 1. Additionally, although Deviation 9 Option 1 goes through Artilligan and Abhainn Srathain Burns SSSI and Tarbert Woods SAC, it would not have an effect on the communities for which these sites were designated.</p> <p>Technical – The baseline alignment is preferred as it requires fewer angle towers and is shorter in length. However, access to AT24-AT28 would be difficult and would require helicopter construction.</p> <p>Cost – The baseline cost is the most economical solution.</p>

Table 3.9: Deviation 9: Meall Mòr and Artilligan (Figure 3.9)

	<p><i>Deviation 9 Option 1 has been selected as the overall preferred option. Although the baseline alignment is preferred from both a technical and cost perspective, Deviation 9 Option 1 is the preferred option on balance. The principal consideration is that the baseline alignment would have the potential to give rise to adverse effects, including mortality through collision risk for golden eagle. Deviation 9 Option 1 offers clear environmental improvements upon the baseline alignment, particularly from an ornithological perspective, by avoiding the eagle territories. The Deviation 9 Option 1 alignment also avoids effects on other European ecological designations and reduces the effects on Ancient Woodland.</i></p>
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1.19 Deviation 10: Tarbert (AT31-AT37)

Table 3.10: Deviation 10: Tarbert (Figure 3.10)	
Need	The baseline alignment between AT31 and AT33 is in close proximity to a property. A deviation was sought at this point to avoid potential amenity effects on the property. At the loch end of West Loch Tarbert, between AT33 and AT35, deviations were suggested to reduce visual amenity effects on properties located in this area and avoid enclosing the sensitive glen landscape at the loch end through the introduction of large scale and prominent elements. Deviations were also considered on the eastern side of West Loch Tarbert to reduce effects on Ancient Woodland and landscape and visual effects of the baseline alignment in relation to the prominence of the alignment on the skyline on the side of the glen overlooking West Loch Tarbert and the sensitive Rocky Mosaic landscape.
Baseline Alignment (AT31-AT37)	<p>Environmental – Approx. 1.6 km of baseline alignment located within Ancient Woodland. AT32 is located 1.5 km south west of Stonefield Castle Hotel GDL and 142 m west of a property. Various properties are located within 130 m of the baseline alignment around the loch end. Baseline alignment would introduce large scale and prominent elements within a sensitive enclosed glen landscape in an area where tourist, recreational and residential receptors are present. As the baseline alignment extends southwards, it would be especially prominent on the skyline, overlooking West Loch Tarbert and the sensitive Rocky Mosaic landscape. Sustrans NCR78 located between 200 m-360 m and Tarbert Golf Club approx. 230 m south of baseline alignment. Baseline alignment runs through Campbeltown Road housing allocation (Argyll and Bute LDP).</p> <p>Technical – Seven angle/tension towers and 11 suspension towers required. AT31-AT37 is 5,487 m. Technical constraints: B8024 and A83 road crossings, crosses existing 132 kV Port Ann to Crossaig OHL and multiple other LV lines.</p>
Deviation 10 Option 1 – Changes from Baseline Alignment	<p>Deviation 10 Option 1 initially moves westwards of the baseline alignment to maintain the 100 m buffer from properties. Deviation 10 Option 1 continues further south from AT31 before going east towards AT33 and following a similar alignment as the baseline to AT35.</p> <p>Environmental – Approx. 630 m within Ancient Woodland. Moves further from property close to AT32 but at A83 road crossing, Deviation 10 Option 1 is located approx. 88 m west of a property. Runs through Campbeltown Road LDP housing allocation.</p> <p>Technical – Seven angle/tension towers and 10 suspension towers required. Deviation 10 Option 1 is 5,587 m. Technical constraints: B8024 and A83 road crossings, crosses existing 132 kV Port Ann to Crossaig OHL and multiple other LV lines, infringes on 100 m buffer for one property.</p> <p>Cost – 102% of baseline cost.</p>
Deviation 10 Option 2 – Changes from Baseline Alignment	<p>Deviation 10 Option 2 initially moves westwards of the baseline alignment to maintain the 100 m buffer from properties. Deviation 10 Option 2 reduces the number of angle/tension towers enclosing the loch end and moves north eastwards of the baseline alignment to route around the back of the properties here. Instead of Deviation 10 Option 2 tying into AT35, it maintains the increased distance from West Loch Tarbert at the crossing of the A83 and meets the required stand-off distance from the communications mast located south west of Tarbert. Moving south westwards, Deviation 10 Option 2 reduces the prominence of the alignment on the skyline on the side of the glen overlooking West Loch Tarbert, the sensitive Rocky Mosaic landscape and receptor locations.</p> <p>Environmental – Approx. 1.3 km within Ancient Woodland but avoids placing angle towers within Ancient Woodland which minimises felling. Moves further from property close to AT32 but north of the A83 there is one property located approx. 73 m north east of Deviation 10 Option 2 and south of A83, one property is located approx. 66 m north east of the alignment. Deviation 10 Option 2 reduces the landscape and visual effects of the proposed OHL by reducing the sense of enclosure at the loch end. It is also further from the properties to the north of West Loch Tarbert and NCR 78 which would reduce potential effects on residential amenity on these receptors. However, Deviation 10 Option 2 could potentially increase the prominence of the development on the south eastern end of the Tarbert settlement. Deviation 10 Option 2 avoids the Campbeltown Road housing allocation but runs through Glenfield</p>

Table 3.10: Deviation 10: Tarbert (Figure 3.10)

	<p>potential development area for housing.</p> <p>Technical – Eight angle/tension towers and 13 suspension towers required. Deviation 10 Option 2 is 6,238 m. Technical constraints: B8024 and A83 road crossings, crosses existing 132 kV Port Ann to Crossaig OHL and multiple other LV lines, infringes on 100 m buffer for two properties in order to maintain an appropriate distance from an existing telecommunications mast.</p> <p>Cost – 114% of baseline cost.</p>
<p>Deviation 10 Option 3 – Changes from Baseline Alignment</p>	<p>Deviation 10 Option 3 was considered as an alternative to the baseline alignment between AT35 and AT37 to reduce the amount of felling required within Ancient Woodland. Between AT31 and AT35, Deviation 10 Option 3 remains the same as the baseline alignment.</p> <p>Environmental – Runs through approx. 300 m less Ancient Woodland compared to baseline alignment (1,683 m). East of West Loch Tarbert, Deviation 10 Option 3 would have a prominent presence on the skyline on the side of the glen, overlooking West Loch Tarbert, and would affect a large number of receptors, although it does represent an improvement on the baseline alignment in these respects. Deviation 10 Option 3 avoids all planning allocations/potential development areas</p> <p>Technical – Seven angle/tension towers and 10 suspension towers required. Deviation 10 Option 3 is 5,681 m. Technical constraints: B8024 and A83 road crossings, crosses existing 132 kV Port Ann to Crossaig OHL and multiple other LV lines.</p> <p>Cost – 104% of baseline cost.</p>
<p>Summary of preferred alignment</p>	<p>Environmental – On balance, Deviation 10 Option 2 is preferred as it offers a marked improvement in landscape and visual terms and would require the least amount of Ancient Woodland felling while also avoiding Campbeltown Road housing allocation.</p> <p>Technical – Deviation 10 Option 3 is preferred as it maintains the 100 m buffer around properties and has the fewest towers.</p> <p>Cost – The baseline alignment is most economical.</p> <p><i>Deviation 10 Option 2 has been selected as the overall preferred option. Although the baseline alignment is preferred from a cost perspective and Deviation 10 Option 3 is preferred from a technical perspective, Deviation 10 Option 2 offers clear environmental improvements upon the baseline alignment particularly from a landscape and visual perspective on the loch end and also the Rocky Mosaic LCT.</i></p>

1.20 Deviation 11: B8001 (AT37-AT41)

<p>Need</p>	<p>Public consultation identified a number of properties in vicinity of the baseline alignment, where it crosses the B8001. A deviation (Deviation 11 Option 1) was sought to move the alignment further from the properties with the aim of reducing the visual amenity effects on those properties. Freasdail windfarm is located west of the baseline alignment and Deviation 11 Option 1 was also suggested to reduce cumulative landscape and visual effects. Further to the identification of Deviation 11 Option 1, it was noted that the crossing of the B8001 between Kennacraig and Claonaig Bay was considered sensitive based on the landscape character of the glen, including its relationship with the coastal Rocky Mosaic character type, as well as the number of sensitive visual receptors. The B8001 is a well-used tourist and recreational road that is valued for its views towards Arran as part of the approach to Claonaig Ferry and the quieter scenic alignments along the eastern side of the peninsula. Deviation 11 Option 2 was suggested therefore to:</p> <ul style="list-style-type: none"> • minimise the extent of the glen affected; • reduce the proximity of towers to the B8001 and residential properties; • reduce the prominence and extent of skylining of towers; • avoid affecting views of the Arran Hills; and • avoid the creation of a corridor effect or enclosure of the glen by energy developments (i.e. where towers would be located on the northern side of the glen, opposite the Freasdail turbines).
<p>Baseline Alignment (AT37-AT41)</p>	<p>Environmental – Crossing of B8001 between Kennacraig and Claonaig Bay considered sensitive based on the landscape character of the glen, including its relationship with the coastal Rocky Mosaic character type, as well as the number of sensitive visual receptors. The B8001 is a well-used tourist and recreational road that is valued for its views towards Arran as part of the approach to Claonaig Ferry and the quieter scenic alignments along the eastern side of the peninsula. Baseline alignment would cause landscape and visual effects on this sensitive area.</p> <p>Technical – Five angle/tension towers and 30 suspension towers required. AT37-AT41 is 11,217 m. Technical constraints: B8001 road crossing. Crosses perpendicular to the existing 132 kV OHL requiring two heavy angle towers.</p>
<p>Deviation 11 Option 1 – Changes from Baseline Alignment</p>	<p>Deviation 11 Option 1 moves eastwards of the baseline alignment after AT38, running parallel to the B8001. It crosses the B8001 at a perpendicular angle before joining the baseline alignment south west of AT39.</p> <p>Environmental – Deviation 11 Option 1 would run parallel to the B8001, creating a ‘corridor’ effect. Potential to reduce visual intrusion on properties located on B8001 and also cumulative landscape and visual effects relating to Freasdail windfarm. It crosses the glen at a critical point, interposing towers in views of the Arran Hills.</p> <p>Technical – Five angle/tension towers and 31 suspension towers required. Deviation 11 Option 1 is 11,578 m. Technical constraints: B8001 road and existing 132 kV OHL crossing.</p> <p>Cost – 103% of baseline cost.</p>
<p>Deviation 11 Option 2 – Changes from Baseline Alignment</p>	<p>Deviation 11 Option 2 follows a similar arrangement as the baseline alignment but changes direction before AT38 to go south and cross the B8001. It then runs parallel to the baseline alignment before joining at AT40.</p> <p>Environmental – Deviation 11 Option 2 would draw towers back from the more exposed edges of the western end of the glen and reduce their perceived scale in views from low lying properties and sections of the B8001 at the western end of the glen, including from the Rocky Mosaic landscape and A83 corridor. As Deviation 11 Option 2 extends south from the B8001 it would cross the existing 132 kV alignment, thereby distancing it from the Redesdale House and Spion Kop properties. It also avoids the creation of a corridor effect or enclosure of the glen by energy developments (i.e. where towers would be located on the northern side of the glen, opposite the Freasdail turbines). Deviation 11 Option 2 would reduce the prominence and extent of skylining of towers and would set the line back further from views towards Arran and would avoid affecting views of the Arran Hills. Freasdail wind farm located to west of Deviation 11 Option 2. Deviation 11 Option 2 located approx. 217 m east of a Freasdail wind turbine and</p>

Table 3.11: Deviation 11: B8001 (Figure 3.11)

	<p>AT40 is located 310 m south east of a Freasdail wind turbine.</p> <p>Technical – Four angle/tension towers and 28 suspension towers required. Deviation 11 Option 2 is 10,860 m. Technical constraints: B8001 road crossing, acute crossing of the existing 132 kV OHL close to existing towers. Infringes on the Freasdail windfarm buffer zone.</p> <p>Cost – 97% of baseline cost.</p>
<p>Summary of preferred alignment</p>	<p>Environmental – The deviation was driven by landscape and visual issues. Deviation 11 Option 2 represents the alignment option with the biggest improvement in landscape and visual terms. Therefore, Deviation 11 Option 2 is the preferred option from an environmental perspective.</p> <p>Technical – Deviation 11 Option 1 is preferred as it maintains the windfarm buffer requirements and crosses the existing 132 kV OHL without the need for two heavy D90 angle towers. A compromise between the three options should be considered as despite Deviation 11 Option 1 being the technical preference as it removes some of the technical constraints; it is still the longest of the three and requires the most structures.</p> <p>Cost – Deviation 11 Option 2 is the most economical solution.</p> <p><i>As shown on Figure 3.11, a combination of the three options for Deviation 11 has been selected as the Preferred Alignment; Deviation 11 Option 2 has been selected up to its intersection with the baseline alignment, from this intersection point the baseline alignment is selected until AT39 after which Deviation 11 Option 1 is selected before re-joining the baseline alignment up to AT41. This combination of options provides some of the landscape and visual improvements from Deviation 11 Option 2, particularly when crossing the B8001. As Deviation 11 Option 2 would encroach on the separation distance to the Freasdail windfarm turbines, the baseline alignment is selected following the crossing of the B8801. As AT40 is within the separation distance required from the Freasdail turbines, Deviation 11 Option 1 is selected from AT39 to the point it meets the baseline alignment. This reduces the need for two heavy D90 angle towers at the crossing of the existing 132 kV Port Ann to Crossaig overhead line. From this point the baseline alignment is selected to meet AT41. This combination of options results in the most balanced option from an environmental, technical and cost perspective.</i></p>

PREFERRED ALIGNMENT AND NEXT STEPS

1.21 Summary Preferred Alignment

1.21.1 The preferred alignment is illustrated by Figure 4.1-Figure4.6. This includes the deviations accepted in the previous section.

1.22 Next Steps

Summary of Consultation Process

1.22.1 SHE Transmission places great importance on and is committed to consultation and engagement with all parties likely to have an interest in proposals for new OHL projects.

1.22.2 This Consultation Document is a publically available document which facilitates consultation on the Preferred Alignment. Its purpose is to inform stakeholders of the project need, summarise the process followed to arrive at the Preferred Alignment and how and why the Preferred Alignment was selected by SHE Transmission.

1.22.3 A Report on Consultation will be produced following consultation. Its purpose is to record the stakeholder feedback received during the consultation process, explain how SHE Transmission have responded and, how it has informed the selection of the Indicative Proposed Alignment.

Selection of Indicative Proposed Alignment

All comments received from consultees will inform further consideration of the Preferred Alignment. Suggested changes will be accepted or rejected which will result in the selection of an Indicative Proposed Alignment. It may not always be the case that a particular comment or request can be incorporated into the option selection or design. Where this is the case, the decision will be clearly explained. The selection of the Indicative Proposed Alignment will be documented in a Report on Consultation which will be made available to consultees. The Report on Consultation will confirm the Indicative Proposed Alignment that will be taken to consenting process.

EIA and Consents

1.22.4 The Indicative Proposed Alignment will be taken forward to the consenting process for more detailed environmental assessment via an EIA, prior to the submission of an application for consent under section 37 of the Electricity Act 1989.

Timeline

1.22.5 Comments on this document should be sent to:

Neil Anderson, by email at, neil.anderson@sse.com or by post to, Inveralmond House, 200 Dunkeld Road, Perth, PH1 3AQ.

1.22.6 Public consultation events detailing the proposals described in this document will be held in Autumn 2017, these events will be advertised publicly via traditional printed media, social media and through postal notification.

1.22.7 SHE Transmission request that all consultation responses on the Preferred Alignment are received by 21st July 2017.

ANNEX A: FIGURES