SP ENERGY NETWORKS

Changing the VIEW

Reducing the visual impact of existing electricity transmission infrastructure in Scotland's National Parks & National Scenic Areas

Stage 1 & 2 Report

Prepared by LUC on behalf of ScottishPower Energy Networks

December 2016

LUC

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Project Title: Changing the VIEW (Visual Impact of Existing Wirescape)

Reducing the visual impact of existing electricity transmission infrastructure in Scotland's National Parks & National Scenic Areas

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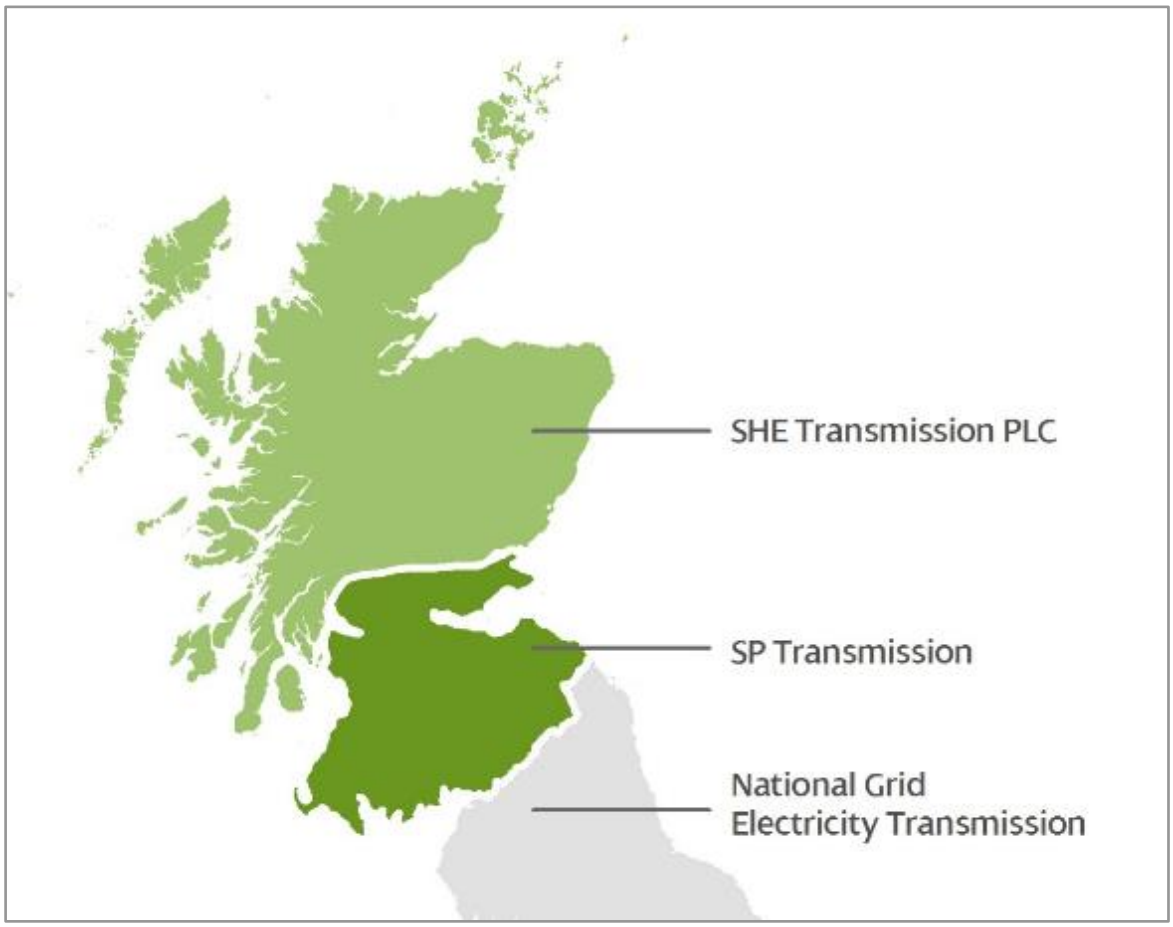
1 Introduction

What is Changing the VIEW?

1.1 SP Energy Networks (SPEN) is the licensed electricity transmission operator for the south of Scotland. It owns and maintains the 132kV, 275kV and 400kV electricity transmission network across the area shown in **Diagram 1.1.**

1.2 All electricity transmission owners are funded by a price control mechanism which is agreed with and set by OFGEM (Office of Gas and Electricity Markets). OFGEM and SPEN have agreed a new set of price controls and incentives for the period from April 2013 to April 2021. As part of this current transmission price control, RIIO-T1, OFGEM introduced a policy that would allow the electricity transmission owners to reduce the visual impact of existing transmission infrastructure on nationally protected landscapes.

Diagram 1.1: Transmission operator licence areas



1.3 Under this initiative, a transmission owner can ask for funding for projects to mitigate the visual impact of transmission infrastructure in protected areas. However, before a transmission owner can ask OFGEM to approve funding for a specific project, it must have an agreed approach on how it will work with stakeholders to identify and prioritise projects that could yield the greatest visual improvements.

1.4 Changing the VIEW represents an opportunity to contribute to the success of Scotland's most highly valued and most sensitive landscapes – National Parks and National Scenic Areas (NSAs) - by accessing a share of a £500 million OFGEM fund allocated for the positive enhancement of existing transmission infrastructure in our most protected landscapes. This fund is intended to positively influence the visual impact of existing transmission infrastructure, including overhead lines and substations, which currently exist within the UK's most highly valued landscapes. SPEN has published a policy document and accompanying technical addendum that set out further information on the initiative, which are available via the project webpage:

- www.spenergynetworks.co.uk/pages/view_project.asp

Coordination across Scotland

1.5 Scottish Hydro Electric Transmission plc (SHE Transmission) is the licensed electricity transmission operator for the north of Scotland. It owns and maintains the 132kV, 275kV and 400kV electricity transmission network across the area shown in **Diagram 1.1**.

1.6 SHE Transmission is also progressing mitigation proposals as part of their VISTA (Visual Impact of Scottish Transmission Assets) initiative which seeks to access some of the same OFGEM fund. SHE Transmission has published a policy document that sets out further information on VISTA, which is available via the project webpage:

- https://www.ssepd.co.uk/vistaconsultation/

1.7 SPEN is committed to working together with SHE Transmission to achieve a coordinated response in areas where their infrastructure overlaps. This occurs in the Loch Lomond and The Trossachs National Park, where both transmission operators hold significant transmission assets.

1.8 SPEN is also committed to engaging with National Grid, who own and operate the transmission network in England and Wales, in relation to their own Visual Impact Provision (VIP) Project in order that a collaborative approach between all Transmission businesses can be adopted. This will encourage the transfer of knowledge and best practice, and ultimately seek to maximise the benefits of the OFGEM fund for consumers.

Integration with National Planning Policy

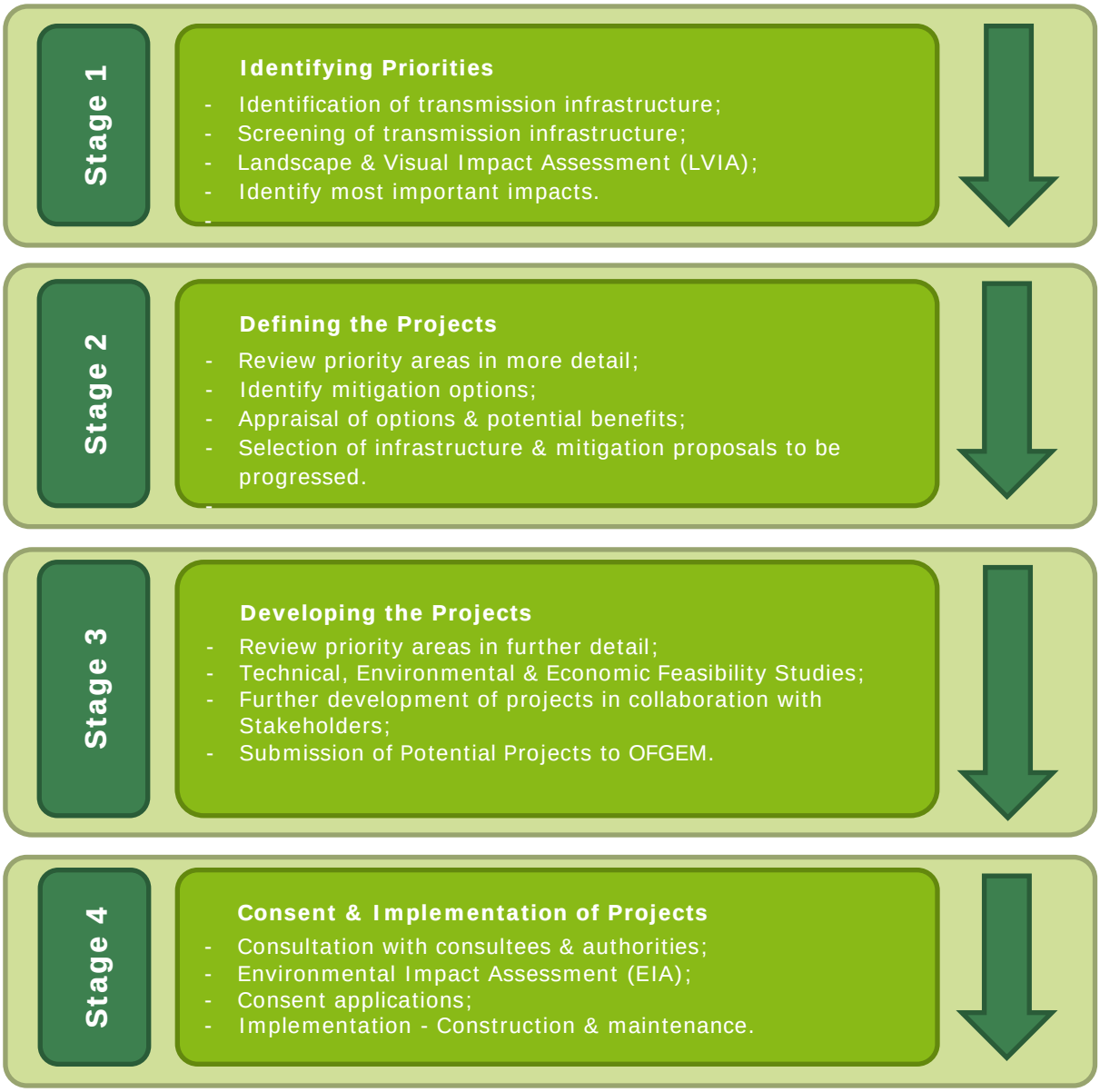
1.9 The Changing the VIEW initiative offers a unique opportunity to address Scottish Government National Planning Policy objectives set out in Scottish Planning Policy (SPP)[1] and National Planning Framework 3 (NPF3) [2], in relation to pre-existing transmission infrastructure.

'We recognise that there will be a need to mitigate the environmental impacts of new or upgraded high voltage onshore transmission lines and that there will be a cost associated with this. Mitigation corridors bringing wider benefits to landscape and visual amenity, and which promote green places and active travel networks, may be an effective option in some areas.' (Para. 3.29, NPF3[2])

1.10 SPEN will seek to identify opportunities for mitigation proposals to deliver Scottish Planning Policy objectives in relation to green infrastructure, green networks, landscape and the wider environment throughout the Changing the VIEW initiative.

[1] Scottish Planning Policy (SPP), (2014). Scottish Government.
[2] National Planning Framework (NPF3), (2014). Scottish Government

Diagram 1.2: Key Stages of the Project



Purpose of this report

1.11 This report sets out the approach and findings from **Stage 1** and **Stage 2** of the Changing the VIEW project. The proposed approach to Changing the VIEW is outlined in the *Changing the Visual Impact of Existing Wirescape (VIEW)*[3] policy document and accompanying *Technical Addendum – A Closer VIEW*[4]. The key stages of the project are outlined in **Diagram 1.2**, and are explained in more detail in the *Technical Addendum – A Closer VIEW*.

1.12 The purpose of **Stage 1** was to identify the locations where transmission infrastructure has the greatest level of impact on nationally designated landscapes, and where there is greatest

[3] *Changing the VIEW: Reducing the visual impact of existing electricity transmission infrastructure in Scotland's National Parks & National Scenic Areas* (2016) SP Energy Networks & LUC

[4] Changing the VIEW: Reducing the visual impact of existing electricity transmission infrastructure in Scotland's National Parks & National Scenic Areas - *Technical Addendum – A Closer VIEW* (2016) SP Energy Networks & LUC

opportunity for successful mitigation. A comparative exercise was therefore required to look at all transmission infrastructure and select key areas for more detailed investigation.

1.13 **Stage 2** of the project sought to identify options for mitigation, and to examine the likely benefits of each. Through consultation with stakeholders and technical specialists, a large number of possible proposals were considered and refined to a short-list of feasible, effective and deliverable projects.

1.14 **Stage 3** and **Stage 4** will be concerned with developing and delivering individual mitigation projects from this short-list.

1.15 This report covers the examination of SPEN infrastructure located in Loch Lomond and the Trossachs National Park and the Eildon & Leaderfoot NSA.

Structure of the report

1.16 A detailed methodology for identification of priorities and defining projects is set out in **Section 2** of this report. **Section 3** describes the infrastructure under consideration, and **Section 4** looks in detail at the designated landscapes of the Loch Lomond and the Trossachs National Park and the Eildon & Leaderfoot NSA in the Scottish Borders, including consideration of relevant landscape and visual baseline information.

1.17 The landscape and visual impacts identified in relation to the pre-existing transmission infrastructure considered in the assessment are summarised in **Section 5**.

1.18 Section 6 and Section 7 outline Stage 2 of the project and is concerned with the selection of mitigation proposals that could be taken forward to more detailed development (Stage 3) and implementation (Stage 4). **Section 6** describes the process of identifying mitigation options and how these were filtered to arrive at a 'long-list' of potential projects. **Section 7** describes the further refinement that led to the identification of a 'short-list' of projects. **Section 8** presents the shortlisted projects in more detail.

Approach to consultation

1.19 As outlined in GLVIA3 consultation is an important part of the LVIA process: *'It has a role in gathering specific information about the site, and in canvassing the views of the public'* and *'It can be a valuable tool in seeking understanding and agreement about the key issues, and can highlight local interests and values which may otherwise be overlooked'* (GLVIA3, Page 43, Paragraph 3.42).

1.20 It is recognised that stakeholders' involvement is essential for successful accomplishment of the project. To ensure that the outcomes of the Changing the VIEW initiative are reflective of stakeholders' views, consultation sought to involve as many relevant parties as possible.

1.21 Early engagement of stakeholders in the project was pivotal in identifying and understanding the key receptors (people) and sensitivities within the designated landscapes, identifying the landscape and visual impacts associated with the existing transmission infrastructure and also in identifying effective and deliverable mitigation proposals which could deliver potential mutual benefits alongside other ongoing or planned initiatives within the areas being considered.

1.22 The stakeholder engagement process has been led by SPEN, facilitated through the Changing the VIEW webpage, and telephone and written consultation. The main channel for disseminating material to stakeholders and gathering feedback has been a series of stakeholder meetings and workshops.

1.23 In Loch Lomond & The Trossachs National Park, both SPEN and SHE Transmission have been working with the same stakeholder partnership group in order to achieve a joined-up approach.

Stakeholder Partnership Group

1.24 In identifying and addressing the transmission infrastructure that has the most adverse impact on the landscape, visual amenity, and special qualities of the nationally designated landscapes being considered, SPEN set out an approach to work collaboratively with a range of stakeholders and end users, in order to adopt a partnership approach to deliver the best possible outcome for the areas in which they operate.

1.25 SPEN recognise the value and importance of engaging key stakeholders to ensure the best possible success in achieving the stated objectives. SPEN identified a group of key stakeholders, to be known as the Stakeholder Partnership Group (SPG), to draw upon local expertise and knowledge with regard to the important protected landscapes considered within the project.

1.26 The identified members of the SPG comprise senior representatives of groups and organisations with a national or regional interest in the protection, enhancement and use of the designated landscapes being considered.

1.27 The initial members of the SPG, in alphabetical order, were:

- Friends of Loch Lomond & The Trossachs;
- Historic Environment Scotland[5];
- The John Muir Trust;
- Loch Lomond & The Trossachs Countryside Trust;
- Loch Lomond & The Trossachs National Park Authority (LLTNPA);
- National Trust for Scotland;
- Scottish Hydro Electric Transmission Limited (SHE Transmission);
- Scottish Borders Council;
- Scottish Government;
- Scottish Natural Heritage (SNH) – Loch Lomond Area;
- Scottish Natural Heritage (SNH) – The Scottish Borders Area; and
- The Scottish Campaign for National Parks (SCNP).

1.28 Membership of the SPG evolved in response to specific issues which emerged through the project, and as needs to engage with further regional and local stakeholder groups arose. A number of further stakeholders were engaged throughout the project, who are listed below in alphabetical order:

- Association for the Protection of Rural Scotland;
- Forestry Enterprise Scotland/Forestry Commission Scotland (FCS);
- Helensburgh and District Access Trust;
- Loch Lomond & The Trossachs National Park Community Partnership;
- Luss Estates Company (engaged by Helensburgh District Access Trust);
- Scottish Water;
- Scottish Environment Protection Agency (SEPA);
- Southern Uplands Partnership; and
- VisitScotland.

[5] Formerly Historic Scotland at the outset of the project, rebranded as Historic Environment Scotland 1st October 2015

1.29 The good practice guidance advocated in GLVIA3 *'Well-organised and timely consultation and engagement with stakeholders and public can bring substantial benefits to a project'* (GLVIA3, Page 47, Paragraph 3.45) was a constant reminder throughout the project, whereby the SPG members advised SPEN, and SHE Transmission in the case of Loch Lomond & The Trossachs National Park, and LUC on the types of issues which Changing the VIEW should seek to mitigate, help undertake the evaluation of impacts and mitigation options, and inform ultimate selection of mitigation projects which may emerge from the initiative. The members of the SPG helped to:

- Inform an understanding of how the qualifying areas are used;
- Identify the specific infrastructure and locations which would most benefit;
- Investigate the types of issue we may seek to mitigate – with a primary focus on visual impacts;
- Identify initial priorities for the use of the Changing the VIEW Project, based on defined key selection criteria;
- Investigate the range of potential mitigation measures which may contribute positively to each area.
- Consider the input of wider stakeholders who are not directly represented on the Stakeholder Partnership Group (e.g. specific comments on where use of the OFGEM fund might be beneficial, or where there is evidence of stakeholder and/or public support);
- Consider technical input on the feasibility and deliverability of mitigations options to be provided by SPEN;
- Define the mitigation projects which should be taken forward to the development phase by SPEN; and
- Re-consider or re-assess priorities and use of the OFGEM fund, as the development of projects progresses.

Summary of Consultation

1.30 Stakeholder meetings have been held at several stages through the project process, involving a number of organisations as listed in **Table 1.1**. A summary of the key topics of discussion, responses and findings from the Stage 1 and Stage 2 consultation meetings and workshops are outlined in the **Stage 1 & 2 Report Appendices** which accompany this report.

1.31 Stakeholder engagement has informed each stage of the Changing the VIEW initiative, from the development of methodology through to the selection and prioritisation of mitigation projects. Stakeholder input is described at the relevant points throughout this report. The key stakeholders will continue to be involved through stages 3 and 4 of the initiative to ensure the successful delivery of projects.

Table 1.1: Stakeholder engagement during Stage 1 & Stage 2

Date	Location	Organisations attending
SPG Meeting Friday, 15th May 2015	Grand Central Hotel, Glasgow	Loch Lomond & The Trossachs National Park Authority Loch Lomond & The Trossachs Countryside Trust Loch Lomond & Trossachs Community Partnership Friends of Loch Lomond & The Trossachs National Park Helensburgh and District Access Trust John Muir Trust Scottish Campaign for National Parks Scottish Natural Heritage Historic Scotland Scottish Government Southern Uplands partnership Scottish Borders Council SHE Transmission SPEN
LLTNP Meeting Wednesday, 12th June 2015	LL&TNP Authority Headquarters, Balloch	Loch Lomond & The Trossachs National Park Authority Loch Lomond & The Trossachs Countryside Trust Loch Lomond & Trossachs Community Partnership SPEN
Eildon & Leaderfoot NSA Meeting Monday, 21st September 2015	Scottish Borders Council Headquarters, Newtown St. Boswells	Scottish Borders Council Scottish Natural Heritage Historic Scotland Southern Uplands Partnership SPEN
SPG Meeting Thursday, 3rd December 2015	Radisson Blu Hotel, Glasgow	Loch Lomond & The Trossachs National Park Authority Loch Lomond & The Trossachs Countryside Trust Loch Lomond & Trossachs Community Partnership Friends of Loch Lomond & The Trossachs National Park Helensburgh and District Access Trust John Muir Trust Scottish Natural Heritage Scottish Government Southern Uplands partnership Luss Estates Company SHE Transmission SSE Power Distribution SPEN

Date	Location	Organisations attending
Stakeholder Drop-in Session Wednesday, 17th February 2016	LL&TNP Authority Headquarters, Balloch	Loch Lomond & The Trossachs National Park Authority Loch Lomond & The Trossachs Countryside Trust Loch Lomond & Trossachs Community Partnership Friends of Loch Lomond & The Trossachs National Park SHE Transmission SPEN
Strathard Project Launch Event Saturday, 27th February 2016	Community Village Hall, Kinlochard	Loch Lomond & The Trossachs National Park Community Partnership Forest Enterprise Scotland Scottish Water SEPA Local community/public SPEN
Additional Stakeholder Meeting Thursday, 7th April 2016	LL&TNP Authority Headquarters, Balloch	Loch Lomond & The Trossachs National Park Authority Scottish Water VisitScotland Forest Enterprise Scotland SEPA SHE Transmission SPEN

2 Approach and Methodology

Stage 1 Methodology: Identifying Priorities

2.1 It was necessary to develop a methodology for the assessment of landscape and visual impacts arising in relation to the pre-existing transmission infrastructure being consider within the project. The section which follows outlines the specific approach developed by LUC in association with SPEN for the Changing the VIEW project. The approach is guided by GLVIA3[6] and developed specifically for the Scottish landscape and policy context[7].

2.2 The purpose of Stage 1 was to identify the locations where transmission infrastructure has the greatest level of impact on nationally designated landscapes, and where there is greatest opportunity for successful mitigation. A comparative exercise was therefore required to look at all transmission infrastructure and select key areas for more detailed investigation. This report sets out the approach to and findings of the following key tasks within Stage 1 of the project:

- Identification of transmission infrastructure;
- Screening of transmission infrastructure;
- Landscape & Visual Impact Assessment (LVIA);
- Identification of most important impacts.

2.3 The reverse LVIA approach applies the LVIA process to development, in this case electricity transmission infrastructure, which is already present in the landscape. The assessment focuses on establishing the 'importance' of an impact which is already known to exist. This is a fundamental different approach to that of a conventional LVIA, where the impacts of future development can only be predicted. For this reason the term 'significance' is not used in the study.

2.4 The project explores each landscape and visual impact, and establishes the relative importance of each impact, in order that the different sections of overhead transmission line and associated transmission infrastructure can be prioritised in terms of the need for mitigation of the identified impacts. Informed by the method advocated in GLVIA3, the susceptibility and value of each identified receptor are determined, based on the application of criteria. The size/scale and geographic extent of the impact on each receptor are also determined. The relative importance of the impact is then assessed informed by these judgements.

2.5 The principal document relating to the routeing of overhead transmission lines is the Holford Rules[8], which set out a list of key considerations. Similarly the Horlock Rules[9] set out key considerations for the siting and design of electricity substation infrastructure. Although not a routeing study, the project considers the landscape and visual issues raised by the Holford Rules and Horlock Rules in determining the impacts of the existing transmission infrastructure.

2.6 An initial site visit was undertaken on Monday, 22nd December 2014 to field-test the approach and carry out an initial evaluation of the landscape and visual impacts of transmission lines on the

[6] *Guidelines to Landscape and Visual Impact Assessment – Third Edition (GLVIA3).* (2013) Landscape Institute & Institute for Environmental Management and Assessment.

[7] The approach used draws on the methodology applied by LUC for National Grid's 'Visual Impact Provision' project, and also parallels the methodology being used to assess SHE Transmission infrastructure as part of their VISTA Initiative.

[8] Holford Rules, (1959) Lord Holford, with subsequent updates NGC 1992, SHETL 2003

[9] Horlock Rules, (2003). NGC with subsequent update 2006

Loch Lomond and The Trossachs National Park. Further consultation with the Stakeholder Partnership Group (SPG) was also undertaken in early 2015 to agree the detail of the approach.

Key Steps in Methodology

2.7 The key steps in the methodology are as follows:

Desk Study

- To gather and map baseline information on each of the identified transmission lines and associated transmission infrastructure (e.g. substations/sealing end compounds);
- To identify assessment sections and sub-sections of the transmission infrastructure, and transmission infrastructure, based on the interaction of the infrastructure with topography and landscape character types (LCTs);
- To identify the landscape, and visual receptors (groups of people) who may be most affected by each section or sub-section of the transmission line or associated transmission infrastructure; and
- In consultation with stakeholders, identify appropriate specific and representative viewpoints, and routes in relation to each section and sub-section of transmission line or associated transmission infrastructure.

Field Survey

- To drive and/or walk along the line and confirm the assessment sections, visual receptors and representative assessment viewpoint locations;
- To undertake an assessment of the impacts of each section and sub-section on the landscape, and on visual receptors from each viewpoint and route, making a judgement of the following;
  - Evaluate susceptibility and value of landscape and visual receptors;
  - Evaluate size/scale and extent of the impact of the transmission infrastructure; and
- To judge the importance of each impact using field survey sheets.

Following Field Survey

- To complete a summary sheet for each assessment section, including a judgement of the overall impact on the landscape and overall impact on visual amenity;
- Identification of mitigation opportunities where appropriate; and
- To assemble field survey sheets, maps and photos for presentation as part of the study output.

LVIA Technical Reporting – contained in Stage 1 Report

- Presentation of assessment of landscape and visual impacts and proposed mitigation measures identified to specifically address the identified impacts.

Study Area

2.8 LUC's past experience in assessing overhead transmission lines and transmission infrastructure suggests that the most significant, and in the case of this assessment important, impacts on landscape and visual receptors will most often occur within 10km of transmission infrastructure. The project therefore focuses on receptors (landscapes and people) within a 10km radius of the transmission infrastructure being considered, however due to the high sensitivity of receptors within nationally designated landscapes, and the specific geographical location of some of the

transmission infrastructure in highly visible elevated areas, it was also necessary to consider specific impacts beyond 10km in some cases.

2.9 Zone of theoretical visibility (ZTV) mapping was generated based on the position and height of each steel lattice tower pylon or wood pole (using data provided by SPEN). This was used to help identify areas where transmission infrastructure was more or less likely to give rise to significant impacts. ZTVs were generated out to a 10km radius extent to include the likely maximum area of potential significant, or important, landscape and/or visual impacts. The ZTVs were based on a bare earth model and therefore show the maximum visibility of the transmission infrastructure up to a distance of 10km.

2.10 The theoretical visibility indicated by the ZTVs represents a 'maximum case effect' scenario, however desk based analysis of maps and aerial imagery were complemented by initial field surveys to verify the theoretical visibility, where screening by local topography, built form, woodland cover (coniferous forestry and deciduous woodland) and other vegetation was often judged to reduce the actual visibility of the transmission infrastructure.

Baseline Data

2.11 The following key documents have been referred to, to inform the approach to the project:

Loch Lomond & The Trossachs National Park

- Identifying the Special Qualities of Scotland's National Scenic Areas Report No. 255[10];
- The Special Qualities of the National Scenic Areas Report No. 374[11];
- The special landscape qualities of the Loch Lomond and The Trossachs National Park Report[12];
- Loch Lomond and the Trossachs landscape character assessment[13];
- The National Park Adopted Local Plan[14];
- The National Park Partnership Plan[15];

Eildon & Leaderfoot NSA

- information setting out the purpose and special qualities of the Eildon & Leaderfoot National NSA[16] and Loch Lomond NSA[17];
- The Borders Landscape Assessment[18].

2.12 Within a 10km radius study area of the transmission infrastructure considered, the following data was gathered to inform the assessment process:

- Nationally, regionally or locally promoted walking routes, cycleways and bridleways, including Core Paths defined by local authorities;

[10] David Tyldesley and Associates (2007). Identifying the Special Qualities of Scotland's National Scenic Areas. Scottish Natural Heritage Commissioned Report No.255 (ROAME No. F05NC701).

[11] Scottish Natural Heritage (2010). The special qualities of the National Scenic Areas. Scottish Natural Heritage Commissioned Report No.374 (iBids and Project no 648).

[12] Scottish Natural Heritage and Loch Lomond and The Trossachs National Park Authority (2010). The special landscape qualities of the Loch Lomond and The Trossachs National Park. Scottish Natural Heritage Commissioned Report, No.376 (iBids and Project no 648).

[13] SNH (2009) Loch Lomond and the Trossachs National Park Landscape Character Assessment.

[14] Loch Lomond & the Trossachs National Park (2010), Adopted Local Plan 2010-2015.

[15] Loch Lomond & the Trossachs National Park (2012), Partnership Plan 2012-2017.

[16] http://www.snh.gov.uk/docs/B699718.pdf

[17] http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/nsa/special-qualities/

[18] Ash Consulting Group & SNH (1998). The Borders Landscape Assessment (SNH Review No. 112).

- Nationally designated historic landscape assets, including sites on the Inventory of Gardens and Designed Landscapes, Inventory of Historic Battlefields, and scheduled monuments;
- Nationally and internationally designated natural heritage assets (Ramsar sites; SACs; SPAs; SSSIs and NNRs);
- Scenic routes[19] and other tourist routes promoted by VisitScotland;
- Wild Land Areas as identified by SNH and referred to in Scottish Planning Policy;[20]
- Locations and walking routes for Munros, Corbetts and other popular hill summits; and
- Information on tourist attractions, recreational sites and viewpoints identified from 1:25,000 OS maps.

Identification of Infrastructure Assessment Sections

Overhead Transmission Lines

2.13 As overhead transmission lines move through different landscapes, different impacts may be anticipated. To facilitate the comparison of impacts, the various transmission lines were split into separate assessment sections, based on topography and landscape character (informed by the landscape character types (LCTs) described in published landscape character assessments). The sections of overhead transmission lines devised vary from between approximately 3km and 7km in length, and the precise application of this was dependent upon the scale of the landscape characterisation and observations made in the field.

2.14 In some instances shorter sub-sections of the transmission line within the desk-based assessment sections were identified, where the field survey identified particularly important impacts. Depending on their length, these were identified and assessed as a separate sub-section, or were specifically highlighted in the overview summary sheet. Each section, and sub-section of overhead transmission line was then examined separately in terms of its impact on landscape and visual receptors.

Identification of Landscape Receptors

2.15 Drawing on the analysis of baseline data, the landscape receptors for each section and sub-section of overhead transmission line and element of associated transmission infrastructure were identified. This was informed by the contributions of stakeholders during the first Stakeholder Partnership Group (SPG) workshop held in May 2015 and subsequent correspondence with stakeholders with regard to the areas of designated landscapes with which they are most familiar.

Landscape Character Types

2.16 Landscape receptors are the underlying landscape character types (LCTs) through which the overhead transmission line passes. Where necessary, adjacent LCTs were considered, although the impacts on landscape character were not judged likely to extend beyond approximately 1-2km.

Wild Land Areas

2.17 In addition to LCTs, the assessment of transmission infrastructure also considered the potential for impacts on Wild Land Areas (WLAs which the overhead transmission lines pass through or

[19] http://www.lochlomond-trossachs.org/scenicroutes/

[20] Scottish Government, (2014), 'Scottish Planning Policy', Available [online] at: http://www.scotland.gov.uk/Resource/0045/00453827.pdf

within close proximity to. It was judged that landscape impacts on WLAs would not extend beyond 5km, although visibility of transmission infrastructure from locations within WLAs beyond 5km are possible and visual impacts of high importance could feasibly be identified.

Identification of Visual Receptors

2.18 Visual receptors are the people who live in or visit the landscape, and who may experience views of the transmission infrastructure. The study focuses predominantly on public rather than private views, however views experienced from residential properties and their curtilages have been considered. Visual receptors therefore include:

- Residents of the area;
- Walkers, cyclists and other recreational users of the landscape;
- People travelling on documented long distance footpaths, Core Paths, cycle routes, scenic routes;
- People travelling on roads through the landscape; and
- Visitors to documented viewpoints, sites of historic interest and other attractions where the focus is on the surrounding landscape.

2.19 The first SPG workshop held in May 2015 provided an opportunity for stakeholders to contribute to the identification of potential visual receptors, informed by the preliminary ZTV mapping, baseline information and their expert knowledge of the designated landscapes with which they are most familiar.

Representative Viewpoints

2.20 The identification of viewpoints was informed by the preliminary ZTV plans generated for each overhead transmission line to indicate where theoretical visibility of the existing infrastructure is potentially experienced from.

2.21 SPG members also contributed to the identification of potential representative viewpoints during group workshop sessions at the first SPG workshop in May 2015 and subsequent consultation workshops with Loch Lomond & The Trossachs National Park stakeholders in June 2015, and Eildon & Leaderfoot NSA stakeholders in September 2015.

2.22 A range of representative assessment viewpoints were selected for each section and sub-section of transmission infrastructure. These were selected to represent the types of views of the existing infrastructure which are available from publicly accessible, albeit sometimes remote locations, and experienced by a range of receptors, often undertaking a variety of different activities.

Representative Routes

2.23 Consideration was also given to potential transient sequential impacts on visual amenity experienced by people on routes within the study area. Through desk based analysis of OS maps, tourist information sources and consultation with stakeholders, key routes were identified for consideration in the assessment and where applicable informed the identification of representation viewpoint. For example, an assessment viewpoint on a documented route, path or cycle route may be representative of similar views which are available over a long stretch of the route, therefore appropriate commentary is provided in the assessment from specific viewpoints which are representative of similar views experienced from routes.

Field Surveys

2.24 The assessment of landscape and visual impacts was undertaken as a field-based exercise. Field surveys involved initial familiarisation with the transmission infrastructure and the designated

landscapes within which it is located, and confirmation of the sections and sub-sections of overhead transmission lines to be assessed. This initial field survey was undertaken in late 2014 and early 2015.

2.25 The initial field surveys were followed by more detailed recording of landscape and visual impacts through more extensive detailed fieldwork. During the first stage, information on the susceptibility and value of the landscape was recorded, and the importance of the impact on landscape character was judged.

2.26 Each of the identified viewpoints was visited individually, and evaluations were made as to the following:

- susceptibility of the receptor(s);
- the value of the view; and
- the scale, frequency and importance of the resulting visual impact of the transmission infrastructure.

2.27 On average, approximately 5km of overhead transmission line was surveyed per day, however this average length varied dependant on the accessibility of the transmission infrastructure and location of representative viewpoints and routes used for the assessment. All surveys were carried out by a team of two Chartered Landscape Architects from publicly accessible locations, with the majority of locations accessed by car or on foot.

Assessment of Landscape and Visual Impacts

2.28 For each line section, assessments were made of the importance of impacts on landscape and visual receptors.

2.29 Following the methods set out in GLVIA3, the value and susceptibility of the landscape was determined, based on the application of agreed criteria. The size/scale and geographic extent of the impact on the landscape was also determined. A judgement of the relative importance of the impact was then made based on these assessments.

2.30 The assessment of impacts on visual amenity was undertaken using a selection of representative viewpoints, and consideration of sequential views from transitory routes. Each representative viewpoint was chosen to represent the experience of one or more of the receptor groups listed above. At each location a judgement of the value of the view and the scale of the impact on the receptors was made. With reference to the frequency of the impacts, a judgement of the relative importance of the impact on the receptors was made. An overall evaluation of the impacts of the infrastructure on views and visual amenity was then made by reviewing the profile of judgements made from the range of representative viewpoints and observations made in relation to views experienced from relevant transitory routes.

2.31 Full details of the assessment methodology are presented in **Appendix 1** of the **Stage 1 & 2 Report Appendices**.

2.32 Following the assessment process each assessment section was assessed in terms of:

a) the importance of the impact on landscape character, including in relation to Wild Land Areas where relevant, resulting in a single judgement for each assessment section; and

b) the overall impact on visual amenity, as experienced by people using and visiting the National Park and/or NSAs, based on the viewpoint analysis.

2.33 These overall assessments, on a scale of *low – moderate – high – very high,* allow the assessment sections to be compared in terms of their relative level of impact on landscape, and

views and visual amenity. This process therefore establishes the locations where consideration of mitigation should be prioritised, and forms the conclusion of **Stage 1**.

Stage 1 Consultation

2.34 On Friday, 15th May 2015 SPEN held the first Changing the VIEW SPG meeting to introduce the project to key stakeholders and seek ideas and involvement in the project moving forwards from the prospective SPG members. This initial meeting provided background to the initiative and the OFGEM fund, and sought to set out SPEN's objectives and aspirations for the Changing the VIEW initiative. A draft of the *Changing the Visual Impact of Existing Wirescape (VIEW)*[21] policy document was presented to stakeholders for comment along with a draft of the proposed landscape and visual impact assessment methodology which would be used for the assessment of the existing infrastructure.

2.35 During the meeting representatives from SHE Transmission outlined the early stages of their own VISTA initiative and both companies set out their aspirations to work collaboratively across the LLTNP, and identify any potential overlapping areas where the two companies could work together to achieve effective mitigation.

2.36 This initial SPG meeting was followed by two additional stakeholder meetings held with stakeholders from the Loch Lomond & The Trossachs National Park on Friday, 12th June 2015 and the Eildon & Leaderfoot NSA on Wednesday, 23rd September 2015. These meetings were attended by several stakeholder members, including officers from different departments within the LLTNP Authority and officers from the Scottish Borders Council (SBC). The meetings took the form of an open workshop discussion with participants invited to offer comment on:

- The designated landscapes:
  - What is especially valued about the areas near the infrastructure, and by whom?
  - Where do people go? Where are the 'honeypot' areas?
  - What do people do in these areas?
- Impacts of the existing infrastructure:
  - How do people perceive the existing infrastructure?
  - Do people see the infrastructure as a problem in any particular location?
  - Which sections of infrastructure do you think should be looked at, and why?
- Potential mitigation:
  - What mitigation may be appropriate, successful and represent 'best value'?
  - Who will benefit from the proposed mitigation?
  - Are there other projects or initiatives in the area that Changing VIEW could be tied into?

2.37 A summary of the key topics of discussion, responses and findings from the Stage 1 consultation meetings and workshops are outlined in **Appendix 4** of the **Stage 1 & 2 Report Appendices**.

Stage 2 Methodology: Defining the Projects

2.38 Stage 2 of the project sought to identify options for mitigation, and to examine the likely benefits of each. Through consultation with stakeholders, primarily through the members of the Stakeholder Partnership Group (SPG), and internal technical specialists within SPEN, a large number of possible proposals were considered and then refined to a list of feasible, effective and deliverable projects. This section of the report therefore sets out the approach to the identification and selection of mitigation projects to be progressed to Stage 3.

[21] *Changing the VIEW: Reducing the visual impact of existing electricity transmission infrastructure in Scotland's National Parks & National Scenic Areas* (2016) SP Energy Networks & LUC

2.39 The definition of mitigation projects was driven by consideration of three key factors:

- The need to mitigate an **identified landscape or visual impact**;
- The need for **stakeholder support**; and
- The need for **technical deliverability and affordability** within the limits of the OFGEM funding.

2.40 Only those projects that met all three of these criteria could be considered for progression as part of the Changing the VIEW initiative. Conversely, not all projects that do meet all these criteria can be taken forward. The three criteria were not applied as a hierarchy, though the final prioritisation of projects was primarily driven by stakeholder interests.

2.41 At the outset, Stage 2 focused on gathering and generating ideas and options for possible mitigation solutions which directly, or in some instances indirectly, address the landscape and visual impacts identified in Stage 1. In this first phase, the criteria above were not introduced as limiting factors, in order to ensure that all possible solutions were considered. Following this initial gathering of information, the remaining part of Stage 2 was a refinement process using the above criteria as a series of sieves to arrive at firstly a 'long-list' of mitigation proposals and secondly a more refined 'short-list' of mitigation projects which were the most appropriate to take forward to Stage 3. This 'sieving' was not a linear process, but an iterative consideration of all the factors.

Types of mitigation considered

2.42 Mitigation is clearly defined within GLVIA3 in relation to landscape and visual effects *as 'Measures which are proposed to prevent, reduce and where possible offset and significant adverse effects (or to avoid, reduce and if possible remedy identified effects)'* (GLVIA3, Page 41, Paragraph 3.37).

2.43 Although not referred to within the EIA Regulations,[22] mitigation is specifically referenced within the Electricity Act 1989,[23] which provides a clear definition of what mitigation may be necessary in relation to proposals involving electricity transmission infrastructure:

'(b) 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' (Schedule 9, 3.1(b), Page 112).

2.44 From the outset of the Changing the VIEW initiative, a wide range of potential mitigation options were considered, ranging from small-scale landscape interventions through to large scale engineering projects, including consideration of undergrounding, subsea cable routes and Re-routeing out with the Nationally designated landscapes being considered. It was made clear to stakeholders that appropriate mitigation could take many different forms, however three overarching principles of mitigation of visual impacts are to be considered:

- Proposals that **remove** impacts, by removing infrastructure from the view;
- Proposals that **reduce** the level of impact, by screening the view or by reducing the physical size of the infrastructure in the view;
- Proposals that **re-focus** the attention of the viewer, so that the apparent level of impact is reduced, although the infrastructure remains unchanged.

2.45 There are strict criteria that proposed mitigation projects must satisfy in order to qualify for consideration as part of the OFGEM incentive. The types of measures that were considered include:

[22] The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011

[23] Electricity Act 1989, Chapter 29

Remove

- **re-routeing** or realignment of existing overhead transmission lines;
- **undergrounding** existing overhead lines;
- replacement of existing overhead lines with **subsea / loch cable**;

Reduce

- **screening** visible elements of infrastructure such as substations or overhead lines;
- replacement of air insulated substation (AIS) infrastructure with **gas insulated substation (GIS)** infrastructure;
- replacement of existing infrastructure with **alternative pylon design** (e.g. lower height towers or bespoke design;
- **replacement** of steel lattice towers with wood poles (132kV infrastructure only);
- **Assessment of distribution network infrastructure**[24] which may contribute to cumulative impacts in association with the transmission infrastructure being considered; and
- innovative mitigation techniques to **reduce visibility** of towers;

Refocus

- general **landscape enhancements** which mitigate the impact of transmission infrastructure;
- **introduction or intervention** which offers a visual focal point or averts attention from the existing infrastructure;
- **re-routeing or relocation** of visitor, tourism or recreational interests to refocus attention away from existing infrastructure;
- **recreational or social initiatives** associated with use of recognised designated areas; and
- other mitigation measures identified during consultations with stakeholders.

Process of identifying mitigation options

2.46 Potential mitigation solutions were identified during fieldwork carried out by LUC, and were developed through consultation with SPEN and stakeholders.

2.47 Over the course of the field survey and assessment outline notes were taken on the potential for mitigating the landscape and visual impacts identified, particularly where more important impacts were recorded. This was informed by the design principles outlined within the Holford Rules and Horlock Rules.

2.48 Consultation with stakeholders began at an early stage in the project and continued throughout Stage 2 of the project as documented in **Appendix 3 and 4** of the **Stage 1 & 2 Report Appendices**. Consultation not only sought to refine potential mitigation options, but also generated further ideas for mitigation. Initial ideas were generated at a stakeholder meeting convened by SPEN in May 2015 along with the subsequent stakeholder meetings which followed focused on infrastructure located within the SPEN transmission operator licence area within the LLTNP, and the Eildon & Leaderfoot NSA, and stakeholders highlighted issues relevant to both of these areas.

[24] SPEN intend to co-ordinate any such cumulative impacts through a similar project dealing specifically with lower voltage (distribution) apparatus.

Refinement of mitigation options

2.49 The stakeholder engagement and field surveys generated a huge range of possible mitigation measures, and all were given due consideration in line with SPEN's Changing the VIEW policy approach. All suggested measures were reviewed by LUC and SPEN in the light of the three criteria noted above.

2.50 This was not a linear process, where projects were either discounted or taken to the next stage of the project for further consideration. In reality the process took an iterative and multi-faceted approach where projects were considered against the selection criteria and in some cases were adapted or modified rather than being rejected out of hand, particularly where they had a higher level of stakeholder support. The first stage of this refinement was the development of a 'long-list' of mitigation projects that had potential for further development. These were derived from the initial suggestions by asking the questions below.

Does it mitigate the impact?

2.51 Mitigation projects that would mitigate an identified impact, either directly or indirectly, were retained for consideration. Indirect mitigation included measures to refocus the attention of viewers, or to move receptors away, for example through the realignment of a footpath. Some suggestions led by stakeholders could not be linked to mitigation in this way and were not considered further.

2.52 The level of impact being mitigated, and the level of mitigation likely to be delivered by a project, was also given some weight. However, while more importance was given to proposals to mitigate impacts assessed as high within the LVIA, mitigation of moderate impacts was still considered if the level of mitigation was proportionate and had stakeholder support.

Does it have stakeholder support?

2.53 As noted above, stakeholder involvement was a key part of the process. Projects that had been discussed with stakeholders, or suggested by them, were considered to have support for the purposes of the long-list.

Is it deliverable?

2.54 In identifying a long-list of mitigation options a high level technical review was undertaken by SPEN to identify any major technical constraints which would make a proposal unfeasible to deliver. Some approximate costs were estimated, but were only defined as ranges to inform stakeholders at this stage. Some suggestions were rejected on the basis that they were not achievable or realistic due to operational matters.

Refining the long-list of projects

2.55 The resulting long-list contained alternative options for mitigating the impacts of several sections of transmission infrastructure. A long-list of mitigation proposals was also developed by SHE Transmission for infrastructure located within their operator licence area of the LLTNP, and the two lists overlapped in places where both transmission operators' infrastructure was present.

2.56 Each proposal on the long-list of mitigation options was considered to be viable and suitable for consideration as part of the Changing the VIEW initiative, however further refinement was needed to provide a short-list of more refined mitigation projects that could be taken forward to Stage 3.

Identifying the provisional short-list of projects

2.57 At this stage of the project, all of the mitigation options included on the long-list were considered to meet the first criteria, that of mitigating an identified impact. Continued stakeholder support was therefore a key consideration.

2.58 Based on stakeholder feedback, less favoured or higher-risk mitigation projects were set aside, and the most widely supported schemes were progressed to the provisional short-list.

2.59 Those proposals that were not included on the provisional short-list could yet be taken forward in the future, should funding be available to implement additional mitigation projects within the current or forthcoming price control periods.

Stage 2 Consultation

2.60 Detailed and meaningful consultation with stakeholders during Stage 2 of the project was essential to ensure that mitigation proposals to address the identified impacts were identified and developed with stakeholder input and support.

2.61 A summary of the key topics of discussion, responses and findings from the Stage 2 consultation meetings and workshops are outlined in **Appendix 4** of the **Stage 1 & 2 Report Appendices**.

Provisional short-list of projects

2.62 Based on stakeholder and technical feedback, less favoured projects were set aside, and the most widely supported deliverable schemes were progressed to the provisional short-list. Proposals which are not included on the final short-list may be taken forward in the future, should funding be available to implement additional projects within the current or forthcoming price control periods. The finalised short-list of projects forms the output of Stages 1 and 2 of the Changing the View initiative, and is presented in **Section 8**.

Stage 3 & Stage 4: Developing & Implementing the Projects

2.63 Stages 3 and 4 or the project will be concerned with developing and delivering individual mitigation projects defined on the final short-list of projects, as identified in **Section 8** of this report.

SPEN initial review of deliverability

2.64 Following the identification of the provisional short-list of projects each of the potential mitigation proposals will be subject to an initial review of deliverability by an internal team of SPEN technical specialists. This review will include a high level consideration of the following:

- **Technical feasibility** – a high level review of the technical limitations and constraints likely to be experienced in delivery of the proposal;
- **Network implications** – a review of the likely implications for the wider transmission network during both construction and operation;
- **Landowner collaboration** – establishing initial dialogue with potentially affected landowners and/or leasees to determine buy-in to proposal;
- **Project delivery implications** –review of the likely timescale/programme, expenditure and consenting process implications for proposal.

2.65 This process will establish some level of certainty as to the deliverability of each of the proposals, and will confirm that those provisionally shortlisted can be taken forward.

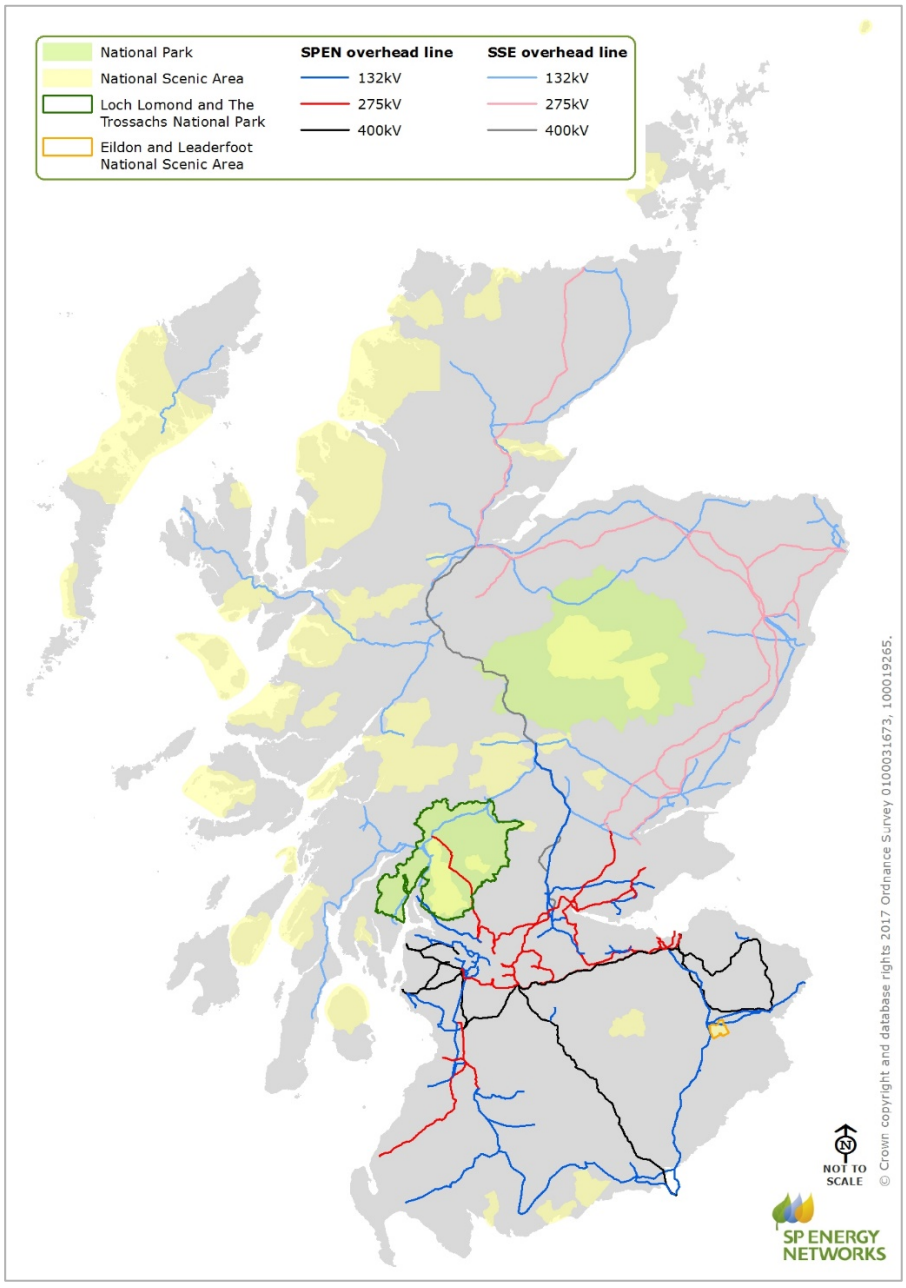
Further consultation

2.66 Consultation to be undertaken during Stages 3 and 4 of the project is to be agreed and defined in collaboration with the SPG and is likely to include a wider range of stakeholders and local communities, who may be more directly affected by the proposed mitigation projects to be progressed to detailed feasibility studies and further development, prior to any submission to OFGEM for funding.

3 Identification of transmission infrastructure

SPEN Transmission Infrastructure in Scotland

3.1 SPEN, through Scottish Power Transmission Ltd (SPT), is the transmission licence holder for the south of Scotland, while Scottish Hydro Electric Transmission Ltd (SHE Transmission) is the transmission licence holder for the north of Scotland. Transmission is defined in Scotland as voltages of 132kV or over. This network comprises almost 4,000km of electricity lines and over 300km of cables, and over 130 substations. The SPEN transmission operator licence area is shown on **Diagram 1.1**, and **Figure 3.1** below illustrates the network of SPEN transmission infrastructure across this area.



3.2 The OFGEM funding is available to mitigate the impacts of transmission infrastructure on nationally protected landscapes. In Scotland, nationally protected landscapes comprise two National Parks[25] and 40 National Scenic Areas (NSAs)[26]. Transmission infrastructure which is within, or in some cases just outside, nationally designated landscapes, may affect the special qualities of the designation and may be considered as eligible for mitigation as part of this project.

3.3 A proportion of the Loch Lomond and The Trossachs National Park (LLTNP) and a number of NSAs fall within SPEN's Transmission's licence area. The majority of SPEN's existing transmission infrastructure is located outside these designated areas, but there are sections of the network which are within or immediately adjacent to National Parks and NSAs.

[25] http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/national-parks/

[26] http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/nsa/ttp://www.snh.org.uk/pdfs/publications/nsa/National%20Scenic%20Areas.pdf

Identification of infrastructure in designated landscapes

3.4 The distribution of SPEN transmission infrastructure assets within nationally designated landscapes (National Parks and NSAs) was reviewed by LUC and infrastructure was identified within the following designated landscapes:

- Loch Lomond and The Trossachs National Park (which includes Loch Lomond NSA and The Trossachs NSA); and
- Eildon & Leaderfoot NSA.

3.5 The infrastructure identified within the areas listed above amounts to:

- Approximately 45km of 275kV overhead transmission lines carried on steel lattice towers;
- Approximately 6km of 132kV overhead transmission lines carried on steel lattice towers; and
- Approximately 2.5km of 132kV overhead transmission lines carried on a combination of wood pole and steel lattice angle towers.

Infrastructure in Loch Lomond & The Trossachs National Park

3.6 The SPEN transmission assets located in this National Park, which also encapsulates the Loch Lomond NSA and The Trossachs NSA, include SPEN infrastructure in the north, north-west of the National Park which is located within the SHE Transmission licence area.

3.7 The 275kV Cruachan to Windy Hill steel tower overhead transmission line is in the ownership of SPEN and runs between the Cruachan Dam pumped-storage hydroelectric power station and Inverarnan substation adjacent to the A82 on the north-western shores of Loch Lomond. This 275kV steel tower overhead transmission line then runs east, south-east through the park past Loch Katrine and the Loch Ard Forest before heading south and leaving the park east of Drymen, on heading southwards to the Windy Hill substation.

3.8 Two 132kV overhead transmission lines (CL route and CK route) also pass through the south-western corner of the park along Glen Fruin. These two steel lattice tower lines enter the park north of the A818 near Helensburgh, and run parallel along the southern slopes of the glen, before leaving the park south-east of Garelochhead and traversing the boundary of the park along the eastern shores of Loch Long.

3.9 SHE Transmission also own and operate a number of transmission lines and substations within the National Park, which are being considered within the VISTA initiative. SPEN and SHE Transmission are committed to working together to deliver mitigation projects within the LLTNP for transmission infrastructure within this area.

Infrastructure in National Scenic Areas (NSAs)

3.10 A single 132kV overhead transmission line carried on a combination of wood pole, and steel lattice towers (AT route) crosses the Leader Water Valley at the northern extent of the Eildon & Leaderfoot NSA.

3.11 SPEN also owns a number of assets located in relatively close proximity to NSAs, including two pre-existing 132kV steel lattice tower overhead lines which pass close to the western and northern boundaries of the Eildon & Leaderfoot NSA, and two 132kV steel lattice tower overhead lines which pass close to the Nith Estuary NSA and East Stewartry Coast NSA, in Dumfries and Galloway:

- Eildon & Leaderfoot NSA (132kV overhead transmission lines carried on steel lattice towers within approximately 1.5km north of the NSA – U Route, and 132kV overhead transmission lines carried on steel lattice towers within approximately 0.5km west of the NSA – V Route);

- Nith Estuary NSA (132kV overhead transmission lines carried on steel lattice towers within approximately 3km of this NSA – S route and BR route); and
- East Stewartry Coast NSA (132kV overhead transmission lines carried on steel lattice towers within approximately 3km of this NSA – S route).

Substations

3.12 In addition to the above overhead lines, substations and associated infrastructure were also considered for inclusion in the project. However, no substations owned or operated by SPEN were found to be located within either the Loch Lomond and The Trossachs National Park or the NSAs considered above, and therefore no substations were included for further consideration as part of the Changing the VIEW initiative.

Screening of infrastructure

3.13 A high level screening process was adopted to identify which transmission infrastructure was to be considered through the Changing the VIEW initiative and where mitigation projects were likely to be most beneficial. Mitigation projects were to be targeted where they will give rise to maximum enhancement of the landscape and views within a designated area. While there is a financial and technical dimension to this targeted approach, the purpose of the screening exercise was to understand any constraints which may exist which would prevent implementation of potential mitigation projects through the Changing the VIEW initiative.

3.14 As part of this screening process SPEN confirmed that transmission infrastructure projects that had been consented through Section 37 of the Electricity Act 1989, since the implementation of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000, would not be considered through the Changing the VIEW initiative. These projects have undergone rigorous Environmental Impact Assessment (EIA), including landscape and visual impact assessment, with appropriate mitigation measures being implemented where necessary. It is not considered that further mitigation of these projects would present the best use of the OFGEM funding.

3.15 In addition, transmission assets that are subject to planned major upgrade works that would potentially lead to the removal or replacement of assets, are also excluded from the initiative. The uncertainty surrounding the future of these assets means that effective mitigation cannot be adequately planned and implemented. Assets which may be subject to ongoing or planned refurbishment works, such as replacement of conductors, will be included within the scope of the project, where these works are unlikely to alter the impact of the assets on designated landscapes.

3.16 The pre-existing 132kV steel tower overhead lines which pass close to the Nith Estuary NSA and East Stewartry Coast NSA, between substations at Dumfries and Tongland, and Dumfries and Chapelcross, in Dumfries and Galloway are not included for consideration in the initiative. These overhead lines are either directly and indirectly related to the current SPEN Dumfries and Galloway Strategic Reinforcement Project[27] for which consent to Scottish Government under section 37 of the Electricity Act 1989, will be made in the near future following completion of detailed routeing studies and Environmental Impact Assessment (EIA). This project currently comprises of a proposed new 275kV - 400kV overhead line between Auchencrosh in South Ayrshire and Harker in Cumbria, and removal and replacement of other ageing 132kV overhead lines. The landscape and visual impacts of these proposals, including potential impacts on nationally designated landscapes, will be fully examined as part of the EIA, and any relevant mitigation measures will be proposed as part of consent application.

[27] http://www.spenergynetworks.co.uk/pages/dumfries_galloway_strategic_reinforcement.asp

Transmission infrastructure included in assessment

3.17 Following the high level screening process undertaken the following approximate route lengths were identified for further consideration:

- 45km of 275kV steel tower overhead line (part of the Dalmally-Windyhill– YW Route) within the LLTNP, around 2km of which is also located within the Loch Lomond NSA;
- Two parallel 6km lengths of 132kV steel tower overhead lines which traverse Glen Fruin, in the south-west of the LLTNP (Sloy-Windyhill - CL Route and CK Route); and
- Approximately 2.5km of 132kV overhead line, carried largely on wooden poles, within the Eildon & Leaderfoot NSA, and approximately 5.5km to the east and west of the NSA (Galashiels-Eccles - AT Route).

3.18 In addition, a number of overhead transmission lines located close to the Eildon & Leaderfoot NSA in the Scottish Borders were also included for further consideration:

- Approximately 8km of 132kV overhead line on steel towers to the north of the Eildon & Leaderfoot NSA (Galashiels-Eccles - U Route); and
- Approximately 6km of 132kV overhead line on steel towers to the west of the Eildon & Leaderfoot NSA (Galashiels-Hawick - V Route).

Transmission infrastructure included

3.19 The overhead transmission lines and associated transmission infrastructure which are considered in the project are listed in **Table 2.1**. Four overhead transmission lines located within two designated areas have been included, amounting to a total of over 60km of transmission infrastructure. A further two transmission lines within close proximity to the Eildon & Leaderfoot NSA have also been considered within the project, located less than 2km to the NSA at their closest point.

3.20 The overhead transmission infrastructure are listed in **Table 3.1**, approximately from north to south. **Figure 3.2a** illustrates the distribution of transmission infrastructure in and around the LLTNP, and **Figure 3.2b** illustrates the lines in and around the Eildon & Leaderfoot NSA.

Table 3.1: SPEN transmission infrastructure included

Circuit Name	Route Code[28]	Voltage	Infrastructure type	Approximate length of line to be assessed (km)	Proximity to NP/ NSA (km) at nearest point
Loch Lomond & The Trossachs National Park (including Loch Lomond NSA)					
Cruachan - Windyhill	YW	275kV	Steel lattice	45 km	n/a
Sloy - Windyhill[29]	CL	132kV	Steel lattice	6 km	n/a
Sloy - Windyhill[30]	CK	132kV	Steel lattice	6 km	n/a

[28] SPEN transmission network line reference code

[29] CL Route from east of Garelochhead to Sloy substation is owned and operated by SHE Transmission

[30] CK Route from east of Garelochhead to Sly substation is owned and operated by SHE Transmission

Circuit Name	Route Code[28]	Voltage	Infrastructure type	Approximate length of line to be assessed (km)	Proximity to NP/ NSA (km) at nearest point
Eildon & Leaderfoot NSA					
Galashiels - Eccles	AT	132kV	Wood pole & steel lattice	8 km	n/a
Galashiels - Eccles	U	132kV	Steel lattice	8 km	1.5 km
Galashiels - Hawick	V	132kV	Steel lattice	6 km	0.5 km

Description of transmission infrastructure included

3.22 The following section presents a brief overview description of each of the overhead transmission lines identified in **Table 3.1** above.

Cruachan – Windyhill (YW Route)

3.23 A double circuit 275kV overhead transmission line carried on steel lattice towers of approximately 45m in height runs from Cruachan Dam pumped-storage hydroelectric power station north-west of the park to Inverarnan substation, entering the park south of Glen Lochy across the southern slopes of Beinn a'Chleibh (916m AOD). This line is located within the SHE Transmission licence area but is owned and operated by SPEN. This 275kV steel tower overhead transmission line then runs east, south-east through the National Park past Loch Katrine and Loch Arklet, and past Loch Chon within the Loch Ard Forest, before heading south and leaving the park east of Drymen, on heading southwards to the Windy Hill substation.

3.24 Inverarnan substation, which is owned and operated by SHE Transmission, is located adjacent to the A82 on the north-western shores of Loch Lomond. The Cruachan – Windyhill overhead line connects into this substation from the west and east, and a number of other 132kV transmission lines which are owned and operated by SHE Transmission also link into this substation from the north and south.

Sloy – Windyhill (CL Route and CK Route)

3.25 Two 132kV overhead transmission lines pass also through the south-western corner of the park along Glen Fruin. These two steel lattice tower lines enter the park north of the A818 near Helensburgh, and run parallel along the southern slopes of the glen, before leaving the park south-east of Garelochhead and traversing the boundary of the park along the eastern shores of Loch Long.

3.26 The ownership and operation of these two overhead transmission lines changes at the SPEN and SHE Transmission operator licence boundary, however the northern sections of these overhead lines are considered within the SHE Transmission VISTA initiative.

Galashiels – Eccles (AT Route)

3.27 This 132kV overhead transmission line crosses the Leader Water Valley from east to west at the northern extent of the Eildon & Leaderfoot NSA. The infrastructure consists of predominantly heavy duty double wood poles with steel lattice angle towers, of approximately 16m in height. The overhead line runs eastwards from a substation at Langlee near Galashiels, within the Tweed Valley approximately 2.5km west, north-west of Melrose and meets the 132kV U route (described below) approximately 0.5km north-west of the settlement of Eccles.

3.28 The overhead line enters the NSA south-east of Black Hill at the north-eastern extent of the NSA, passing through enclosed pasture and arable fields east of the B6356 before descending into the Leader Water Valley where the line crosses the river from east to west approximately 500m north of the small settlement of Redpath. The overhead line then climbs the western slopes of the valley, crossing perpendicular to the A68 and running parallel to linear shelterbelts and field boundary trees which dissect the slopes. The line then contours across higher ground north of Ferny Hill before crossing the Southern Upland Way and descending into the Tweed Valley north-west of Melrose.

Galashiels – Eccles (U route)

3.29 This overhead transmission line runs between a substation approximately 2.5km east of Eccles, and the same substation described above at Langlee, near Galashiels. The 132kV overhead line consists of steel lattice towers of approximately 25m in height and runs broadly parallel with the AT route described above between the settlement of Eccles and Galashiels, passing to the north of the settlement of Earlston approximately 1.5km north of the NSA alongside Leader Water before

descending into the same substation at Langlee near Galashiels, within the Tweed Valley approximately 2.5km west, north-west of Melrose. At its closest point the overhead line is located approximately 1.5km from the NSA, for a distance of approximately 8km.

Galashiels – Hawick (V route)

3.30 This 132kV overhead transmission line is carried on steel lattice towers running broadly north to south, between Galashiels and Hawick and in parallel with the western of the NSA boundary for approximately 6km. A terminal tower is located adjacent to the A6091 near Melrose from where the transmission line heads south ascending the southern slopes of the Tweed Valley towards Bowden Moor where it runs parallel with the B6359 for a short stretch, and within less than 500m of the NSA boundary west of the Eildon Hills at Bowdenmoor. The overhead line passes through enclosed pasture and arable fields and cuts through a number of shelterbelts of trees and field boundary trees before descending towards the A699 south of the NSA.

Assessment sections

3.31 For the purposes of the assessment of landscape and visual impacts, the SPEN transmission infrastructure was subdivided into a number of assessment sections. Following the approach presented in the Methodology (**Section 2**), 12 separate assessment sections were identified. These were labelled based on the specific SPEN transmission network line reference code (e.g. YW Route) and numbered consecutively, generally from north to south. The sections of transmission infrastructure within the LLTNP are shown on **Figure 3.3a** and those within and in close proximity to the Eildon & Leaderfoot NSA are shown on **Figure 3.3b** and these assessment sections are briefly described in **Table 3.2**.

Table 3.2: Assessment sections

Assessment section	Description	Approximate Length (km)
Loch Lomond & The Trossachs National Park		
YW.1 Gleann nan Caorann	Double-circuit steel lattice tower line through Gleann nan Caorann between north-western boundary of the National Park and near Inverarnan.	7km
YW.2 Inverarnan	Double-circuit steel lattice tower line runs south-east from Inverarnan substation at the northern end of Loch Lomond to the ridge overlooking Glen Gyle.	3.5km
YW.3 Glen Gyle	Double-circuit steel lattice tower line through the remote glen of Glen Gyle to the north-western end of Loch Katrine.	4.9km
YW.4 Stronachlachar, Loch Katrine	Double-circuit steel lattice tower line which contours the north-western shores of Loch Katrine, past the small settlement of Stronachlachar to Loch Arklet.	8.4km
YW.5 Loch Arklet	Double-circuit steel lattice tower line between the ridge south-east of the head of Loch Arklet, from where the line passes west of Lochan Mhàim nan Carn before heading south towards Gleann Dubh on the eastern flanks of Ben Lomond.	4km

Assessment section	Description	Approximate Length (km)
YW.6 Loch Ard Forest Central	Double-circuit steel lattice tower line which runs south-eastwards through Gleann Dubh into the heart of the Loch Ard Forest before it emerges west of Dalmary near the National Park boundary.	12.5km
YW.7 Loch Ard Forest South	Double-circuit steel lattice tower line traverses the edge of the Loch Ard Forest before ascending onto the Moor Park at the eastern edge of the National Park.	3.5km
YW.8 East of Drymen	Double-circuit steel lattice tower line exits the National Park to the south-east of Drymen close to Endrick Water.	6km
CL/CK.1 Glen Fruin	Two double-circuit steel lattice tower lines through Glen Fruin at the south-western extent of the National Park.	6km
Eildon & Leaderfoot NSA		
Section of AT route crossing Leaderfoot Valley	Single circuit twin heavy duty wood pole and steel lattice tower line crossing the Leaderfoot Valley, within the Eildon & Leaderfoot NSA.	5km
Section of U route north of NSA	Double-circuit steel lattice tower line between Galashiels and Eccles, to the north of the Leaderfoot Valley, and close to the NSA.	8km
Section of V route west of NSA	Double-circuit steel lattice tower line between Galashiels and Hawick, to the west of the Eildon Hills, and close to the NSA.	8km

3.32 The assessment sections within the LLTNP are shown in greater detail on **Figure 3.4a** to **Figure 3.4i**, and those for within or in close proximity to the Eildon & Leaderfoot NSA are shown on **Figure 3.5**.

3.33 In order to understand the likely visibility of the overhead lines and inform fieldwork, Zone of Theoretical Visibility (ZTV) maps were generated. Those within the LLTNP are shown in **Figure 3.6a** to **Figure 3.6i,** and those for within or in close proximity to the Eildon & Leaderfoot NSA are shown on **Figure 3.7**.

4 Designated Landscapes & Baseline

4.1 This section provides information about the designated landscapes which are the subject of the assessment, along with other baseline information which forms the basis for consideration in the landscape and visual impact assessment (LVIA).

Loch Lomond & The Trossachs National Park

Extent and special qualities

4.2 The Loch Lomond and the Trossachs National Park was established in 2002 and covers an area of approximately 1,865 km^2 (720 miles^2) and has a boundary length of 350km (220miles). It includes areas within West Dunbartonshire, Argyll & Bute, Stirling and Perth & Kinross. Infrastructure being considered as part of the Changing the VIEW project is located within Argyll & Bute and Stirling.

4.3 The special qualities of the National Park are set out in a 2010 report[31], this follows an earlier report published by the National Park Authority in 2006[32]. Special landscape qualities are defined in this report as *"the characteristics that, individually or combined, give rise to an area's outstanding scenery".* For the purpose of developing special qualities the National Park was divided into four landscape areas, or 'character zones': Argyll Forest; Loch Lomond; Breadalbane; and The Trossachs. Unlike the 2006 report, the 2010 report focuses on special landscape qualities, defined as *"the qualities of the landscape as a whole"*, and were therefore the most appropriate basis for the evaluation of landscape and visual impacts.

4.4 The special landscape qualities relating to the whole of Loch Lomond and the Trossachs National Park are set out below, alongside those for the landscape areas where SPEN transmission infrastructure is located. There is no SPEN transmission infrastructure in The Trossachs landscape area, as shown on **Figure 4.1**.

General Qualities

- *A world-renowned landscape famed for its rural beauty*
- *Wild and rugged highlands contrasting with pastoral lowlands*
- *Water in its many forms*
- *The rich variety of woodlands*
- *Settlements nestled within a vast natural backdrop*
- *Famous through-routes*
- *Tranquillity*
- *The easily accessible landscape splendour*

Loch Lomond

- *Immensity of loch and landscape*
- *Two lochs in one*

[31] SNH & Loch Lomond and The Trossachs National Park Authority (2010). The special landscape qualities of the Loch Lomond and The Trossachs National Park. SNH Commissioned Report, No.376

[32] Loch Lomond and The Trossachs National Park Authority (2006). An Evaluation of the Special Qualities of Loch Lomond & The Trossachs National Park Technical appendix to the National Park Plan Submitted to Scottish Ministers

- *A multitude of beautiful islands*
- *Distinctive mountain groups*
- *Ben Lomond, widely known, popularly frequented*
- *Banks of broadleaved woodland*
- *Peaceful side glens*

Breadalbane

- *Steep mountains and long glens*
- *Crossroads within remote mountain ranges*
- *A landscape of distinctive glens and straths*
- *The narrow Strathyre and Loch Lubnaig ribbon*
- *Beautiful Balquhidder*
- *Wide and straight Loch Earn*
- *The rocky pass of Glen Ogle*
- *Killin and the Falls of Dochart*
- *Expansive Glen Dochart*
- *Wide Strath Fillan*
- *Sinuous Glen Falloch*

The Trossachs

- *A traditional 'Gateway to the Highlands'*
- *A harmonious concentration of lochs, woods and hills*
- *Rugged Ben Venue, the centrepiece of the Trossachs*
- *Loch Katrine, the 'Queen of the Trossachs'*
- *A landscape of beautiful lochs*
- *The romance of the Trossachs*
- *The resort of Aberfoyle and the Duke's Pass*
- *The curious wooded hillocks of Aberfoyle*
- *The gateway town of Callander*
- *The tranquil Lake of Menteith*

Loch Lomond National Scenic Area

4.5 There is extensive overlap between the Loch Lomond landscape area and the boundaries of the Loch Lomond National Scenic Area (NSA) hence, the special qualities of the Loch Lomond NSA equate to the qualities of the Loch Lomond landscape area above. Special qualities are not separately defined for this NSA.

The Trossachs National Scenic Area

4.6 In contrast, The Trossachs NSA is significantly smaller than the Trossachs landscape area referenced within the special qualities below. Therefore the qualities of the Trossachs landscape area above will not necessarily apply to the area contained within the designated NSA, including those relating to Lochs Ard, Chon and Arklet, Aberfoyle, Callander, and the Lake of Menteith. Special qualities are not separately defined for this NSA.

Eildon & Leaderfoot NSA

Extent and special qualities

4.7 The Eildon & Leaderfoot NSA is one of two NSAs found in the Scottish Borders, it is centred on the historic Borders town of Melrose and includes the trio of volcanic Eildon Hills which form a key focal point from locations across the NSA including the Tweed and Leader Valleys which meet east of Melrose, and dominate a wider area of the Borders landscape. The famous Scott's View above Dryburgh offers an ideal vantage to appreciate the whole of the NSA.

4.8 The NSA comprises a number of uniform hills enclosing the Tweed and Leader rivers, which are often incised and enclosed by woodland, with a mixed land use of arable, pasture, plantation and moorland, and a settlement pattern that still bears a scale and form closely related to the topography.

4.9 The NSA is also the meeting point of three Regional Landscape Areas: the Tweed Lowlands, the Lammermuir and Moorfoot Hills, and the Central Southern Uplands.

4.10 The special qualities relating to the whole of the Eildon & Leaderfoot NSA are as follows:

- *Great landscape diversity within a compact area*
- *The distinctive triad of the Eildon Hills*
- *Spectacular views from the hill summits*
- *A strongly united landscape pattern of lively rhythm and colour*
- *A richly wooded scene of great variety*
- *The Tweed, an iconic river of international renown*
- *A rich array of historic buildings, structures and estates*
- *The hub of Border settlement*
- *A harmonious and varied prospect from unequalled viewpoints*
- *Inspiration for the arts, literature and painting*
- *Border country ballads and battles*
- *The historic crossings of Leaderfoot*
- *Scott's View*
- *The Wallace Statue*

Landscape Character

4.11 The landscape character of the Loch Lomond & The Trossachs National Park is described and classified in the *Loch Lomond and The Trossachs National Park Landscape Character Assessment*[33], whilst the landscape character of the Eildon & Leaderfoot NSA is described and classified in the *Borders Landscape Assessment*[34].

4.12 This describes and classifies the landscape into a number of landscape character types (LCT), which share common characteristics and features, and which are found across the National Park and the Eildon & Leaderfoot NSA. An overview of the LCTs across the LLTNP is shown in **Figure**

[33] Loch Lomond and The Trossachs National Park Landscape Character Assessment (2009) SNH & Loch Lomond and The Trossachs National Park. SNH Review 140.
[34] The Borders Landscape Assessment (1998) Ash Consulting Group. SNH Review 112.

4.2, and these are illustrated in greater detail in **Figure 4.3a** to **Figure 4.3i**. The LCTs across the Eildon & Leaderfoot NSA are shown in **Figure 4.4**.

Wild Land Areas (WLAs)

4.13 Wild Land Areas (WLA) are defined by Scottish Natural Heritage, as the most extensive areas of high wildness. They are identified as nationally important in Scottish Planning Policy, but are not a statutory designation. Wildness is determined through analysis of four physical attributes: perceived naturalness; rugged or challenging terrain; remoteness from public mechanised access; and visible lack of built development and other modern artefacts.

4.14 The following WLAs were considered within the study of transmission infrastructure within the Loch Lomond and The Trossachs National Park and are shown on **Figure 4.5**:

- Ben Lui (6); and
- Ben More – Ben Ledi (7).

4.15 No WLAs are located within 10km of the Eildon & Leaderfoot NSA and have therefore not been considered in the study for this area.

Other designations

4.16 Although the focus of the Changing the VIEW initiative is necessarily on the landscape and visual amenity of the LLTNP and the Eildon & Leaderfoot NSA, it is recognised that other designations can contribute to the value placed on landscape and views. Other designations covering the LLTNP are shown on **Figure 4.6a** to **Figure 4.6**, whilst those covering the Eildon & Leaderfoot NSA are shown on **Figure 4.7**:

- Scheduled Monuments (SMs);
- Listed buildings;
- Sites of Special Scientific Interest (SSSIs);
- Special Areas of Conservation (SACs);
- Special Protection Areas (SPAs);
- National Nature Reserves (NNRs);
- Inventory of Ancient Woodland; and
- Inventory of Gardens and Designed Landscapes (GDLs).

5 Assessment of Impacts

Introduction

5.1 Detailed assessment of each of the sections of transmission infrastructure included in the project was undertaken to establish the landscape and visual impacts associated with the pre-existing infrastructure. This was informed by a process of desk and field based assessment as outlined in **Section 3** of this report and described below.

Initial Field Visit

5.2 An initial site visit was undertaken on Monday, 22nd December 2014 to field-test the approach and carry out an initial evaluation of the landscape and visual impacts of transmission lines on the Loch Lomond and The Trossachs National Park. Due to access and time constraints, only the Sections 2, 4, 5, 7 and 8 of the Cruachan – Windyhill (YW Route) transmission line were surveyed. However the entirety of the Sloy – Windyhill (CL Route and CK Route) which lies within the National Park through Glen Fruin was surveyed. The other sections of the Cruachan – Windyhill (YW Route) transmission line were initially evaluated based on OS mapping, aerial imagery, computer-generated zones of theoretical visibility, and photography available on-line.

Detailed Field Surveys

5.3 Detailed fieldwork to undertake the assessment of landscape and visual impacts was carried out during July, August and September 2016 by Chartered Landscape Architects from LUC's Edinburgh and Glasgow offices, working in teams of two.

5.4 The detailed survey work included an assessment of the landscape and visual impacts associated with each section of pre-existing transmission infrastructure using the detailed LVIA methodology outlined in **Appendix 1** found in the **Stage 1 & 2 Report Appendices**, and included an initial judgement on the importance of the impact, and consideration of potential mitigation measures which may be implemented to remove or reduce the impacts, or alternatively re-focus the views of receptors.

Reporting of Impacts

5.5 Following completion of detailed field surveys, follow up reporting was completed for each component of transmission infrastructure being considered. The landscape and visual impacts identified, including the relevant importance of the impacts, are summarised below and should be read in conjunction with the detailed assessment field survey forms included in **Appendix 2** found in the **Stage 1 & 2 Report Appendices** which accompanies this report.

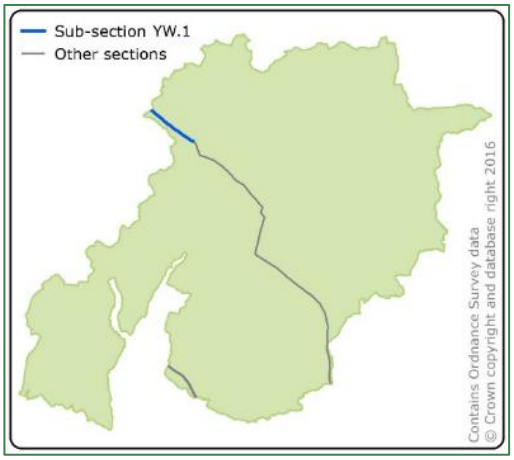
Assessment summaries

5.6 The following sections provide summaries of landscape context, landscape impact and visual impact for each of the assessment sections. These are drawn from the detailed LVIA survey sheets presented in **Appendix 2** found in the **Stage 1 & 2 Report Appendices**.

Loch Lomond & The Trossachs National Park

YW.1 Gleann nan Caorann

View from access track through Gleann nan Caorann



Location of section within the LLTNP

Landscape and Visual context

5.7 This section of line runs between Troisgeach Bheag, a rugged summit above Inverarnan (at the northern end of Loch Lomond), north-west along the upper sides of Gleann nan Caorann to the edge of the LLTNP boundary south of the Munro Ben Lui (1130 m AOD). The line passes along the upper sides of the glen in a relatively straight line, crossing heather moorland and semi-natural grassland, and also semi-natural woodland at the south-eastern end of the section. The area is remote, and accessible only via farm / transmission line access tracks. Sheep and cattle graze the slopes.

5.8 The transmission line continues north-westwards out of the National Park through coniferous forestry plantations east of Dalmally before contouring around the northern shores of Loch Awe to Cruachan Hydro power station beneath the slopes of Ben Cruachan at the eastern end of the Pass of Brander.

Summary of landscape impacts

5.9 This section of the line is generally well accommodated due to the large scale nature of the landscape and simple land cover of moorland. In the vicinity of Troisgeach Bheag the pylons are on more elevated ground and are incongruous with the skyline formed by rocky hill slopes. However, the pylons detract from the overall sense of wilderness and remoteness within the glen, and the surrounding WLA, although it is noted that other man-made elements are present in the glen e.g. tracks, hydro-electric infrastructure and some forestry.

Overall assessment of landscape impact: **High**

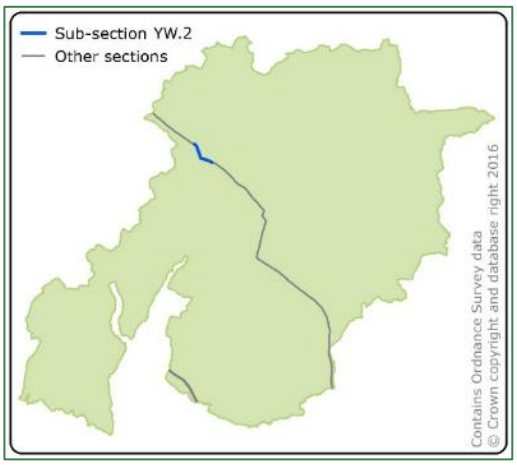
Summary of visual impacts

5.10 This section of line is visible in close proximity views from the track which runs alongside in parallel for most of its length, where it has a high visual impact resulting from proximity and numbers of pylons visible, however few walkers are believed to use this route in comparison to other well frequented hill paths to the surrounding summits. There is also visibility from nearby summits including Ben Lui, a Munro, where the pylons are seen predominantly against a moorland backcloth, decreasing in perceptibility at ever increasing distances.

Overall assessment of visual impact: **Moderate**

YW.2 Inverarnan

View from the floor of the glen near Beinglas Campsite.



Location of section within the LLTNP

Landscape and Visual context

5.11 The 275kV transmission line crosses the southern end of Glen Falloch, a dramatic, steep sided upland glen between elevated summits, with waterfalls cascading to the glen floor. The line falls from approximately 380 m AOD on the eastern side of the glen, to 10m AOD in the glen floor, and rises again to approximately 250 m AOD on the western side of the glen at Troisgeach Bheag. The line crosses rugged rocky slopes and moorland on the glen sides, and pasture, broadleaved woodland, the River Falloch and A82 trunk route on the lower glen sides and glen floor. Other infrastructure including the SHE Transmission line and telegraph wood poles cross the glen.

Summary of landscape impacts

5.12 The line crosses the dramatic lower end of Glen Falloch, north of Loch Lomond. The scale of the pylons is generally accommodated within the large scale glen, particularly those on the settled glen floor which contains small settlements and the A82 road corridor along the River Falloch. When ascending the eastern slopes of the glen and crossing the dramatic rocky ridges containing t the pylons are more visible and incongruous with the wild and remote qualities that extend into the mountainous upland areas, away from the settled glens.

Overall assessment of landscape impact: **Moderate**

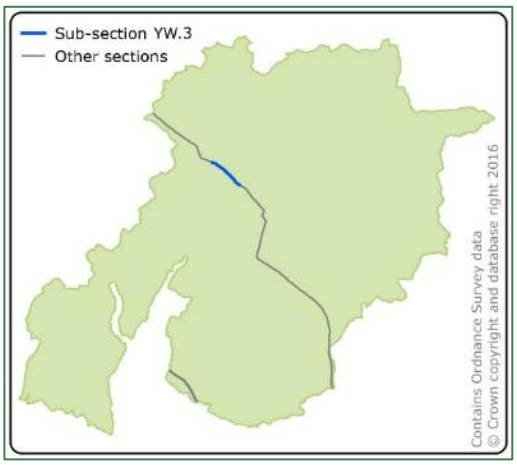
Summary of visual impacts

5.13 This section of line is better accommodated in the settled glen floor, where it appears in scale with other elements such as trees and farmsteads, and views of the overhead line are often contained by the wooded steep sides of the glen, although some visual conflicts occur, particularly with the 132 kV line. On the rugged ridges above the glen the pylons diminish the scale of the hills and detract from the scenic backdrop to the glen.

Overall assessment of visual impact: **Moderate**

YW.3 Glen Gyle

View from Core Path within Glen Gyle



Location of section within the LLTNP

Landscape and Visual context

5.14 This section of line runs in a north-west to south-east direction through the upland glen of Glen Gyle, a dramatic, steep sided glen enclosed by the rugged peaks of Meall Mor, Beinn a Choin and Beinn Ducteach, located to the east of Loch Lomond. The subsection starts between the peaks of Ben Glas and Cruach, high above the eastern side of Glen Falloch and the village of Inverarnan at 390m AOD, the line then runs for 120m along an upland plateau of moorland before heading down Glen Gyle, running in parallel with the Glengyle Water. This section finishes within the lower part of the glen leading into YW.4 at approximately 160m AOD at the western end of Loch Katrine. The upper part of the glen is relatively remote and accessible only via maintenance track, which is also a core path. Sheep extensively graze the slopes.

Summary of landscape impacts

5.15 In terms of scale, the pylons are generally well accommodated within this large scale landscape, particularly where the pylons are sited on lower slopes and backclothed by the rugged hills that enclose the glen. Although, where sited on higher ground in the upper part of the glen, the pylons conflict with the distinctive backdrop of the surrounding hills. These man-made structures substantially detract from the overall sense of remoteness and wilderness which would otherwise be experienced in the area. Consequently, the line has an adverse impact on the Ben More - Ben Ledi Wild Land Area. The geographic extent of this impact is relatively contained within the glen, although views from adjacent hill summits and ridges within the WLA are possible.

Overall assessment of landscape impact: **High**

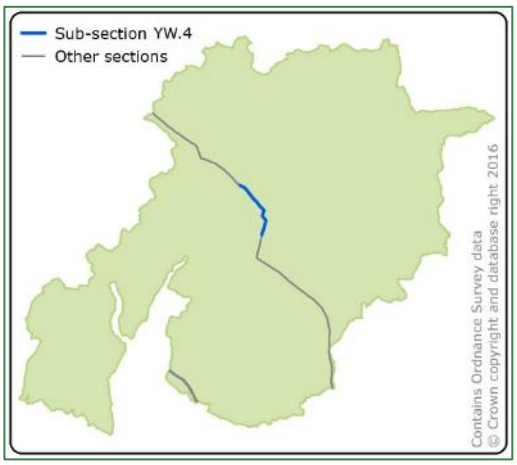
Summary of visual impacts

5.16 This section of line is visible in close proximity views from the track (also a core path), which runs alongside the overhead line for most of its length, and has a high visual impact resulting from the proximity of the line and the numbers of pylons visible as receptors travel sequentially in parallel to the line. There is also visibility from nearby hill summits including Ben Glas where the pylons will be visible mainly at a lower elevation against a moorland backcloth, apart from where they pass over the ridge at the head of Glen Gyle before descending westwards towards Inverarnan.

Overall assessment of visual impact: **High**

YW.4 Stronachlachar, Loch Katrine

View from Stronachlachar Pier, Loch Katrine



Location of section within the LLTNP

Landscape and Visual context

5.17 This section of the 275kV line passes along the steep side slopes above the north western edge of Loch Katrine between Glen Gyle and the small settlement of Stronachlachar, where it runs parallel to the Great Trossachs Path which skirts the western edge of the loch. Semi-natural and ancient woodland fringes the shores of the loch. The line crosses high ground above Stronachlachar before heading south towards Loch Ard Forest, passing an aqueduct outlet waterfall and crossing the B829 where it climbs the slopes to the south, south-east of Loch Arklet.

Summary of landscape impacts

5.18 The pylons diminish the scale of the hills, particularly close to Stronachlachar. The pylons are notable elements in an otherwise naturalistic landscape of lochs fringed with woodland and backclothed by rugged hills. The impacts are relatively localised to the western end of Loch Katrine, where the pylons detract from the key characteristics and Special Qualities attributed to and exhibited in this area of Loch Katrine. The pylons affect the setting of some features of industrial heritage such as the aqueduct outlet waterfall south of Stronachlachar, and landscape features such as the rugged low hills around Stronachlachar, whilst the towers in close proximity to the B829 at the head of Loch Arklet form a key feature when emerging from the Loch Ard Forest to the south.

Overall assessment of landscape impact: **High**

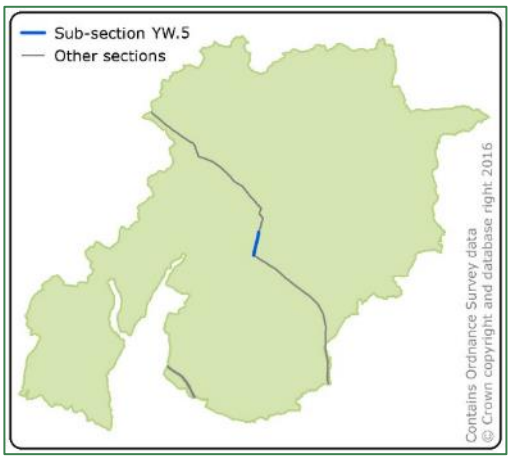
Summary of visual impacts

5.19 Close views of the pylons within this section of the line are available to sensitive receptors, including recreational users of the Great Trossachs Path, receptors on the Sir Walter Scott steamboat, residential receptors on the western shores of the loch and other visitors to this key tourist destination within the LLTNP. The pylons are sited on the rugged slopes above the loch, contouring around the headland near Stronachlachar and appear out of scale with other landscape elements e.g. houses and woodland. To the south, along Loch Arklet visibility reduces with distance and the pylons do not detract from key views west across the loch and to the Arrochar Alps which form the skyline beyond, however towers are often prominent in views from the B829 as it passes beneath the line at the head of Loch Arklet.

Overall assessment of visual impact: **High**

YW.5 Loch Arklet

View from the B829 at northern end of line section



Location of section within the LLTNP

Landscape and Visual context

5.20 This section of the 275kV line passes south, south-westwards from close to the B829 south-east of the head of Loch Arklet. The line passes over a dip in the ridge between Beinn Uamha to the west and Stùc Gille Chonnuill to the east, contouring around the west of Lochan Mhàim nan Carn. The line then runs broadly parallel with the B829 and Loch Chon across open moorland/rough grazing to the west of the Loch Ard Forest, where it meets the remains of the derelict settlement of Cromer at the head of Gleann Dubh. From here the line heads south-east along the glen, before entering Loch Ard Forest.

Summary of landscape impacts

5.21 The towers at the northern end of this section of transmission line are notable feature in the landscape as receptors emerge from the forested area to the south, into the more rugged upland landscape of open character. Views to the enclosing ridges and distant hills become a feature of the landscape through which the line passes, however the presence of the line is only evident at this northern extent close to the B829 where its presence, along with the towers of the adjacent YW.4 section, seems somewhat out of place with the character of the wider landscape. The impacts are relatively localised to the northern end of this section of line, where the pylons detract from the key characteristics and Special Qualities exhibited in this area.

Overall assessment of landscape impact: **Moderate**

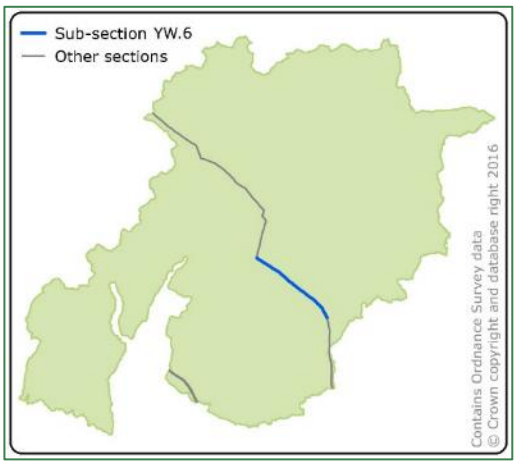
Summary of visual impacts

5.22 Close proximity views of towers experienced by a relatively large number of sensitive receptors are often quite fleeting, limited to views when travelling north and south on the B829 and in views from the Great Trossachs Path on the north side of Loch Arklet. The towers at the northern end of this section of line appear skylined as they pass over the ridge south-east of Loch Arklet, often silhouetted against the sky in views south from Loch Arklet, the Great Trossachs Path and the B829. Receptors emerging from the Loch Ard Forest when travelling along the B829 from the south are generally focused on the views across Loch Arklet towards the Arrochar Alps which form the skyline beyond to the west, however visibility of the towers of YW.4 are a key feature in the available view.

Overall assessment of visual impact: **Moderate**

YW.6 Loch Ard Forest Central

View from forestry access track through Gleann Dubh



Location of section within the LLTNP

Landscape and Visual context

5.23 This section of the line crosses the Loch Ard Forest, a rolling, forested plateau crossed by small burns e.g. the Duchray Water. The forest is relatively inaccessible, except for forestry / water board tracks and mountain biking trails. There are some areas of semi-natural and planted broadleaved woodland e.g. Blairvaich Wood, and some heather moorland. The forest has a rugged backdrop of hills to the south and west, including Beinn Bhreac (579 m AOD) and Ben Lomond (974 m AOD). The Rob Roy Way crosses under the line south of Drum of Clashmore at the south-eastern end of the section.

Summary of landscape impacts

5.24 Landscape impacts are more pronounced in the north-west, where the pylons appear out of scale with the coniferous plantation and diminish the scale of the rugged backdrop of hills including Ben Lomond. Landmark hills are a key characteristic of the area. In the south-east the pylons appear out of scale with landscape features such as the aqueducts and the small scale knolls and ridges, but are sited lower within the forest and are therefore better integrated.

Overall assessment of landscape impact: **Moderate**

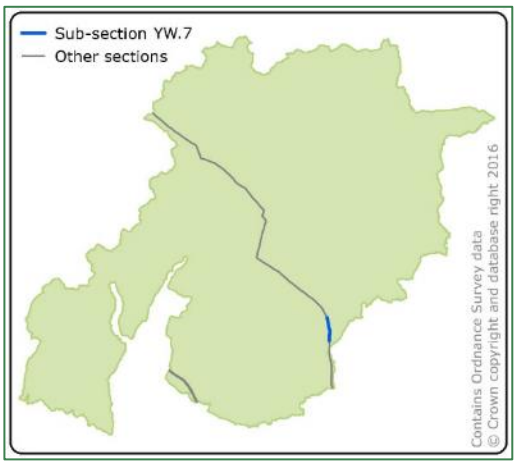
Summary of visual impacts

5.25 In the south-east views of this section of line are restricted to glimpsed views from the forest tracks, some of which are close as the line crosses over the track in places. Otherwise the forestry provides effective screening of the line. In the north-west the forest track is more elevated and the forest structure more open, so prolonged views of the overhead line are available. This section of overhead line, and often importantly its linear wayleave, detracts from views to and from Ben Lomond, particularly when the track is on the north side of the overhead line.

Overall assessment of visual impact: **Moderate**

YW.7 Loch Ard Forest South

View from route of Rob Roy Way at eastern extent of forest



Location of section within the LLTNP

Landscape and Visual context

5.26 This section of line begins on the elevated moorland ridge between Green Hill (270 m AOD) and Bàt a' Charchel (230 m AOD), before dropping down through the fringes of the Loch Ard Forest into a small scale farmed area in the vicinity of Corrie. The line crosses part of the Rob Roy Way (forest track) at the southern edge of the clearing. This section ends at the Kelty Water, a burn on the northern edge of the clearing. Dramatic, rugged backdrop of hills to the north including the Menteith Hills and Ben Ledi.

Summary of landscape impacts

5.27 This section of line crosses an elevated area of forest between Green Hill and Corrie, where the pylons appear in keeping with the large scale moorland and often densely forested landscape. It is where they cross the smaller scale farmed landscape of the Parallel Ridges LCT that the pylons appear to dominate the landscape, and detract from the rugged upland backdrop to the landscape. Only a small, visually contained area is affected.

Overall assessment of landscape impact: **Moderate**

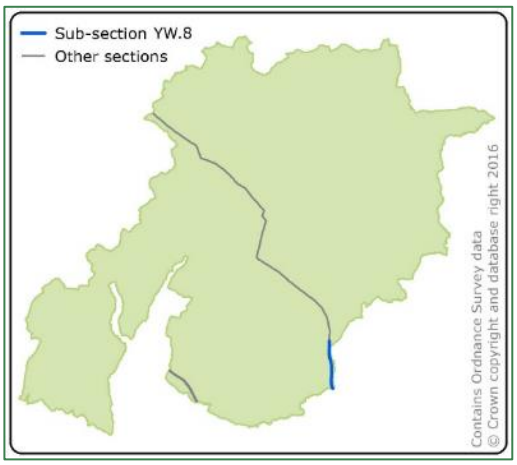
Summary of visual impacts

5.28 This section of the line crosses the Rob Roy Way and NCR7, therefore close views are available to a relatively large number of high sensitivity recreational visitors to the National Park. The overhead line detracts from the small scale wooded hills and rugged upland backdrop for a short section (c. 2 km). The section of overhead line and its linear wayleave often appears as a large and dominant feature in views from the route of the Rob Roy Way at the eastern extent for the Loch Ard Forest. Other than a small number of residential properties located in close proximity to the overhead line at the eastern extent of the forest there are few visual receptors in this area which is only accessible via forest tracks and largely contained by forestry.

Overall assessment of visual impact: **High**

YW.8 East of Drymen

View from Rob Roy Way & NCR7 east of Moor Park



Location of section within the LLTNP

Landscape and Visual context

5.29 This most southerly section of the 275kV line starts west of Upper Gartness where the line crosses a minor road (part of the West Highland Way and John Muir Way) into the LLTNP boundary. The line runs parallel with the LLTNP boundary across rolling farmland and narrow wooded valleys for approximately 2 km, before it crosses the A811 / Old Military Road. From here the line crosses through farmland on the edge of coniferous forestry (some recently felled). The line crosses briefly out of the LLTNP south of Muir Park Reservoir, before passing over a minor road (part of the Rob Roy Way / National Cycle Route 7). This section finishes on the ridge line between Green Hill (270 m AOD) and Bàt a' Charchel (230 m AOD).

Summary of landscape impacts

5.30 This section of line crosses an elevated area of forest between Green Hill and Corrie, where the pylons appear in keeping with the large scale moorland and often densely forested landscape. It is where they cross the smaller scale farmed landscape of the Parallel Ridges LCT that the pylons appear to dominate the landscape, and detract from the rugged upland backdrop to the landscape. Only a small, visually contained area is affected.

Overall assessment of landscape impact: **Moderate**

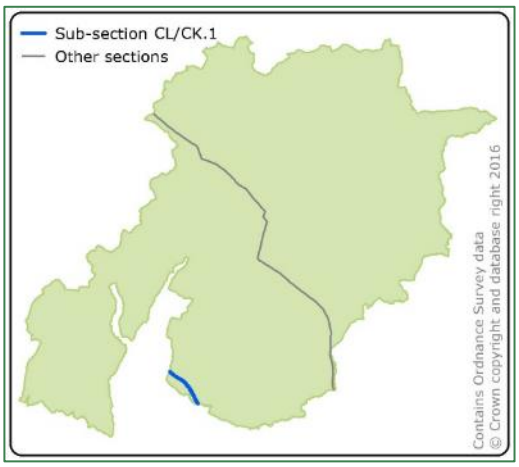
Summary of visual impacts

5.31 This section of overhead line has a widespread visual influence in this section, with the network of roads and farm tracks providing some very close views, including from the Rob Roy Way, West Highland Way and John Muir Way, and National Cycle Route 7. These are popular walking and cycling routes which offer some prolonged views of the overhead line to a large numbers of receptors who may be entering or leaving the National Park at what is an unofficial gateway through which many access the park, particularly in the open moorland areas in the vicinity of Moor Park. The area acts as a gateway to the National Park when approaching from the east, and the overhead line is also visible to receptors travelling on the A811, the main route into the National Park from the south. The overhead line is also visible from a number of residential properties and farmsteads in close proximity, to the east of Drymen.

Overall assessment of visual impact: **High**

CL/CK.1 Glen Fruin

View from route of Three Lochs Way through Glen Fruin



Location of section within the LLTNP

Landscape and Visual context

5.32 These two steel lattice tower parallel lines runs through the southern edge of the LLTNP at Glen Fruin – a broad valley with a flat floodplain rising to low hills, which are higher to the north. A minor road providing access to local farmsteads runs along the valley floor, parallel to the meandering Fruin Water. The A817 also runs through the glen, on the upper valley sides. The line crosses pastoral fields enclosed by dry stone walls, with traditional farm buildings and scattered mature broadleaved trees. The skirts the edge of two straight edged conifer plantations at its north western end.

Summary of landscape impacts

5.33 Glen Fruin is an intact farmed upland glen, but does not display many of the special qualities of the wider National Park. The lines are well integrated with the farmed and forested landscape, matching the scale of nearby conifer plantations and groups of mature trees around farmsteads. The lines do however form a key linear feature within the glen.

Overall assessment of landscape impact: **Moderate**

Summary of visual impacts

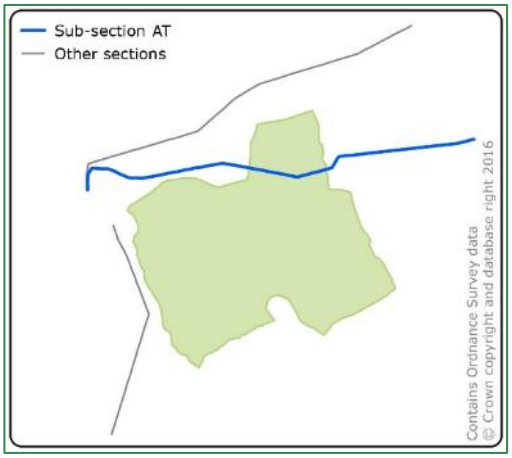
5.34 This section of parallel line is highly visible from the majority of the glen, which is broad, straight and open. Visual receptors include local farmsteads, users of the minor road and A817, and recreational users of the Three Lochs Way. The line is better integrated in the west, with some skylining and stacking occurring in the east, however when moving through the Glen Fruin the parallel overhead lines form a key focal feature in transient views.

Overall assessment of visual impact: **High**

Eildon & Leaderfoot NSA

AT / U / V Leaderfoot Valley

View beneath the 132kV OHL (AT route) towards the Eildon Hills from east of the Leader Water Valley.



Location of section within the NSA

Landscape and Visual context

5.35 Three overhead lines have been considered in the assessment of the Eildon & Leaderfoot NSA, one section of 132kV overhead line crosses the valley of the Leader Water in the north of the National Scenic Area (NSA) carried predominantly on twin heavy duty wood poles, with steel lattice angle towers. A further two steel lattice 132kV overhead lines are located in proximity to the NSA, running parallel with the northern (U route) and western (V route) boundaries. The valley of the Leader Water is contained by deciduous woodland with geometric blocks of coniferous woodland and enclosed farmland creating a relatively intimate scale landscape. The conical shaped landmarks of the Eildon Hills form the key focal point of views within and to the NSA, and offer long distance views of the two lines located outside the NSA boundary.

Summary of landscape impacts

5.36 The low vertical scale of the heavy duty wood pole and steel lattice angle tower infrastructure of the AT line, which crosses the Leader Water valley within the north of the NSA, is generally well contained within the intimate farmland and valley landscape through which it passes, rarely appearing larger in vertical scale than the . The larger steel lattice towers of the U route and V route overhead lines have a greater influence on the surrounding landscape, including areas within the NSA. The towers of V route which pass close to the western boundary of the NSA form a key vertical feature in views from the Eildon Hills landscape character area and alter the setting of this part of the NSA, to some extent diminishing the setting and scale of the hills in views into the this area of the NSA landscape.

Overall assessment of landscape impact: **Moderate**

Summary of visual impacts

5.37 Views of the overhead lines within and in close proximity to the NSA are generally limited to those experienced from routes and locations at the periphery of the NSA. No or very limited visibility of the overhead lines is possible from key locations listed in the NSA Special Qualities such as Scott's View or the Wallace Statue. Views from long distance footpaths such as the Southern Upland Way to the north of the NSA and the St Cuthbert's Way and Borders Abbey Way are limited to short sections or views experienced at some distance. Views are possible of the AT route from the network of Core Paths which cross the northern area of the NSA. The A68 runs perpendicular to the overhead line west of the Leader Water, from where glimpsed views of the line are possible as it crosses the valley. Longer distance views of the lines outside the NSA are possible from the

summits of the Eildon Hills, where the lines often appear as minor elements in the view, however from the key summits within the Eildon Hills the towers of V route west of the NSA appear skylined above the underlying farmland landscape and interrupt views towards the Moorfoot Hills which are otherwise unaffected by vertical built development.

Overall assessment of visual impact: **Moderate**

Summary of Landscape and Visual Impacts

5.38 The overall summaries of the importance assessed for landscape and visual impacts in relation to each line section are summarised in **Table 5.1** below.

5.39 The importance of the impacts was assessed on a scale of *low – moderate – high – very high*. No impacts of very high importance were recorded for any of the SPEN infrastructure located within the Loch Lomond & The Trossachs National Park or the Eildon & Leaderfoot NSA. With the exception of the 275kV overhead line between Cruachan and Windyhill, all of the SPEN transmission infrastructure considered is 132kV carried on steel lattice towers or wood poles of less than 30m in height. This assessment also indicates that, on balance, the pre-existing overhead lines are well-routed through what are often complex and challenging landscapes, generally adhering with the broad principles of the Holford Rules[35].

5.40 Two sections of the 275kV overhead line were identified where both landscape and visual impacts were accorded high importance. These are:

- **YW.3 Glen Gyle**, the large 275kV overhead line passes through the Ben More – Ben Ledi Wild Land Area, conflicts with the perceived remoteness and wilderness and appears as the only man-made built feature within this upland landscape; and
- **YW. 4 Stronachlachar, Loch Katrine**, the presence of the 275kV overhead line to the north and west of the small settlement of Stronachlachar alongside Loch Katrine dwarfs the scale of the adjacent hills and dominates views from key tourist attractions and viewpoints.

5.41 Due to the scale and nature of the 275kV infrastructure associated with the above sections, it is not unusual to expect landscape and visual impacts of this nature.

5.42 Five other sections were identified as having landscape or visual impacts of high importance, and include:

- **YW.1 Gleann nan Caorann**, a high landscape impact where the 275kV overhead line passes through the upland landscape of the Ben Lui Wild Land Area, contrasting with the remote and wild perceptual characteristics of the landscape, and along with the accompanying access/maintenance track appear as the only man-made built features in this landscape.
- **YW.6 & YW.7 Loch Ard Forest Central and South**, high visual impact overall for these sections of the 275kV overhead line, where views of the western extents of the line and its geometric wayleave are possible from Ben Lomond, and where the eastern extent of the line crosses the Rob Roy Way and National Cycle Route;
- **YW.8 East of Drymen**, a high visual impact is recorded where the large towers of the 275kV overhead line are located in close proximity to the West Highland Way, Rob Roy Way and John Muir Way long distance footpaths at the south-eastern gateway to the National Park; and

[35] Holford Rules, (1959) Lord Holford, with subsequent updates NGC 1992, SHETL 2003

- **CL/CK.1 Glen Fruin**, a high visual impact is recorded where the parallel 132kV overhead lines pass through the glen close to the route of the Three Lochs Way long distance footpath, where the presence of these two overhead lines often to leads to 'wirescape' effects when seen from many sections of the glen.

5.43 The other sections of transmission infrastructure assessed were judged to have moderate impacts on both landscape and visual receptors, however as outlined in the **Section 2** the assessment of impacts served to allow a comparison to be made of the relative level of impact on landscape and on visual amenity so that consideration can be made of where mitigation should be prioritised.

Table 5.1: Summary of landscape and visual impacts

Infrastructure Assessment Section	Overall Landscape Impact	Overall Visual Impact
Loch Lomond & The Trossachs National Park		
YW.1 Gleann nan Caorann	**High**	**Moderate**
YW.2 Inverarnan	**Moderate**	**Moderate**
YW.3 Glen Gyle	**High**	**High**
YW.4 Stronachlachar, Loch Katrine	**High**	**High**
YW.5 Loch Arklet	**Moderate**	**Moderate**
YW.6 Loch Ard Forest Central	**Moderate**	**Moderate**
YW.7 Loch Ard Forest South	**Moderate**	**High**
YW.8 East of Drymen	**Moderate**	**High**
CL/CK.1 Glen Fruin	**Moderate**	**High**
Eildon & Leaderfoot NSA		
AT / U / V Leaderfoot Valley	**Moderate**	**Moderate**

6 Identification of mitigation options

Examination of potential mitigation options

6.1 Stakeholder engagement and fieldwork generated a large number of ideas for mitigating the impacts of SPEN infrastructure within both the LLTNP and the Eildon & Leaderfoot NSA.

6.2 All resulting ideas were reviewed by LUC and SPEN in line with SPEN's Changing the VIEW policy approach. However, not all potential ideas were suitable to be taken forward as part of the initiative, for a number of reasons. Some suggestions related to distribution infrastructure[36], while others were not directly related to the mitigation of visual impacts, or may through their implementation result in similar landscape and visual impacts (e.g. undergrounding through forested areas to mitigate the impacts associated with an overhead line wayleave). In discussion with SPEN, other ideas were rejected at this stage on the basis of their likely complexity or deliverability, or their potential for adverse operational impacts on the wider transmission network. In some cases the suggested measures were simply not possible.

6.3 The following analysis presents an examination of possible mitigation measures as they apply to each assessment section of transmission infrastructure. Each of these assessment sections is considered in terms of:

- **Impacts of the infrastructure**: the level of landscape and visual impacts recorded, and the 'key issues' or main sources of impact arising from this overhead line section, with regard to the special qualities of the National Park or NSA in question;
- **Potential mitigation**: these are suggestions and ideas gathered from fieldwork and from consultation that have been included here regardless of their potential cost or technical implications. Both hard engineering and soft landscape measures are included; and
- **Mitigation projects to take forward**: noting those projects that were selected, on the basis of the level of mitigation and level of stakeholder support, for further consideration.

The consideration of a landscape led approach to mitigation has been a prominent feature of the consultation. Such an approach may not be as instant and may also lead to a more marginal reduction of any landscape or visual impact. However, this approach is considered more aligned to the qualities of the national park and also reflects Scottish Planning Policy which seeks to *'promote and significantly enhance green infrastructure networks'*[37]. National Planning Framework 3 (NPF3) states that *'mitigation corridors bringing wider benefits to landscape and visual amenity, and which promote green places and active travel are effective options'* [38] in mitigating the impact of transmission infrastructure. In cases where 'soft' landscape mitigation or enhancement options, such as the introduction of tree screening, were suggested, it was considered whether equal or greater mitigation could be delivered by a 'hard' engineering solution, such as undergrounding. In this way the most effective mitigation could be identified for high-impact areas, which were judged to be of greatest priority.

6.4 The mitigation projects which are documented within this section comprise the 'long-list' of potential projects and are summarised at the end of **Section 6**.

[36] Distribution infrastructure in nationally designated landscapes will be subject to a separate SPEN visual mitigation initiative

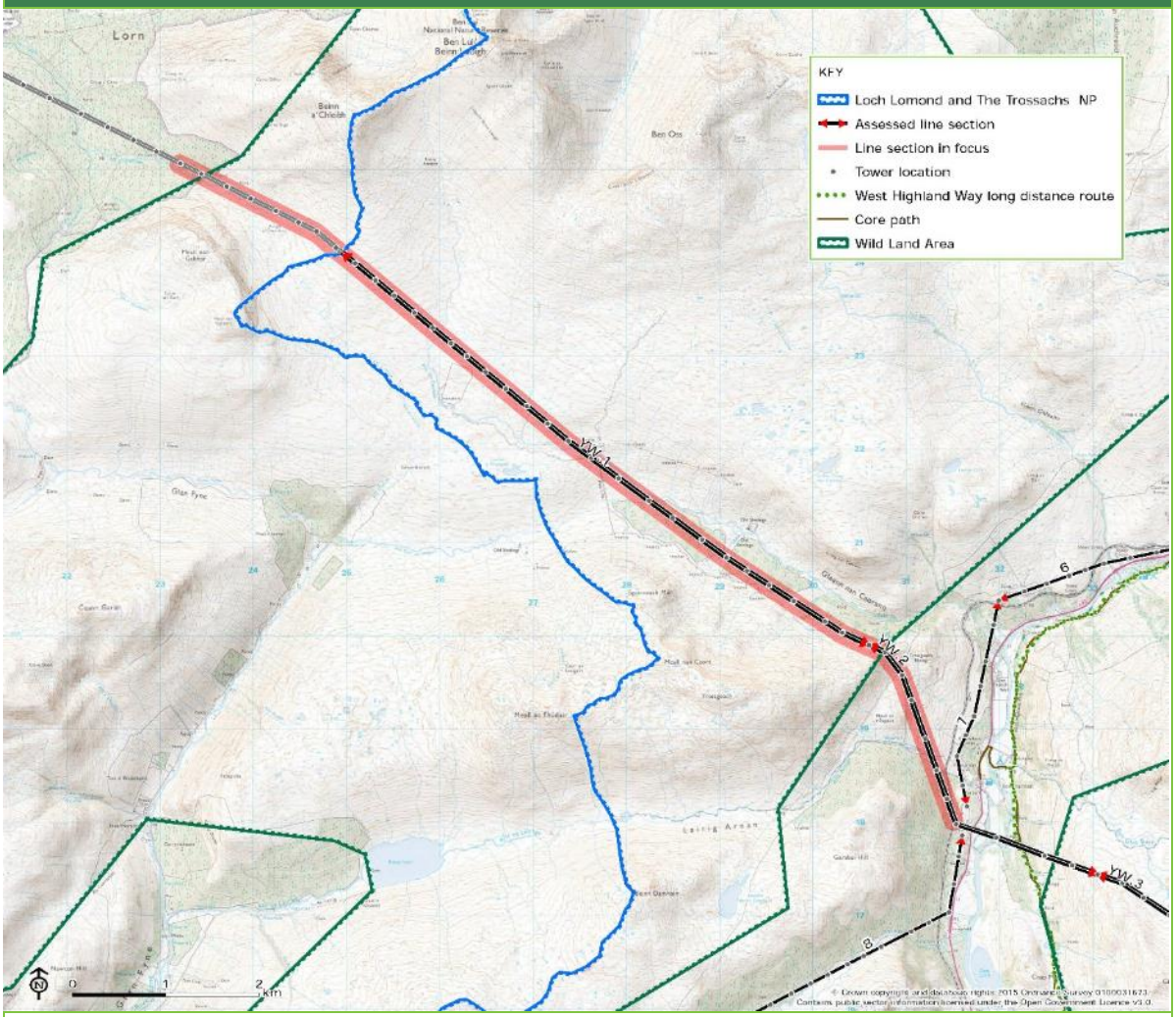
[37] Para. 219, Scottish Planning Policy (SPP), (2014). Scottish Government.

[38] Para. 3.28 – 3.29, National Planning Framework (NPF3), (2014). Scottish Government

SPEN High level technical review

6.5 During the identification of the different potential mitigation options above, SPEN undertook a high level technical review to identify any major technical or economic constraints which may result in a mitigation proposal being unfeasible for implementation. No projects were identified which were either technically or economically unfeasible within the context of the initiative and the available OFGEM funding.

Loch Lomond & The Trossachs National Park

YW.1 Gleann nan Caorann			
			
Area of focus for mitigation within LLTNP			
Impacts of the infrastructure			
Overall landscape impact	**High**	Overall visual impact	**Moderate**

Key issues identified through site work and consultation

- The pylons in the vicinity of Troisgeach Bheag are likely to be visible on the skyline to receptors in the vicinity of Inverarnan and Glen Falloch;
- The presence of infrastructure within the Ben Lui WLA is in juxtaposition with the perceptual qualities expected of this type of remote and rugged landscape, and is key detraction to receptors visiting this landscape; and
- Existing land management processes within this valley may be a key consideration of any mitigation proposals which are potentially developed and implemented in this landscape, which has seen extensive sheep grazing creating an often barren and bleak landcover pattern.

Potential mitigation solutions

The mere presence of the overhead line infrastructure and its accompanying access track in this remote and rugged landscape within the Ben Lui Wild Land Area was judged to be the key driver for potential mitigation. As a result a number of mitigation solutions were identified which would potentially address the landscape and visual impacts. Undergrounding of the existing overhead line was suggested to directly address the visual impact, which would result in the removal of the only large man-made features present in this landscape.

Alternatively, the implementation of extensive landscape enhancement, in the form of widespread tree planting to create areas of native woodland, whilst reducing the visual impact of the overhead lines from key access routes along the glen and neighbouring mountain summits was also suggested during fieldwork and supported by stakeholders.

Re-routeing of the infrastructure out with the wild land area was not judged to be feasible without substantial impacts elsewhere within the National Park, and any alternative realignment of the overhead line within the wild land area would likely result in similar impacts, along with short-medium term impacts occurring through implementation.

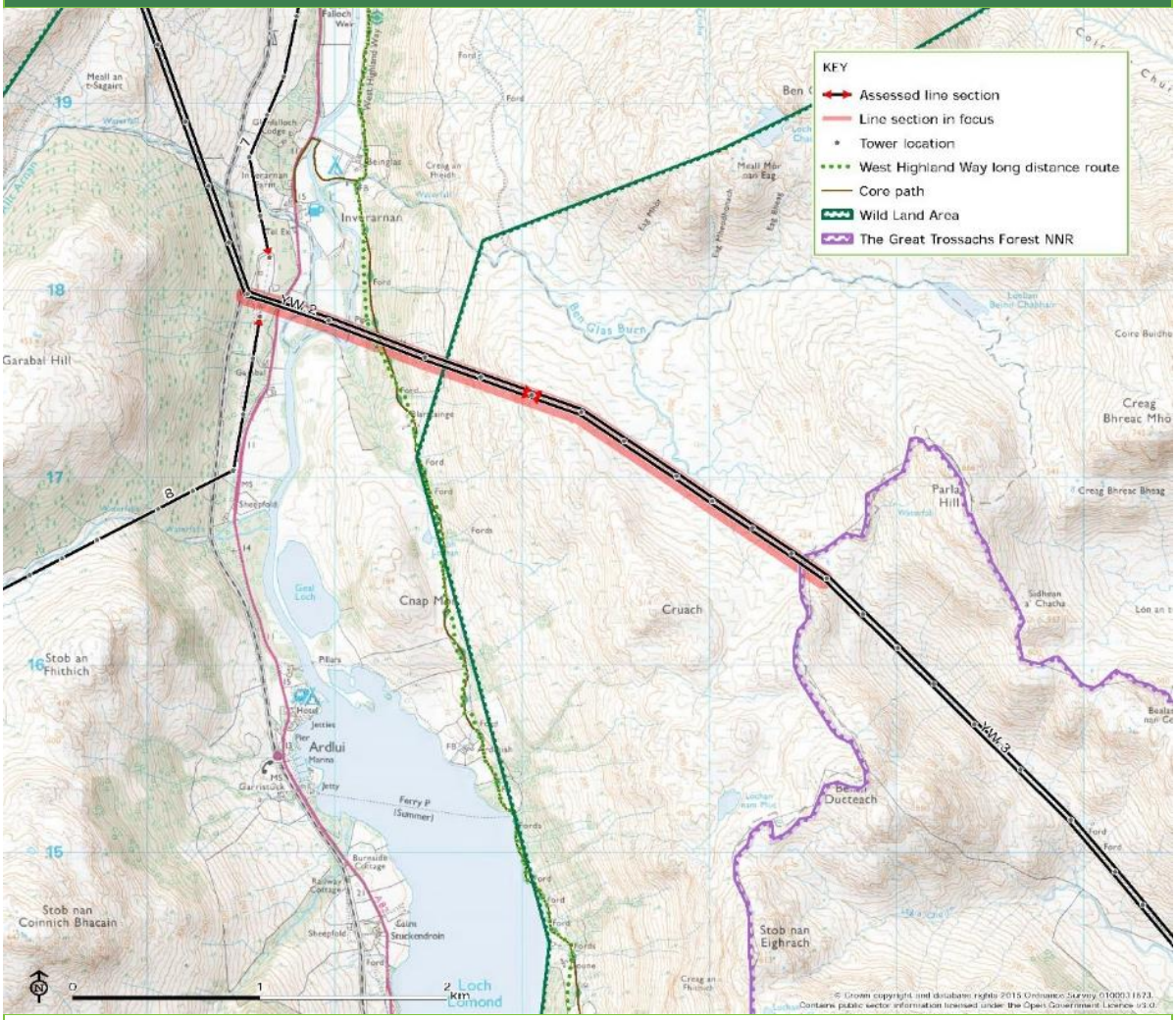
Mitigation projects to take forward

Due to the high level of landscape impact identified in this area, couple with the moderate level of visual impact, this section was identified as a high priority area for mitigation. Although not an area of the National Park which is accessed by a large number of visitors, many of those who visit this area do so to experience the wild land characteristics of the remote landscape, and its Munros hill summits including Ben Lui to the north. Stakeholders were supportive of potential mitigation proposals for this area, especially those which would contribute to the enhancement of the existing landscape and wild land characteristics of the area.

Two potential mitigation projects were taken forward and presented to stakeholders for further consideration in this area:

- **A: Undergrounding** - Undergrounding of 12 km section of overhead line through upper reaches of Gleann nan Caorann south of Ben Lui, from edge of National Park boundary to Inverarnan Substation; and
- **B: Landscape Enhancement** - Extension of planting of native trees (e.g. Scots Pine, Oak and Birch) and regeneration of overgrazed vegetation along the corridor of the overhead line and parallel access track towards the southern footslopes of Ben Lui.

YW.2 Inverarnan



Area of focus for mitigation within LLTNP

Impacts of the infrastructure

Overall landscape impact	**Moderate**	Overall visual impact	**Moderate**

Key issues identified through site work and consultation

- Transmission towers located on the rocky ridges above the glen east of the Great Glen Way appear prominent when observed from within the surrounding landscapes, both within the valley (e.g. from the A82) and from the elevated slopes and summits; and
- The presence of transmission infrastructure within both the Ben Lui WLA and Ben More – Ben Ledi WLA is seen to be at odds with the perceptual qualities of these landscapes.

Potential mitigation solutions

Although only moderate level landscape and visual impacts were identified for this section, due to the location of the infrastructure near an important arterial route through (the A82) and 'honey-pot' area within the National Park it was judged to be of high priority to receive mitigation. The infrastructure is visible to many receptors, and a large number of stakeholders consulted were familiar with the views and impacts of the existing transmission line. As a result, a number of potential mitigation proposals were suggested and discussed throughout the consultation period. Stakeholders at the National Park were particular supportive of taking mitigation projects forward in this area, due to the importance of the A82

through the National Park, and where recent investment has led to new tourism interests in the form of the widely publicised Scenic Routes initiative.

Concerns were also raised in this area in relation to the cumulative interaction with other SHE Transmission infrastructure, including the Inverarnan substation adjacent to the A82. Although this infrastructure is being considered in the SHE Transmission VISTA initiative, a number of stakeholders highlighted the need for potential rationalisation for the transmission network surrounding the Inverarnan substation, and as a result this was a key consideration when determining the progression of this area.

Stakeholders were supportive of a range of potential mitigation proposals in this area ranging from 'hard-engineering' solutions and 'soft' landscape enhancement proposals, as well as more innovative mitigation proposals which include alternative transmission tower design, with an emphasis on sculptural forms which would create a key visual feature of prominent towers on the east side of the glen, and the introduction of new landmark interventions which re-focus views away from the presence of the transmission infrastructure.

Mitigation projects to take forward

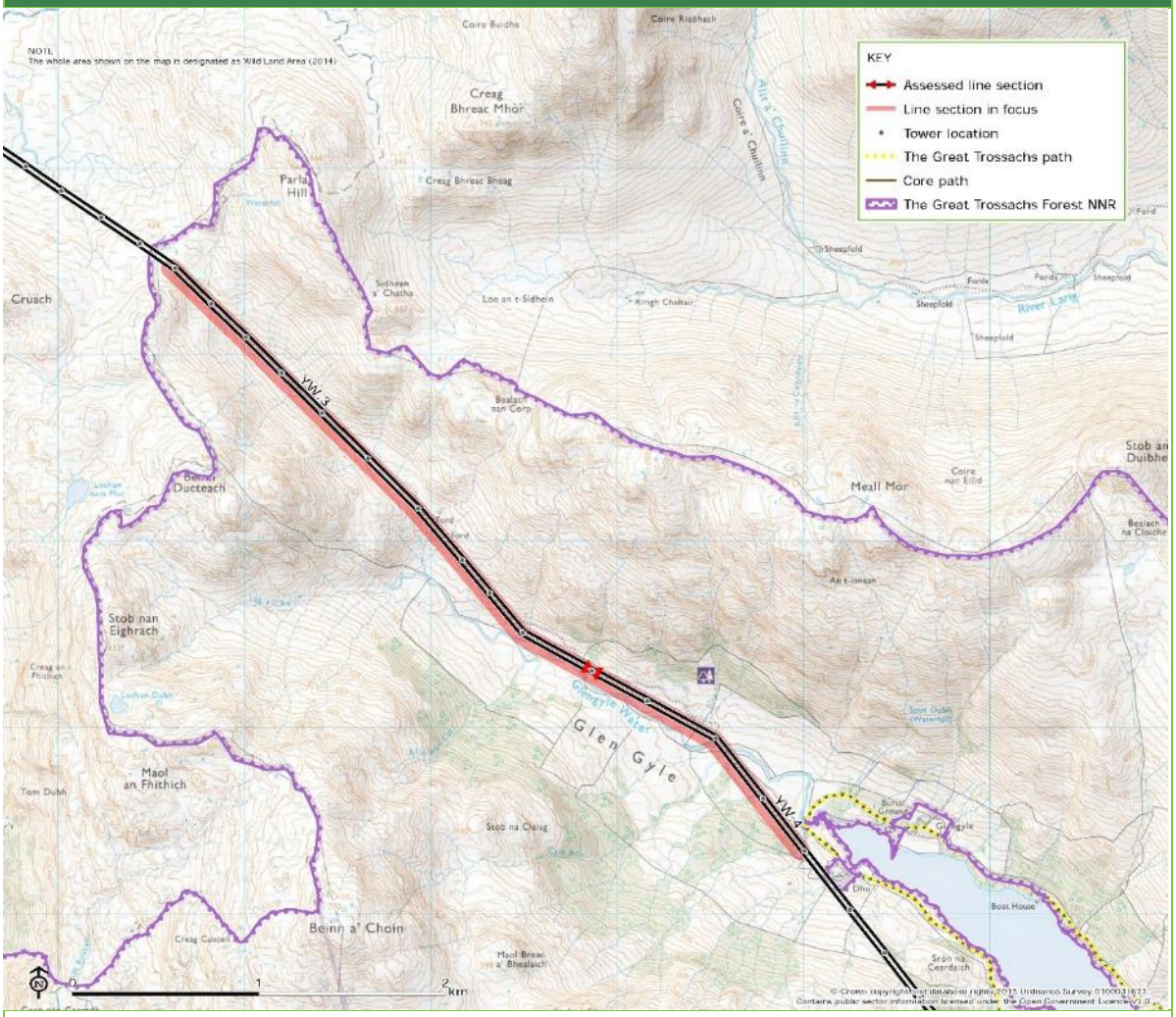
Although initially this area was not identified as a high priority for mitigation, due to the familiar and accessible nature of the surrounding landscape, the large number of potential receptors, and the prominence of the infrastructure in some views highlighted by stakeholders, this section was considered further for mitigation.

There was also stakeholder support for addressing the cumulative effects of the SPEN and SHE Transmission infrastructure in this location. In discussion with SHE Transmission, a number of options were taken forward that could mitigate the impacts of both companies' infrastructure.

Four different potential mitigation projects were taken forward and presented to stakeholders for further consideration in this area:

- **A: Undergrounding** - Undergrounding of 9 km section of overhead line from Inverarnan substation eastwards over the ridge north of Cruach and into Glen Gyle;
- **B: Alternative pylon design** - Alternative/bespoke pylon tower design for overhead line between Inverarnan Substation and the rugged ridge of Cruach to the east (e.g. Icelandic marching men pylon concept design);
- **C: Landscape Enhancement** - Extension of planting of native trees (e.g. Scots Pine, Oak and Birch) and regeneration of overgrazed vegetation along the corridor of the overhead line and parallel access track towards the southern footslopes of Ben Lui (in association with the SHE Transmission infrastructure in this area); and
- **D: New Installation** - Creation of a sculptural incident or installation, in a similar vein and tying into the Scottish Scenic Routes initiative.

YW.3 Glen Gyle



Area of focus for mitigation within LLTNP

Impacts of the infrastructure

Overall landscape impact	**High**	Overall visual impact	**High**

Key issues identified through site work and consultation

- Angle towers are notable in the lower reaches of Glen Gyle where the line runs parallel to Gyle Water avoiding wet ground and landscape features (rocky outcrops and woodland in the glen);
- Presence of the transmission infrastructure within the WLA appears at odds with the perceptual qualities expected of this landscape, especially when seen in the upland context from the Munro summits and connecting ridges, and detract from the sense of remoteness and wildness; and
- Occasionally the transmission towers located on the ridge/watershed at the head of Glen Gyle are seen against the skyline, often in close proximity views and from areas of lower ground. When seen from higher ground, including the Munro summits to the north, the towers are seen backclothed and appear less perceptible.

Potential mitigation solutions

Overall, this section of overhead line presents a high level of landscape and visual impact. Although not an area of the National Park which is accessed by a large number of people, the presence of the transmission infrastructure within the Ben More –Ben Ledi Wild Land Area was judged to detract from the wild land characteristics and sense of remoteness that is expected by visitors within the more exposed upland areas of this rugged landscape. High level visual impacts are experienced by receptors within the glen itself, which is more readily accessible from Loch Katrine, and where the line is a prominent feature of the glen.

A range of different mitigation options were explored for this area, but similarly to YW.1 Gleann nan Caorann, Re-routeing of the existing overhead line was not judged to be feasible. Undergrounding of the existing overhead line through this area was a mitigation measure suggested and supported by a number of stakeholders during consultation as it would effectively remove the landscape and visual impacts associated with the infrastructure and potentially contribute to the enhancement of the landscape and wild land characteristics of this area.

Large scale landscape enhancement was identified as an effective way of reducing the impact of the existing infrastructure through this area. A number of stakeholders highlighted the Great Trossachs Forest National Nature Reserve (NNR)[39] initiative which encompasses this area, and the potential to tie into the landscape scale habitat creation and enhancement proposals for the initiative. It was judged to be feasible to develop a mitigation proposal within the Glen Gyle area which would complement those of the NNR, as well as reducing visual impacts at the southern extent of this section from the route of the Great Trossachs Path[40].

Mitigation projects to take forward

Due to the high level of landscape and visual impact recorded and the high level of support from stakeholders to tie into wider initiatives in this area, this area was taken forward as a high priority area for mitigation.

Two potential mitigation projects were taken forward and presented to stakeholders for further consideration in this area:

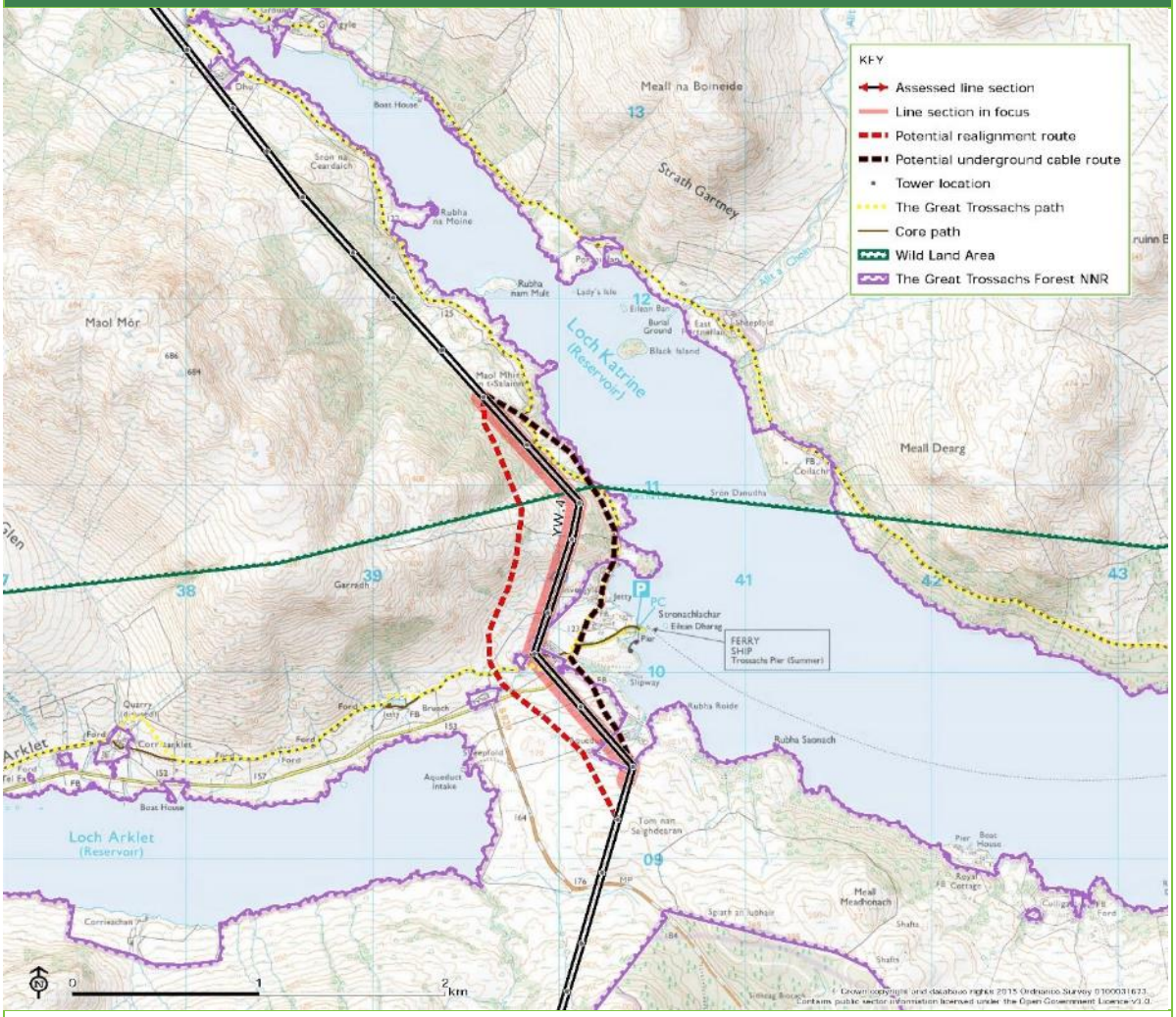
- **A: Undergrounding** - Undergrounding of 275 kV overhead line through Glen Gyle to remove towers visible within the glen and from within the wider Ben More - Ben Ledi WLA.; and
- **B: Landscape Enhancement** - Planting of native trees (e.g. Scots Pine, Oak and Birch) in line with the Great Trossachs Forest initiative. Regeneration of overgrazed vegetation along the corridor of the overhead line.

It should be noted that in progressing and implementing mitigation projects for the YW.4 Stronachlachar, Loch Katrine section of overhead line there is potential for overlap with the southern extent of this line section in order to achieve the most successful mitigation proposal for the adjacent section of overhead line.

[39] http://www.thegreattrossachsforest.co.uk/

[40] http://thegreattrossachsforest.co.uk/great-trossachs-path/what-is-the-great-trossachs-path/

YW.4 Stronachlachar, Loch Katrine



Area of focus for mitigation within LLTNP

Impacts of the infrastructure

Overall landscape impact	**High**	Overall visual impact	**High**

Key issues identified through site work and consultation

- Heavier angle towers are highly noticeable in prominent positions close to key receptors hot spots, even when backclothed against the underlying landscape;
- Along the B829 as receptors emerge from the often wooded or forested road corridor west, north-west of Loch Chon, and receptors pass beneath the line just before the view opens up across Loch Arklet and receptors may stop to take in the view towards the Arrochar Alps, with the overhead line in close proximity behind them;
- A number of pylons located on ridges and craggy landform due to the complexity and steep slopes of the underlying landscape, as a result these towers appear prominent when viewed in close proximity, and are often seen against the skyline;
- The transmission line is located in close proximity to receptor hot spots around Loch Katrine and Stronachalar which forms a key recreational and tourist destination within the LLTNP;
- Heavier towers located where the overhead line changes direction or elevation are highly noticeable in prominent positions close to receptors on the B829 when emerging from Loch Ard Forest, and often

appear more prominent when in close proximity due to their elevated position above the level of the road; and

- The transmission line interacts with network of smaller scale distribution infrastructure located on the western and southern side of Stronachlachar, potential opportunities to reduce wirescape impacts in these areas through mitigation of distribution infrastructure.

Potential mitigation solutions

The impacts in this area are primarily associated with a number of transmission towers located in prominent and elevated positions above Stronachlachar and the neighbouring pier. Many stakeholders were very familiar with this area, which is key tourist hub and area of recreation, and were supportive of mitigation measures which would remove or reduce the existing visual impacts, including undergrounding or Re-routeing of the most intrusive section of overhead line, or the introduction of landscape enhancement along the route of the Great Trossachs Path and along the existing alignment of the overhead line, tying into the Great Trossachs Forest NNR initiative.

Further more innovative mitigation measures were also identified and explored through consultation with stakeholders, including the removal of the existing overhead line and replacement with a sub-loch cable beneath Loch Katrine, and the introduction of a new intervention which re-focuses attention east, south-east along Loch Katrine and away from the transmission infrastructure.

Mitigation projects to take forward

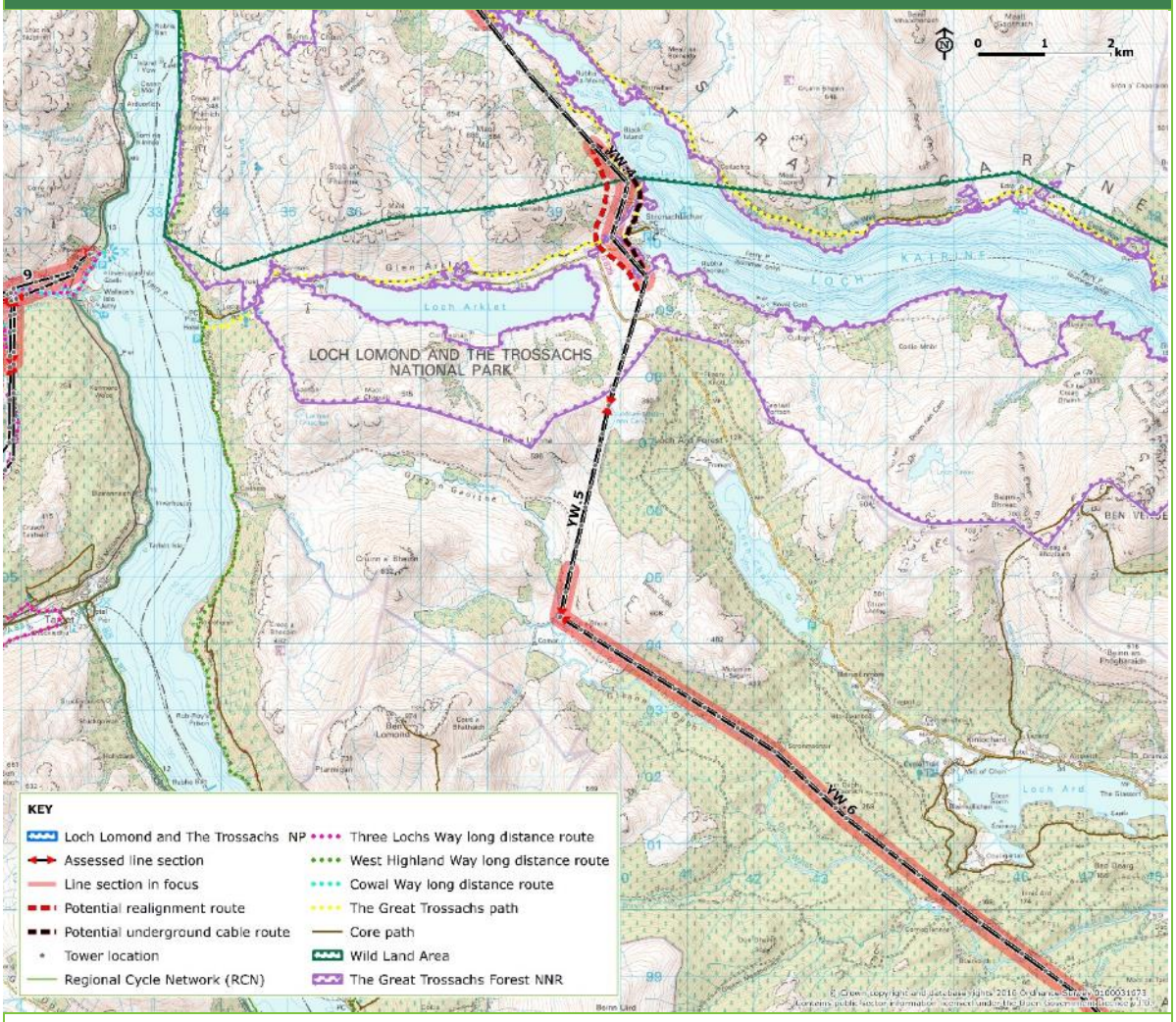
This line section was identified as a high priority for mitigation due to the high level of both landscape and visual impact, and the high level of stakeholder support to mitigate the existing impacts due the important of this key tourist 'hot spot' within the National Park.

Four different potential mitigation projects were taken forward and presented to stakeholders for further consideration in this area:

- **A: Undergrounding** - Undergrounding of approximately 2km of 275 kV overhead line to remove towers visible above headland near Stronachlachar, from Stronachlachar Pier and café, Great Trossachs trail and nearby residential properties;
- **B: Re-routeing** - Minor re-route of approximately 2km of 275 kV overhead line to remove towers visible above headland near Stronachlachar, from Stronachlachar Pier and café, Great Trossachs trail and nearby residential properties;
- **C: Landscape Enhancement** - Catchment and green infrastructure improvements (native tree and shrub planting) along corridor of existing 275 kV overhead line to screen and filter localised views; and
- **D: New Installation** - New installation or attraction at Stronachlachar, or on small headland to north, to focus views along Loch Katrine away from existing infrastructure.

It should be noted that in progressing and implementing mitigation projects for this section of overhead line there may be potential for overlap with the adjacent YW.3 Glen Gyle line section to the north and YW.5 Loch Arklet line section to the south in order to achieve the most successful mitigation proposal for the adjacent section of overhead line.

YW.5 Loch Arklet



Area of focus for mitigation within LLTNP

Impacts of the infrastructure

Overall landscape impact	**Moderate**	Overall visual impact	**Moderate**

Key issues identified through site work and consultation

- The overhead transmission line passes close to the main tourist road route between Aberfoyle and Stronachlachar pier on Loch Katrine, and becomes a notable feature when travelling north to south; and
- Transmission towers are located in prominent positions as they cross the ridge of higher ground between Loch Arklet and Loch Chon, and are noticeable in views from the road when approaching from the north, and appear skylined in views across Loch Arklet when walking along the Great Trossachs Path.

Potential mitigation solutions

Undergrounding of this section of transmission line at the head of Glen Arklet, would likely require the line to be undergrounded to the north as far as Stronachlachar to deliver any real benefit, due to the need to incorporate a terminal tower in the glen. The existing overhead line crosses the ridge south of Loch Arklet

at an obvious saddle or notch on the skyline, therefore it was judged that opportunities for re-routeing via an alternative alignment were very limited, and would likely result in more widespread visual impacts.

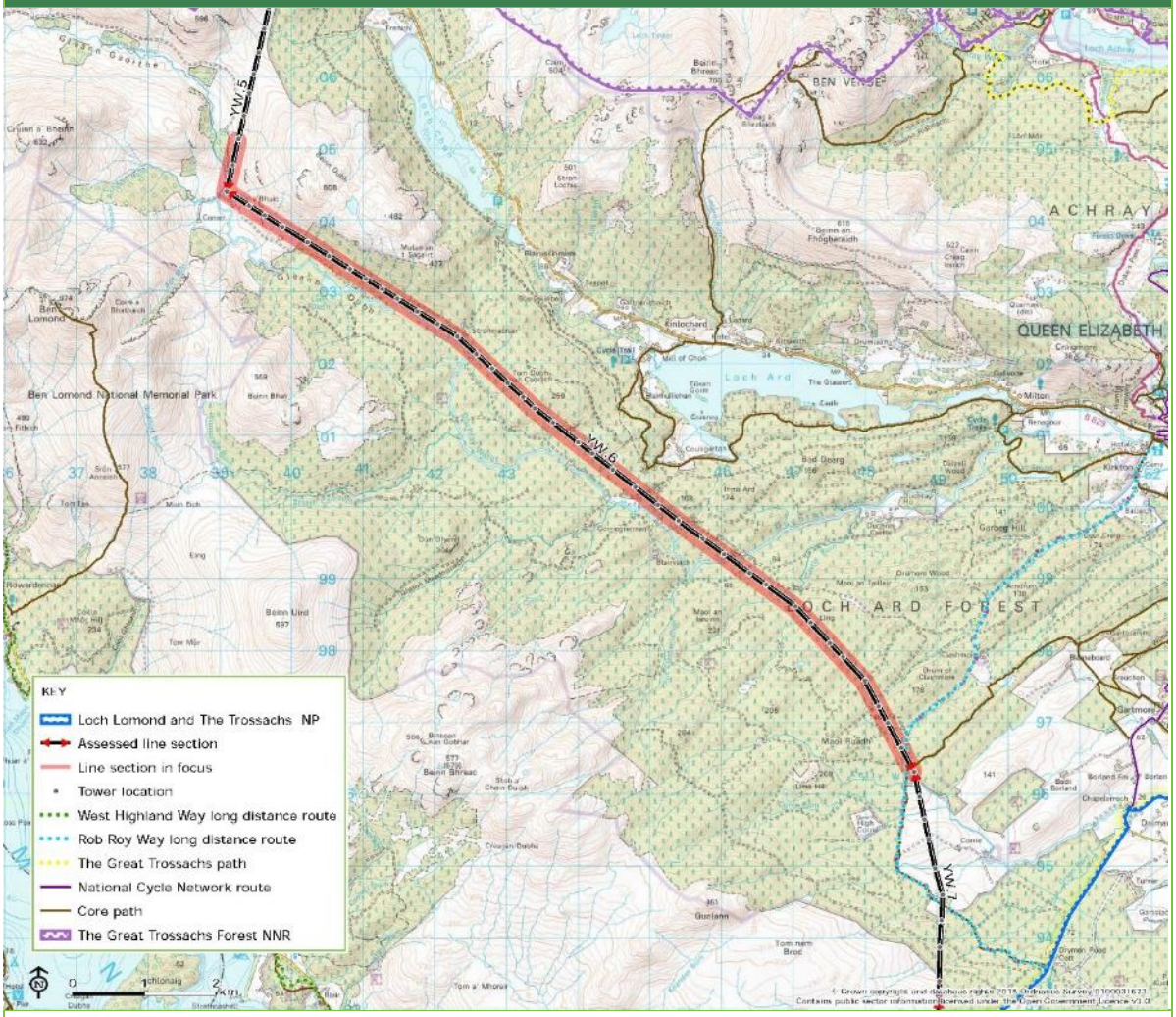
The introduction of landscape enhancement measures along the B829 to enclose visibility until beneath the transmission line, until receptors pass beneath west of the line, and open views become possible across Loch Arklet towards the Arrochar Alps beyond. Although this mitigation option would reduce the existing visual impacts in this area, whilst delivering potential landscape benefits it was not highlighted by stakeholders as a particularly important area of priority for mitigation.

Mitigation projects to take forward

Due to the moderate level of both landscape and visual impact recorded and the limited potential opportunities for successful mitigation, this section was not a high priority to receive mitigation. Stakeholder support for mitigation of impacts in this area was limited, as it was judged that implementing the potential mitigation measures may result in similar or in some instance worse landscape and visual impacts. Therefore, no mitigation projects were taken forward for this area.

It should however be noted that in progressing and implementing mitigation projects for the YW.4 Stronachlachar, Loch Katrine section of overhead line there is potential for overlap with the northern extent of this line section in order to achieve the most successful mitigation proposal for the adjacent section of overhead line.

YW.6 Loch Ard Forest Central



Area of focus for mitigation within LLTNP

Impacts of the infrastructure

Overall landscape impact	**Moderate**	Overall visual impact	**Moderate**

Key issues identified through site work and consultation

- The pylon wayleave is visible from Ben Lomond and surrounding peaks at a relatively long distance as it crosses above Gleann Dubh. The prominence of the linear wayleave within which the transmission line is located is often more perceptible than the infrastructure itself. In some areas of recent commercial forestry felling, large areas of brash area evident either side of the wayleave which contrasts with the underlying vegetated wayleave (low shrubbery and open grassland); and
- Impacts will potentially change as commercial forestry is felled and replanted over the coming years, as part of established or new forestry management plans.

Potential mitigation solutions

The impacts associated with this section of overhead line were predominantly focused on the visibility of the linear wayleave through the Loch Ard Forest, and therefore the relative perceptibility of the transmission line. To address these landscape and visual impacts a number of mitigation proposals were explored, primarily focused on removing or reducing the impacts as due to the scale of the landscape over

which these impacts occur, it was not judged feasible to re-focus the attention of receptors from locations such as the summit of Ben Lomond.

Opportunities for undergrounding or re-routeing of the existing overhead line were explored, however due to the dense forested nature of the landscape through which any undergrounding or re-routeing would likely pass, it was judged that similar or potentially more extensive impacts may occur due to the need to maintain a wayleave along any new underground cable route or realigned overhead line route through this area. These mitigation options were discussed with stakeholders, and coupled with the likely very high cost of such mitigation these options were not deemed to be feasible, or representing best use of the available fund.

A landscape based treatment of prominent wayleaves was however common suggestion across the National Park, and a park-wide approach to wayleave management was something suggested by a number of stakeholders during consultation. In the Loch Ard Forest area in particular, a number of stakeholders drew attention to the ongoing Strathard Ecosystems Services Project, which covers a large are through which overhead line sections YW.4-YW.7 pass. It became clear through consultation that an initiative to reduce the visual impact of the existing transmission infrastructure wayleave through the Loch Ard Forest could be implemented in conjunction with the objectives of the Strathard Project.

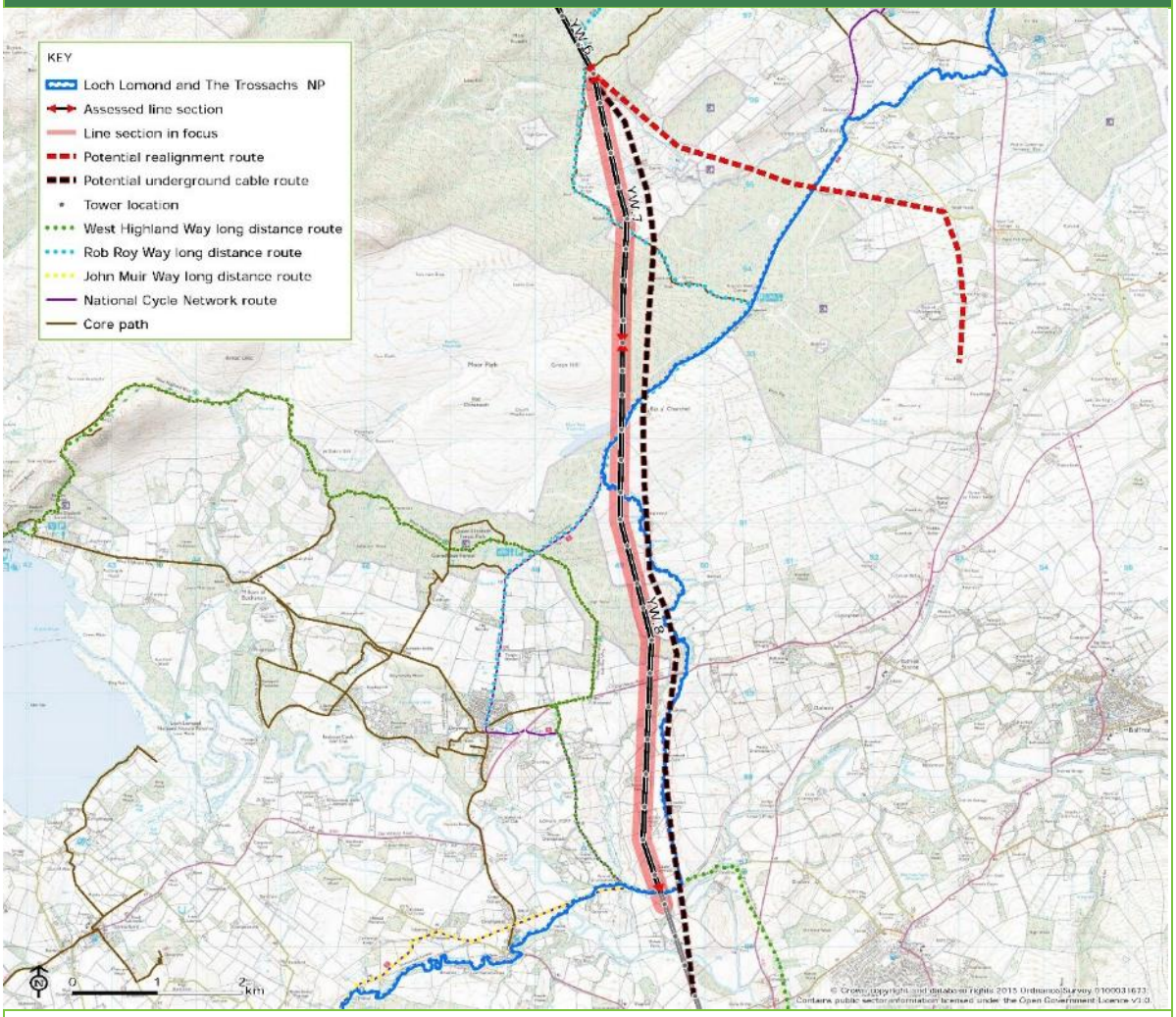
Mitigation projects to take forward

As the overall landscape and visual impacts were judged to me of a moderate level, this section was not initially included as a high priority to receive mitigation. However, as there was a high level of stakeholder support for mitigation proposals to be taken forward in this area, and a clear emphasis for any proposals to be tied into the objectives of the Strathard Project, one potential mitigation project was taken forward for further consideration in this area, and that of the adjacent YW.7 Loch Ard Forest South section:

- **A: Landscape Enhancement** - Restructuring of forestry, tied into a management plan and access strategy for the Loch Ard Forest in order to maintain and improve screening of the overhead line provided by forestry and native woodland. Coupled with improvement of access (circular routes for walking/mountain biking) and softening of wayleaves through the forest. Possible access route along the linear route of the Loch Katrine water project (aqueduct/pipeline) – the 'Utilities Spine route' back to Glasgow / potential cultural heritage link/new long distance footpath/cycle route with linked nodes along route (50 years. of Cruachan celebration).

This mitigation proposal was presented to stakeholders as a Loch Ard Forest wide project which would address the impacts of the existing transmission line wayleave across the whole extent of the Strath Ard area through which it passes.

YW.7 Loch Ard Forest South



Area of focus for mitigation within LLTNP

Impacts of the infrastructure

Overall landscape impact	**Moderate**	Overall visual impact	**High**

Key issues identified through site work and consultation

- The pylon wayleave is visible from elevated locations within the vicinity of the Loch Ard Forest, often at a relatively long distance. The prominence of the linear wayleave within which the transmission line is located is often more perceptible than the infrastructure itself;
- Access and recreation is a key consideration in this part of the Loch Ard Forest, including the route of the Roby Roy Way long distance footpath and the NCR7 route. A series of mountain bike trails and footpaths, predominantly following the network of forestry access tracks offer views of the existing line and its wide wayleave;
- Pylons crossing Moor Park are noticeable against the skyline due to their elevation. There is a particularly prominent pylon to the north of Corrie, with noticeable access track. The prominence of the linear wayleave within which the transmission line is located is often more perceptible than the infrastructure; and
- Impacts will potentially change as commercial forestry is felled and replanted over the coming years, as part of established or revised forest management plans.

Potential mitigation solutions

A similar range of mitigation options were explored for this line section, and as for the YW.6 Loch Ard Forest Central section these were primarily focused on removing or reducing the impacts as due to the scale of the landscape over which these impacts occur, it was not judged feasible to re-focus the attention of receptors from locations such as the summit of Ben Lomond.

As for YW.6 options for undergrounding and re-routeing of the existing overhead line were explored, however due to the dense forested nature of the landscape through which any undergrounding or re-routeing would likely pass, it was judged that similar or potentially more extensive impacts may occur due to the need to maintain a wayleave along any new underground cable route or realigned overhead line route through this area.

It became clear through consultation that an initiative to reduce the visual impact of the existing transmission infrastructure wayleave through the Loch Ard Forest could be implemented in conjunction with the objectives of the Strathard Project, and therefore a Loch Ard Forest wide mitigation proposal was judged to be the most feasible and well supported option to be progressed for this section and YW.6.

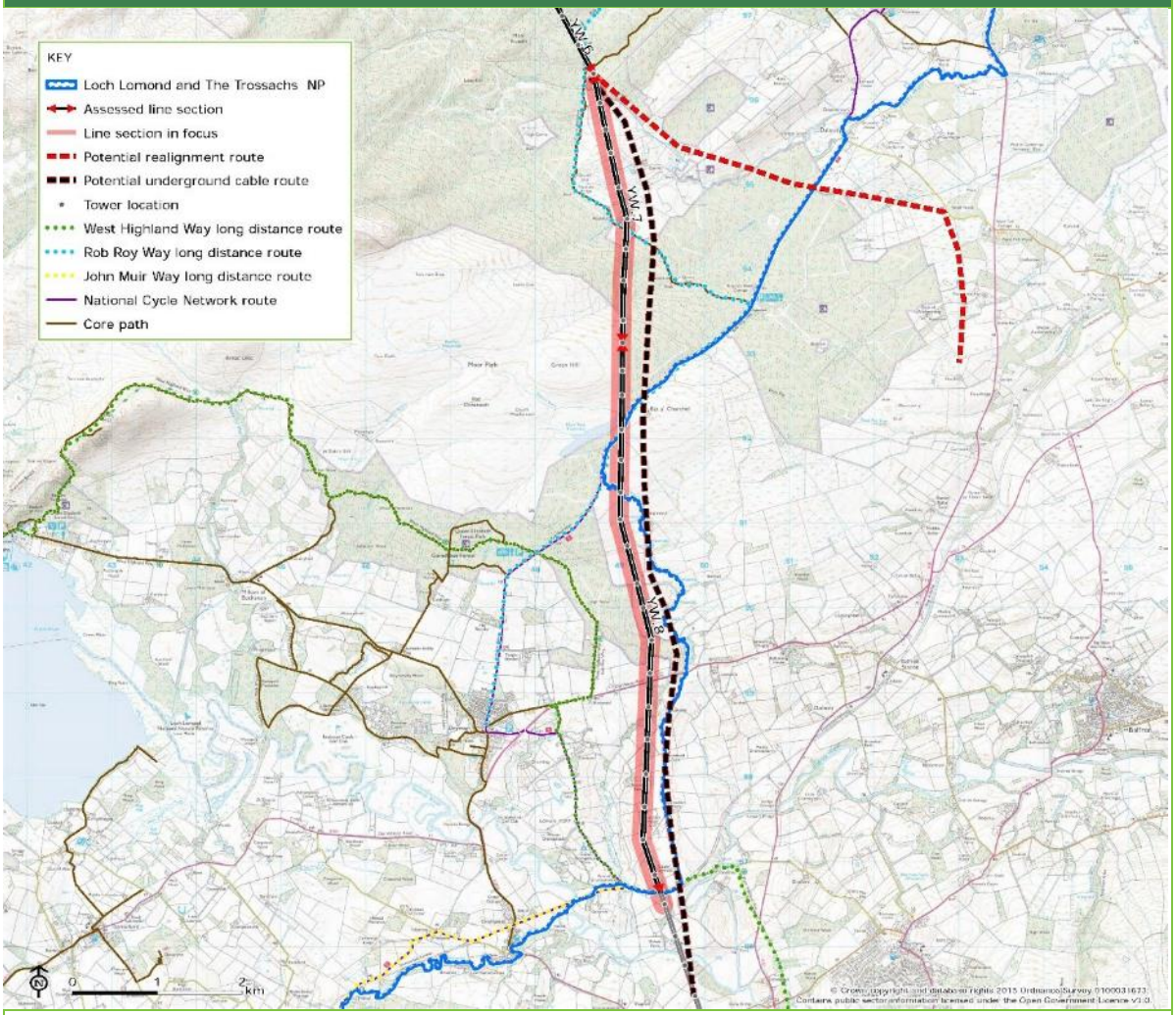
Mitigation projects to take forward

The landscape impacts of this section of line were judged to me of a moderate level, however the visual impacts associated with the more accessible eastern section of the line were judged to be high, nevertheless this section was not initially included as a high priority to receive mitigation. However, as for Yw.6 Loch Ard Forest Central, there was a high level of stakeholder support for mitigation proposals to be taken forward in this area, and a clear emphasis for any proposals to be tied into the objectives of the Strathard Project, one potential mitigation project was taken forward for further consideration in this area, and that of the adjacent YW.6 Loch Ard Forest Central section:

- **A: Landscape Enhancement** - Restructuring of forestry, tied into a management plan and access strategy for the Loch Ard Forest in order to maintain and improve screening of the overhead line provided by forestry and native woodland. Coupled with improvement of access (circular routes for walking/mountain biking) and softening of wayleaves through the forest. Possible access route along the linear route of the Loch Katrine water project (aqueduct/pipeline) – the 'Utilities Spine route' back to Glasgow / potential cultural heritage link/new long distance footpath/cycle route with linked nodes along route (50 years. of Cruachan celebration).

This mitigation proposal was presented to stakeholders as a Loch Ard Forest wide project which would address the impacts of the existing transmission line wayleave across the whole extent of the Strath Ard area through which it passes.

YW.8 East of Drymen



Area of focus for mitigation within LLTNP

Impacts of the infrastructure

Overall landscape impact	**Moderate**	Overall visual impact	**High**

Key issues identified through site work and consultation

- Pylons crossing Moor Park are noticeable against the skyline due to their elevation, from what is a well-used and visited part of the National Park, especially by recreational users using long distance footpath and cycle routes. There is a particularly prominent pylon to the south of Corrie, with a noticeable access track;
- This area of the National Park serves as an informal gateway through which many visitors and tourists access the National Park, as they pass from the settled farmland landscape at the edge of the park and into the more remote upland landscapes; and
- Impacts will potentially change as commercial forestry is felled and replanted over the coming years, in line with the existing or any refined forest management plan.

Potential mitigation solutions

A large number of potential mitigation options were explored for this section of line, to address both the landscape and visual impacts identified. Due to the high level of visual impact, experienced by a relatively

large number of people recreating or accessing the National Park in this area via the Rob Roy Way, John Muir Way, Three Lochs Way and NCR7 it was highlighted by stakeholders that options for removing or reducing the visual impact should be explored. These included consideration of undergrounding of the overhead line out with the forested areas, re-routeing of the overhead line out with the National Park to the east of Corrie, or the introduction of landscape enhancement (e.g. screening planting or woodland creation) to reduce visibility of the infrastructure from key visitor and recreational interests.

Due to the relatively high number of people who access the National Park and recreate within this 'gateway' area of the park, the opportunity for the installation of an intervention which would refocus the attention of receptors in this area and which may also serve as an additional attraction for visitors. Stakeholder support for this type of mitigation option was mixed, however there was clear support for those with an interest in tourism and providing additional facilities for visitors.

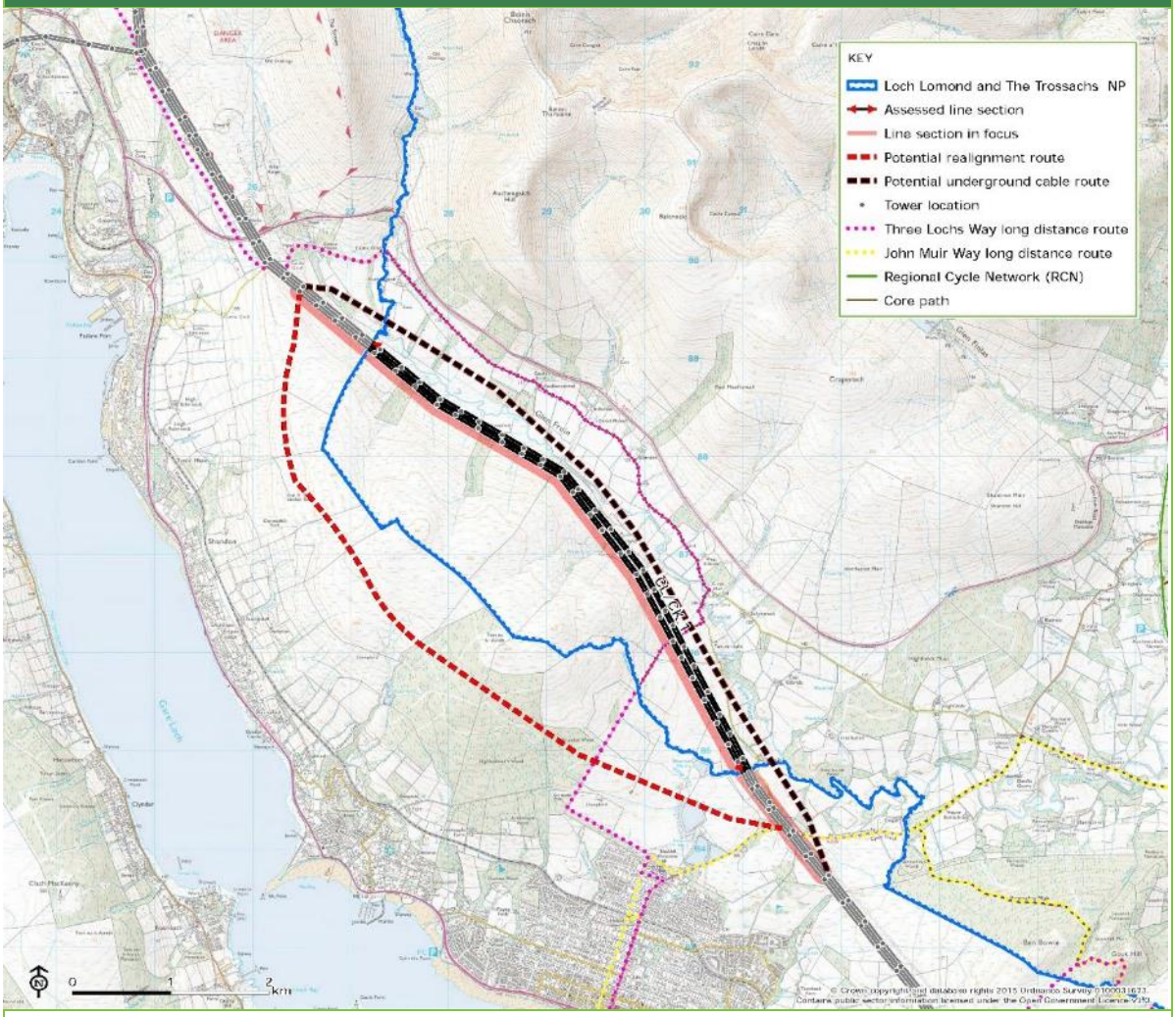
Mitigation projects to take forward

Due to the high level of visual impact in this area, coupled with the moderate landscape impact, this section of overhead line was initially identified as a high priority for mitigation. The relatively high number of potential mitigation options to remove, reduce or refocus visual impacts in this area, coupled with a high level of stakeholder support for a range of these different options, meant that this section remained as a high priority area for mitigation, although there was no clear preference as to the type of mitigation project which should be developed in more detail at this stage.

Four different potential mitigation projects were taken forward and presented to stakeholders for further consideration in this area:

- **A: Undergrounding** - Undergrounding of approximately 9km of 275 kV overhead line from the south east corner of the National Park eastwards towards Flanders Moss and the B835, removing existing visibility from the West Highland Way, Rob Roy Way, John Muir Way and the NCR7;
- **B: Re-routeing** - Minor re-route of approximately 8km of 275 kV overhead line from the south east corner of the National Park eastwards towards Flanders Moss and the B835, reducing visibility from the West Highland Way, Rob Roy Way, John Muir Way and the NCR7;
- **C: Landscape Enhancement** - Landscape improvements to improve the integration of the overhead line in the area of the West Highland Way, John Muir Way, Rob Roy Way, NCR7, and the development of forest management strategy or community woodland project which responds to the presence of the overhead line in providing long term permanent screening and recreation opportunities; and
- **D: New Installation** - Art installation on the West Highland Way, John Muir Way, Rob Roy Way and NCR7, located to distract viewers from the presence of the overhead line and divert their attention towards other visual foci.

CL/CK.1 Glen Fruin



Area of focus for mitigation within LLTNP

Impacts of the infrastructure

Overall landscape impact	**Moderate**	Overall visual impact	**High**

Key issues identified through site work and consultation

- Pylons at the eastern end of the lines, near the LLTNP boundary are visible on the skyline and can be seen stacking. Generally the line is straight as it passes through the glen, with few angle towers; and
- Presence of parallel transmission line exacerbates the impact of the infrastructure within this settled valley. The presence of the parallel access track extends the influence of the infrastructure, albeit that it is used for recreation as part of the Three Lochs Way which passes through the glen.

Potential mitigation solutions

Possible rationalisation of the infrastructure within Glen Fruin was discussed at an early stage, including the potential replacement of the two parallel 132kV overhead lines with one large overhead line to reduce the wirescape impacts associated with the presence of the two lines. This option was not deemed to be technically feasible due to the requirements of the transmission network in this area.

Options to underground both parallel lines through Glen Fruin, or re-route the lines out with the National Park boundary to the south were also put forward, and received mixed support from stakeholders.

Potential landscape enhancement within the glen was an option which had a high level of stakeholder support consultation, and opportunities to improve the visual experience of users on the Three Lochs Way and network of Core Paths in the glen were suggested by a number of stakeholders, including the major landowner in this area, the Luss Estates Company. As this area of the National Park is relatively accessible to a large number of people, including the town of Helensburgh to the south, mitigation options which could potentially deliver tourism and visitor benefits most well supported.

Mitigation projects to take forward

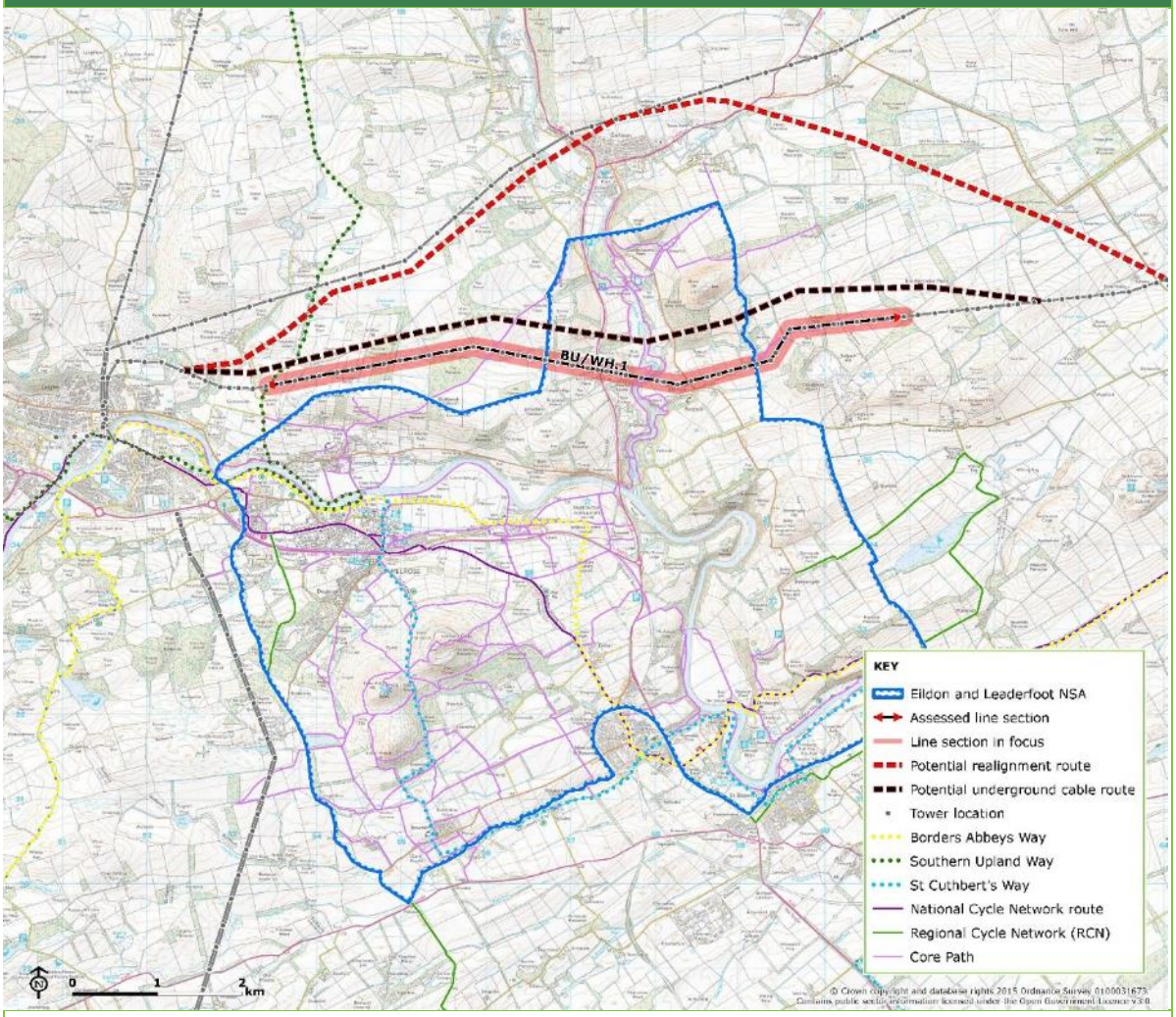
With high visual impacts recorded, this area was initially identified as a high priority for mitigation as part of the Changing the VIEW initiative. Coupled with the high level of support amongst stakeholders to improve the experience for visitors to the glen and the wider route of the Three Lochs Way, this section was judged to be of high priority for consideration within the initiative.

Three different potential mitigation projects were taken forward and presented to stakeholders for further consideration in this area:

- **A: Undergrounding** - Undergrounding of a section of both overhead lines through the National Park to appropriate terminal tower positions located outside the National Park boundary;
- **B: Re-routeing** - Re-routeing of parallel 132 kV overhead lines outside of the National Park boundary to the south, on the western slopes of Tom na h-Airidh between Glen Fruin and Helensburgh; and
- **C: Landscape Enhancement** – Green network/landscape improvements along the route of the Three Lochs Way long distance footpath, including an alternative route inland through upper Glen Luss - including landscaping - wide scale planting in the glen, improvement to the appearance of the track.

Eildon & Leaderfoot NSA

AT / U / V Leaderfoot Valley



Area of focus for mitigation within NSA

Impacts of the infrastructure

Overall landscape impact	**Moderate**	Overall visual impact	**Moderate**

Key issues identified through site work and consultation

- The AT route infrastructure is the only overhead line located within the NSA, and therefore its presence is somewhat of an anomaly within this landscape. Although the overhead line is relative small in vertical scale, it forms a feature in views when entering and leaving the NSA via the A68 along the Leader Water Valley and forms a linear feature through the settled farmland landscape at the northern extent of the NSA;
- The steel lattice angle towers, although relatively limited in vertical scale often appear more apparent in views than those of the twin heavy duty wood poles, and they can occasionally be mistaken for telecommunications masts when seen from a longer distance, where the wood poles are backclothed which reduces their perceptibility; and
- The overhead lines of U and V route, located outside the boundaries of the NSA, are larger in vertical scale, crossing relatively open ground to the north and west of the NSA. As a result the towers often appear perceptible over greater distances, especially in the case of the overhead line to the west of the B6359 which is apparent in views from the summits and footpaths across the Eildon Hills.

Potential mitigation solutions

Due to the relatively short sections under consideration and the lower voltage nature of the transmission infrastructure (132kV), undergrounding of the line located within the northern extent of the NSA (AT route), and potentially those outside the NSA (U route, and V route), were judged to feasible and potentially cost effective ways to mitigate the landscape and visual impacts identified. Alternatively, options of potential re-routeing of the overhead lines, out with and further away from the setting of the NSA were also identified. There was a relatively modest level of stakeholder support for these 'hard engineering' options, however support for mitigating the impacts associated with the AT route was judged to be sufficient for its inclusion for further consideration.

Due to the small scale nature of this NSA, a number of stakeholders raised the idea of the initiative collaborating in the development of a Management Strategy or Plan for the whole NSA, which would include provision for the mitigation of visual impacts associated with the existing transmission infrastructure through a variety of measures, focused on landscape enhancement of the NSA. The presence of transmission pylons is identified as a key characteristic or negative attribute for a number of the landscape character types which cover the NSA, and this innovative mitigation proposal was seen as a possible option for to deliver positive landscape change and visual change to the NSA and its setting.

Mitigation projects to take forward

As only medium landscape and visual impacts were recorded in this area, and as a result it was not initially of the highest priority to receive mitigation. However, due to the level of stakeholder support for addressing impacts on both the landscapes of the NSA and its setting, a number of mitigation proposals were developed for further consideration.

Three different potential mitigation projects were taken forward and presented to stakeholders for further consideration in this area:

- **A: Undergrounding** - Removal of 8km of existing overhead line (AT route) and undergrounding (within the NSA);
- **B: Re-routeing** - Re-routeing of 8km of existing overhead line (AT route) along an alternative alignment to the north of the NSA; and
- **C: Landscape Enhancement** - Development of an Eildon and Leaderfoot NSA Management Strategy/Plan. The plan must include objectives linked to the mitigation of visual impacts associated with overhead line infrastructure, and a chapter on the topic (rationalisation of infrastructure, removal of clutter, and potential future re-routeing out of the NSA).

Long-list of mitigation projects

6.6 These proposals therefore represent those that were considered to meet the three key selection criteria at this stage of the project:

Does it mitigate the impact?

Does it have stakeholder support?

Is it deliverable?

6.7 The proposals were compiled into a long-list of potential mitigation projects. These are set out in **Table 6.1** below, and include 23 potential mitigation proposals across the sections of transmission infrastructure which were assessed.

Table 6.1: Summary table of long-list of mitigation projects

Line section and proposal
Loch Lomond & The Trossachs National Park
YW.1 Gleann nan Caorann
A: Undergrounding through Ben Lui Wild Land Area
B: Landscape enhancement: native woodland planting/restoration
YW.2 Inverarnan
A: Undergrounding from Inverarnan into Glen Gyle
B: Alternative/sculptural pylon design between Inverarnan and Cruach
C: Landscape enhancement around substation/A82/West Highland Way
D: Installation of a sculptural incident or attraction
YW.3 Glen Gyle
A: Undergrounding through Glen Gyle
B: Landscape enhancement: native woodland planting/restoration
YW.4 Stronachlachar, Loch Katrine
A: Undergrounding a short section above Stronachlachar Pier
B: Minor re-route of short section above Stronachlachar Pier
C: Landscape enhancement: native tree and shrub planting
D: Installation of a sculptural incident or attraction
YW.6/7 Loch Ard Forest Central & South
A: Restructuring of forestry and wayleaves, improved access along aqueduct route
YW.8 East of Drymen

A: Undergrounding from National Park boundary towards Flanders Moss
B: Re-route overhead line away from National Park gateway
C: Landscape improvement along key access routes to screen views
D: Art installation(s) on key access routes to draw views
CL/CK1 Glen Fruin
A: Undergrounding through Glen Fruin
B: Re-route overhead line outside the National Park
C: Landscape enhancement along the Three Lochs Way and alternative walking route
Eildon & Leaderfoot NSA
AT / U / V Leaderfoot Valley
A: Undergrounding of line through the NSA
B: Re-route or replace overhead lines so they run outside the NSA
C: Development of an Eildon and Leaderfoot NSA Management Plan

7 Selection of mitigation projects

Consultation on the long-list of projects

7.1 The long-list of potential mitigation options, presented in **Table 6.1**, were developed into a series of information boards that were presented to stakeholders at the second SPG meeting held in Glasgow on Thursday, 3rd December 2015. The findings of the landscape and visual impact assessment were outlined at the meeting, with those sections of transmission infrastructure where the most important impacts were identified presented on a series of information boards. Reduced versions of the information boards are presented in **Appendix 6** of this report.

7.2 The long-list of SPEN projects was combined with the similar long-list developed by SHE Transmission, and included several projects that overlapped between both companies' infrastructure, in particular in the Inverarnan area at the northern end of Loch Lomond. For simplicity, projects in this area were presented together. A total of 14 information boards were prepared, one for each section of transmission infrastructure within the National Park, and one information board for the Eildon & Leaderfoot NSA. A total of 36 different mitigation proposals were presented as measures to address the impacts of these line sections.

7.3 Information presented on each information board comprised:

- Summaries of the existing landscape and visual context, and landscape and visual impacts, which are also included in Section 5 of this report;
- Brief descriptions of the mitigation proposals, presented as options for each line section; and
- Supporting maps and photographs.

7.4 Stakeholders were also presented with worksheets that presented further information on each proposal. This included symbolic representations of the indicative capital costs and effectiveness of mitigation for each proposal, as shown in **Tables 7.1** and **7.2**. Indicative costs were identified at the request of stakeholders attending consultation events. It was considered by stakeholders that some order of costs would help to prioritise schemes considered as representing "best value". It was made clear to stakeholders that these were to guide decision making only, and did not represent fully developed or costed scenarios. Whilst SPEN sought to provide stakeholders with all of the information requested SPEN were keen that at this stage of the consultation cost should not form a major consideration for stakeholders.

Table 7.1: Representation of indicative costs

Indicative Costs	
£££££££	more than £200 million
£££££	£100 – 200 million
£££££	£50 – 100 million
££££	£10 – 50 million
£££	£5 – 10 million

Indicative Costs	
££	£1 – 5 million
£	less than £1 million

Table 7.2: Representation of level of mitigation

Effectiveness of Mitigation	
★★★★★	**Very High** - complete mitigation of visual impacts
★★★★	**High** - extensive mitigation of visual impacts
★★★	**Medium** - partial mitigation of visual impacts
★★	**Low** - minor mitigation of visual impacts
★	**Very Low** – visual impacts remain unaltered

7.5 A brief summary of the symbolic representations of the indicative capital costs and effectiveness of mitigation for each proposal on the long-list is provided below in **Table 7.3**.

Table 7.3: Long-list of mitigation projects

Line section and proposal	Indicative Costs	Effectiveness of Mitigation
Loch Lomond & The Trossachs National Park		
YW.1 Gleann nan Caorann		
A: Undergrounding through Ben Lui Wild Land Area	**£££££**	★★★★★
B: Landscape enhancement: native woodland planting/restoration	**££**	★★★
YW.2 Inverarnan		
A: Undergrounding from Inverarnan into Glen Gyle	**£££££**	★★★★★
B: Alternative/sculptural pylon design between Inverarnan and Cruach	**££-£££**	★★
C: Landscape enhancement around substation/A82/West Highland Way	**£**	★★
D: Installation of a sculptural incident or attraction	**£-££**	★
YW.3 Glen Gyle		
A: Undergrounding through Glen Gyle	**£££££**	★★★★★
B: Landscape enhancement: native woodland planting/restoration	**£**	★★★
YW.4 Stronachlachar, Loch Katrine		

A: Undergrounding a short section above Stronachlachar Pier	**£££££**	★★★★★
B: Minor re-route of short section above Stronachlachar Pier	**£££££**	★★★★
C: Landscape enhancement: native tree and shrub planting	**£**	★★
D: Installation of a sculptural incident or attraction	**££**	★
YW.6 / 7 Loch Ard Forest Central & South		
A: Restructuring of forestry and wayleaves, improved access along aqueduct route	**££**	★★★
YW.8 East of Drymen		
A: Undergrounding from National Park boundary towards Flanders Moss	**£££££**	★★★★★
B: Re-route overhead line away from National Park gateway	**£££££**	★★★★
C: Landscape improvement along key access routes to screen views	**£**	★-★★
D: Art installation(s) on key access routes to draw views	**£-££**	★
CL / CK1 Glen Fruin		
A: Undergrounding through Glen Fruin	**££££**	★★★★★
B: Re-route overhead line outside the National Park	**££££**	★★★★★
C: Landscape enhancement along the Three Lochs Way and alternative walking route	**£**	★★
Eildon & Leaderfoot NSA		
AT / U / V Leaderfoot Valley		
A: Undergrounding of line through the NSA	**£££**	★★★★★
B: Re-route or replace overhead lines so they run outside the NSA	**£££-££££**	★★★★★
C: Development of an Eildon and Leaderfoot NSA Management Plan	**£**	★

Stakeholder response to the long-list

7.6 The information boards detailing the long-list of mitigation projects were initially presented at a stakeholder consultation meeting in Glasgow in December 2015, attended by a range of organisations. Following this meeting the presentation boards were moved to the LLTNPA Headquarters where they were on display to staff and other stakeholders for several weeks. At the request of the LLTNP Authority a further workshop was held at the Headquarters on Wednesday, 17th February 2016 to gather additional feedback from staff and stakeholders. The final element of Stage 2 consultation was a meeting a meeting on Thursday, 7th April 2016 involving organisations who had not been previously consulted, including Forestry Enterprise Scotland, Scottish Environment Protection Agency (SEPA), Scottish Water and VisitScotland. All organisations represented at these meetings are listed in **Table 1.1**.

7.7 Stakeholders were asked to review each of the boards and respond on the positive and negative aspects of each proposal, and provide any additional comments or information they may wish in relation to each mitigation proposal. These were recorded on worksheets that are included in **Appendix 6**, and are summarised below.

Loch Lomond & The Trossachs National Park

YW.1 Gleann nan Caorann

A: Undergrounding through Ben Lui Wild Land Area	
Undergrounding of 12 km section of overhead line through upper reaches of Gleann nan Caorann south of Ben Lui, from edge of National Park boundary to Inverarnan Substation.	
Indicative capital cost: **£££££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
This option would remove the existing overhead line from the Ben Lui WLA, resulting in no vertical man-made elements within this wild and rugged landscape. Mitigation would be almost immediate following completion of construction and rehabilitation of vegetation. Mitigation and removal of overhead line would complement the objectives of the WLA and special qualities in this remote part of the National Park.	
Key negative aspects	
Undergrounding would lead to substantial ground disturbance to areas of open and steep terrain, and likely result in irreversible impacts on deep peat and important habitats (e.g. ground water dependant terrestrial ecosystems). Impacts during removal of existing infrastructure and construction may bring long lasting damage to wild land area characteristics, as permanent access to underground cable route would be required. Permanent access would be required once operational for maintenance or repair of any faults, therefore the accompanying access track would remain as a visible feature through the glen and WLA. Undergrounding would require terminal tower/sealing end compounds to be incorporated into the landscape – west of Gleann nan Caorann outside the National Park, and the eastern end of the glen where it meets Glen Falloch. Likely to be very expensive and disruptive to implement whilst mitigating visual impacts experienced by a relatively low number of receptors.	

B: Landscape enhancement: native woodland planting / restoration	
Extension of planting of native trees (e.g. Scots Pine, Oak and Birch) and regeneration of overgrazed vegetation along the corridor of the overhead line and parallel access track towards the southern footslopes of Ben Lui.	
Indicative capital cost: **££**	Effectiveness of mitigation: ★★★
Key positive aspects	
This option could help facilitate the delivery of wild land area objectives, which are consistent with the aspirations of other organisations, and improve the key characteristics and special qualities of this part of the National Park. Once established native mixed woodland along the glen floor and lower slopes would help to diminish the scale and prominence of the overhead line from key footpaths and access routes through the glen, whilst reducing the perceptibility of the infrastructure from elevated areas within the WLA (e.g. surrounding hill summits and ridges). The introduction of extensive tree planting would help reverse the overgrazing and poor land management which has taken place in this glen over recent generations. Establishing extensive woodland would improve biodiversity and deliver many added benefits beyond natural heritage interests, including	

potential alternative access options along the glen to the remote summits of the WLA utilising the existing access track.

Key negative aspects

This would be a long-term initiative which would require extensive implementation and ongoing management to ensure the objectives of the mitigation are successful over time (e.g. medium to long-term fencing to protect tree saplings from grazing).

Mitigation option would require landowner buy-in on a large scale for the mitigation to be effective, and would require a substantial change in the way that the land require for implementation is managed.

Dense woodland may be uncharacteristic of some of the upper reaches of the glen and where establishment of woodland may be more difficult due to ground and weather/growing conditions, and the need for protective fencing would conflict with the wild land qualities of the area.

Summary

Neither of the mitigation options for this location received strong support from stakeholders. The impacts in this area were not generally seen as a priority.

The need to mitigate impacts associated with this section received some support from stakeholders, however of the two mitigation options proposed the wider benefits of Option B led to a consensus of support for the implementation of large scale landscape enhancement scheme in Gleann nan Caorann which would introduce additional native mixed woodland along the foot and lower slopes of the glen in order to diminish the visual impact of the overhead line from key hill paths and approaches along the glen whilst integrating the infrastructure into a more complex pattern of landcover, therefore reducing its perceptibility from surrounding hill summits, ridges and slopes of the Ben Lui WLA.

Although there was a preference from stakeholders towards Option B, on balance it was considered that no mitigation proposal should be progressed for this section of overhead line.

Highest priority mitigation project

Option B: Landscape enhancement: native woodland planting/restoration	**Medium**

YW.2 Inverarnan

A: Undergrounding from Inverarnan into Glen Gyle	
Undergrounding of 9 km section of overhead line from Inverarnan substation eastwards over the ridge north of Cruach and into Glen Gyle;	
Indicative capital cost: **£££££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
This mitigation option would remove entirely the visual impact associated with the prominent transmission towers from the Great Glen Way and A82, and improve the visual image of what is a highly sensitive area within the National Park. Removal of the overhead line would address some of the cumulative visual impacts associated with transmission infrastructure and other man-made elements within the vicinity of Inverarnan substation and the A82.	
Key negative aspects	
This was not seen as a cost effective way to mitigate the visual impacts of this section of line by stakeholders due to the high relative cost and the likely impacts on other natural heritage assets, and need for extensive tree felling and disturbance to establish an underground cable route across very steep and complex topography. Many stakeholders raised questions as to whether this could be delivered without introducing more substantial visual impacts than those which already exist. Mitigation would likely take a long time to implement and would lead to extensive disturbance in a popular and well visited part of the National Park, potentially resulting in impacts on tourism and visitors which have a long-term impact following implementation.	

B: Alternative/sculptural pylon design between Inverarnan and Cruach	
Alternative/bespoke pylon tower design for overhead line between Inverarnan Substation and the rugged ridge of Cruach to the east (e.g. Icelandic marching men pylon concept design).	
Indicative capital cost: **££-£££**	Effectiveness of mitigation: ★★
Key positive aspects	
This mitigation option would potentially introduce and interesting focal point/landmark within the National Park at a key gateway and transient route. It may also offer the opportunity to conduct a high profile design competition for infrastructure suitable for the Scottish landscape in conjunction with the LLTNP Authority and other stakeholder organisations (e.g. similar to National Grid T-Pylon design competition), or the Scottish Scenic Routes initiative. It could represent a new direction for the design of transmission infrastructure more widely and serve as an educational attraction.	
Key negative aspects	
The proposal would not address the visual impact and would instead attract the attention of viewers seeking to make a sculptural feature of the most prominent towers, which would inevitably lead to a split in opinion amongst the wider public. Any appropriate design must compliment and not contrast too distinctly from the Scottish landscape. Major technical and operational hurdles to clear. Stakeholders questioned the advantages, noting that such a project would need a high level of community buy-in to be accepted.	

C: Landscape enhancement around substation / A82 / West Highland Way	
Extension of planting of native trees (e.g. Scots Pine, Oak and Birch) and regeneration of overgrazed vegetation along the corridor of the overhead line and parallel access track towards the southern footslopes of Ben Lui (in association with the SHE Transmission infrastructure in this area).	
Indicative capital cost: **£**	Effectiveness of mitigation: ★★
Key positive aspects	
This option would seek to reduce visibility and perceptibility of the existing infrastructure from the Great Glen Way, A82, railway line and other key locations in this part of the glen. A relative short timescale for implementation and could lead to immediate visual mitigation in some locations. Relatively low capital cost, but will only partially mitigate impacts from limited locations.	
Key negative aspects	
Operational limitations along wayleave of overhead line may restrict where planting can take place and effectiveness of the mitigation will depend on its long-term management and retention, which may be difficult in the context of the planned A82 road upgrade. Requirement for land owner agreement and collaboration, including areas of existing agricultural use.	

D: Installation of a sculptural incident or attraction	
Creation of a sculptural incident or installation, in a similar vein and tying into the Scottish Scenic Routes initiative.	
Indicative capital cost: **£-££**	Effectiveness of mitigation: ★
Key positive aspects	
This option may create an additional visitor attraction/point of interest in an already popular location, with the opportunity to tie into the Scottish Scenic Routes initiative. Relatively low capital cost, but will not directly mitigate impacts of existing overhead line. Accessible to large number of people and could deliver a substantial tourism benefit to the area.	
Key negative aspects	
Introduction of further man-made influence into this landscape would lead to inevitable visual impacts which would need to be justified. Artworks and installations, especially in such sensitive landscapes, are highly personal and subjective and therefore any intervention has the potential to be controversial or unpopular.	

Summary
Highlighted by stakeholders as a high priority area for mitigation, the Inverarnan section was one of much discussion during the consultation meetings although consensus on the preferred method of mitigation was mixed. The cumulative impacts of SPEN and SHE Transmission infrastructure, were seen as a key consideration for any mitigation that was proposed, however Option A and B were not seen as a cost effective way of addressing the impacts without the potential for potential associated environmental impacts which would outweigh the benefits achieved. Option B, although novel to some stakeholders, was highlighted as being too controversial for progression in such an important location within the National Park.

Options C and D received some support from stakeholders, though Option C was more widely viewed as positive. Combining these two options was also seen as a possibility, as they were not necessarily seen as exclusive.	
Highest priority mitigation project	
Option C: Landscape enhancement around Inverarnan substation, A82 and West Highland Way	**High**

YW.3 Glen Gyle

A: Undergrounding through Glen Gyle	
Undergrounding of 275 kV overhead line through Glen Gyle to remove towers visible within the glen and from within the wider Ben More - Ben Ledi WLA.	
Indicative capital cost: **£££££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
This option would remove the existing overhead line from the Ben More – Ben Ledi WLA resulting in no vertical man-made elements within this wild and rugged landscape. Mitigation would be almost immediate following completion of construction and rehabilitation of vegetation. Mitigation and removal of overhead line would complement the objectives of the WLA and special qualities in this remote part of the National Park.	
Key negative aspects	
Undergrounding would lead to substantial ground disturbance to areas of open and steep terrain, and likely result in irreversible impacts on deep peat and important habitats (e.g. ground water dependant terrestrial ecosystems). Impacts during removal of existing infrastructure and construction may bring long lasting damage to wild land area characteristics, as permanent access to underground cable route would be required. Permanent access would be required once operational for maintenance or repair of any faults, therefore the accompanying access track would remain as a visible feature through the glen and WLA. Recent refurbishment of overhead line has required upgrades to existing tracks for access and impacts are as yet not fully understood. Undergrounding would require terminal tower/sealing end compounds to be incorporated into the landscape – west of Loch Katrine, and the western end of the glen, potentially descending west into the foot of the glen to the start of line section YW.2. Likely to be very expensive and disruptive to implement whilst mitigating visual impacts experienced by a relatively low number of receptors.	

B: Landscape enhancement: native woodland planting / restoration	
Planting of native trees (e.g. Scots Pine, Oak and Birch) in line with the Great Trossachs Forest initiative. Regeneration of overgrazed vegetation along the corridor of the overhead line.	
Indicative capital cost: **£**	Effectiveness of mitigation: ★★★
Key positive aspects	
Collaboration with Great Trossachs Forest NNR initiative – delivering mutual benefits for natural heritage interests. Mitigation could also reduce visibility and perceptibility of existing infrastructure from Great Trossachs Path at the western end of Loch Katrine. Relatively low capital cost and ease of implementation, which could be run as a wide scale volunteer initiative alongside others in this part of the National Park. The introduction of extensive tree planting would help reverse the overgrazing and poor land management which has taken place in this glen over recent generations. Establishing extensive woodland would improve biodiversity and deliver many added benefits beyond natural heritage interests, including	

potential alternative access options along the glen to the remote summits of the WLA along the existing access track.

Key negative aspects

Large scale mitigation required to deliver meaningful benefits in terms of screening and mitigation.

This would be a long-term initiative which would require extensive implementation and ongoing management to ensure the objectives of the mitigation are successful over time (e.g. medium to long-term fencing to protect tree saplings from grazing).

Mitigation option would require landowner buy-in on a large scale for the mitigation to be effective, and would require a substantial change in the way that the land require for implementation is managed.

Dense woodland may be uncharacteristic of some of the upper reaches of the glen and where establishment of woodland may be more difficult due to ground and weather/growing conditions.

Summary

Glen Gyle was seen as a high priority location within the National Park amongst a large number of stakeholders, and both mitigation options received support from stakeholders. However, of the two mitigation options proposed, the wider benefits of Option B, specifically when delivered in the context of the Great Trossachs Forest initiative, led to a broader consensus of support for this landscape enhancement initiative.

Highest priority mitigation project

Option B: Landscape enhancement: native woodland planting/restoration	**High**

YW.4 Stronachlachar, Loch Katrine

A: Undergrounding a short section above Stronachlachar Pier	
Undergrounding of approximately 2km of 275 kV overhead line to remove towers visible above headland near Stronachlachar, from Stronachlachar Pier and café, Great Trossachs trail and nearby residential properties.	
Indicative capital cost: **£££££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
Reduce visibility of towers from Stronachlachar Pier and café, Great Trossachs trail and nearby residential properties and receptors approaching the pier on the Sir Walter Scott steamer. Mitigation would be effective straight away once implementation is complete. High number of visitors would benefit, boat trips, walkers, cyclists and case users, plus those using holiday lets. Stronachlachar is a key location within the National Park and mitigation of visual impacts in this area would directly affect the special qualities of the area, improving the visitor experience for a large number of people.	
Key negative aspects	
Likely to be very difficult to implement due to complexity of topography and geology and presence of sensitive receptors (e.g. residential properties along loch side). Disturbance during construction may outweigh the long term benefits. Undergrounding would require terminal tower/sealing end compounds to be incorporated into the landscape at each end of the underground cable section. Appropriate locations for sealing end compounds may be difficult to identify without substantial landscape and visual impacts.	

B: Minor re-route of short section above Stronachlachar Pier	
Minor re-route of approximately 2km of 275 kV overhead line to remove towers visible above headland near Stronachlachar, from Stronachlachar Pier and café, Great Trossachs trail and nearby residential properties.	
Indicative capital cost: **£££££**	Effectiveness of mitigation: ★★★★
Key positive aspects	
Reduce visibility of towers from Stronachlachar Pier and café, Great Trossachs trail and nearby residential properties and receptors approaching the pier on the Sir Walter Scott steamer. Mitigation would be effective straight away once implementation is complete. High number of visitors would benefit, boat trips, walkers, cyclists and case users, plus those using holiday lets.	
Key negative aspects	
Infrastructure will remain visible in long term, though potentially less prominent. Re-routeing may result in similar or worse visual impacts elsewhere. Impacts during removal of existing infrastructure and construction. High cost of implementation for potentially small reduction in visual impacts.	

C: Landscape enhancement: native tree and shrub planting	
Catchment and green infrastructure improvements (native tree and shrub planting) along corridor of existing 275 kV overhead line to screen and filter localised views.	
Indicative capital cost: **£**	Effectiveness of mitigation: ★★
Key positive aspects	
Collaboration with Great Trossachs Forest NNR initiative – delivering mutual benefits for natural heritage interests. Mitigation could also reduce visibility and perceptibility of existing infrastructure from Great Trossachs Path at the western end of Loch Katrine. Relatively low capital cost and ease of implementation, which could be run as a wide scale volunteer initiative alongside others in this part of the National Park. The introduction of extensive tree planting would help reverse the overgrazing and poor land management which has taken place in this glen over recent generations. Establishing extensive woodland would improve biodiversity and deliver many added benefits beyond natural heritage interests, including potential alternative access options along the glen to the remote summits of the WLA along the existing access track.	
Key negative aspects	
Large scale mitigation required to deliver meaningful benefits in terms of screening and mitigation. This would be a long-term initiative which would require extensive implementation and ongoing management to ensure the objectives of the mitigation are successful over time (e.g. medium to long-term fencing to protect tree saplings from grazing). Mitigation option would require landowner buy-in on a large scale for the mitigation to be effective, and would require a substantial change in the way that the land require for implementation is managed. Dense woodland may be uncharacteristic of this area and where establishment of woodland may be more difficult due to ground and weather/growing conditions.	

D: Installation of a sculptural incident or attraction	
New installation or attraction at Stronachlachar, or on small headland to north, to focus views along Loch Katrine away from existing infrastructure.	
Indicative capital cost: **££**	Effectiveness of mitigation: ★
Key positive aspects	
Installation may become an added visitor attraction/point of interest in an already popular location, with opportunities to link into existing Scottish Scenic Routes initiative installations around the National Park and the route of the Great Trossachs Path. An installation may provide an opportunity to run a design competition in conjunction with this mitigation option. Opportunity to tie in to a wider network of paths, information points linked to the 50 years of Cruachan and a possible 'Utilities Spine' from Cruachan back to Glasgow via Loch Katrine and Loch Arklet (cultural/industrial heritage walking route).	
Key negative aspects	

Introduction of further man-made influence into this landscape would lead to inevitable visual impacts which would need to be justified. Artworks and installations, especially in such sensitive landscapes, are highly personal and subjective and therefore any intervention has the potential to be controversial or unpopular.

Would require an appropriate location and landowner buy-in to allow implementation and ongoing management.

Summary	
There was broad agreement about the importance of the impacts identified at Stronachlachar and unequivocal support amongst stakeholders to address the impacts through mitigation. The four mitigation measures proposed received mixed support from stakeholders, with a clear preference for the removal of the most intrusive infrastructure if technical feasible and is achievable without extensive negative impacts on other sensitivities. There was broad support for both Option A and B despite the likely high cost and long-term timescale of implementing both options, however it was noted by some stakeholders that Option B may lead to similar impacts elsewhere through re-routeing of the overhead line. There was also strong support for Option C to reduce the visual impacts of the overhead line from locations in close proximity to the line, including the Great Trossachs Path, whilst contributing to the objectives of the Great Trossachs Forest NNR initiative. Option D received little support from stakeholders as introducing a further man-made intervention into this landscape was not seen as advantageous, although the merits of this option were supported by those stakeholders with an interest in tourism and improving visitor experience.	
Highest priority mitigation project	
Option A: Undergrounding a short section of overhead line above Stronachlachar Pier	**High**

YW.6/7 Loch Ard Forest Central & South

A: Restructuring of forestry and wayleaves, improved access along aqueduct route	
Restructuring of forestry, tied into a management plan and access strategy for the Loch Ard Forest in order to maintain and improve screening of the overhead line provided by forestry and native woodland. Coupled with improvement of access (circular routes for walking/mountain biking) and softening of wayleaves through the forest. Possible access route along the linear route of the Loch Katrine water project (aqueduct/pipeline) – the 'Utilities Spine route' back to Glasgow / potential cultural heritage link/new long distance footpath/cycle route with linked nodes along route (50 years. of Cruachan celebration).	
Indicative capital cost: **££**	Effectiveness of mitigation: ★★★
Key positive aspects	
Collaboration with the Strathard Ecosystems Services Project whereby the restructuring of forestry may deliver mutual benefits for visual impacts and flood prevention / catchment management across the Loch Ard Forest. A relatively low cost and short timescale for implementation, which could deliver landscape scale change to this area of the National Park. Restructuring of wayleaves and surrounding forestry may open up opportunities for access and recreation, focusing visitors away from the overhead lines in key locations (e.g. re-routeing the Rob Roy Way). There was much stakeholder support for improving access to this part of the National Park and creating links with the heritage of Loch Katrine and the Cruachan Hydro station.	
Key negative aspects	
This landscape scale mitigation project would require landowner buy-in over a large area of predominantly commercial forestry plantation. The mitigation would represent a long-term commitment to retaining and managing the forestry to an agreed forestry management plan which may not fit with the commercial aspirations of the Forestry Commission Scotland. Mitigation would not be effective for Operational requirements along the wayleave of the overhead line may restrict where the restructuring of forestry/woodland can take place.	

Summary	
Although the impacts of the overhead line through the Loch Ard Forest area were not generally seen as being of the highest priority there was extensive stakeholder support for mitigation projects which addressed this area and a great deal of discussion about potential initiatives which could be run in parallel with landscape scale restructuring of the existing commercial forestry. Therefore, the idea of addressing wayleaves and forest edges more generally gained stakeholder support. A wider project to develop best practice in designing forest edges and wayleave planting was seen as being beneficial both within and beyond the scope of Changing the VIEW. The project presents opportunities for collaboration between SPEN and Forestry Commission Scotland, as well as a number of stakeholders who are involved in the Strathard Ecosystems Services project, and could be incorporated into long-term forest design plans and contribute to the wider objectives of the Strathard initiative.	
Highest priority mitigation project	
Option A: Restructuring of forestry and wayleaves, improved access along aqueduct route	**High**

YW.8 East of Drymen

A: Undergrounding from National Park boundary towards Flanders Moss	
Undergrounding of approximately 9km of 275 kV overhead line from the south east corner of the National Park eastwards towards Flanders Moss and the B835, removing existing visibility from the West Highland Way, Rob Roy Way, John Muir Way and the NCR7.	
Indicative capital cost: **£££££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
Mitigation would be effective following implementation, improving the visual experience of visitors accessing the National Park from the south, south-east. The mitigation would benefit a relatively large number, albeit transient, receptors travelling to and from the National Park by car, bicycle and on foot along key long distance footpaths such as the West Highland Way, John Muir Way and Rob Roy Way. The removal of the overhead line would also improve the visual amenity and views from residential properties (scattered farmstead and houses) at the eastern edge of Drymen.	
Key negative aspects	
Expensive mitigation option in an area of the National Park which although well visited, is not renowned for its scenic value. The impacts of undergrounding through this area may outweigh the potentially limited benefits. Undergrounding would require the introduction of sealing end compounds and terminal towers at the northern and southern extents of the underground cable route, which would need to be incorporated into the existing landscape, potentially leading to similar significant impacts.	

B: Re-route overhead line away from National Park gateway	
Minor re-route of approximately 8km of 275 kV overhead line from the south east corner of the National Park eastwards towards Flanders Moss and the B835, reducing visibility from the West Highland Way, Rob Roy Way, John Muir Way and the NCR7.	
Indicative capital cost: **£££££**	Effectiveness of mitigation: ★★★★
Key positive aspects	
Re-routeing of overhead line away from this gateway to the National Park would improve the views into the National Park experienced by transient receptors travelling by road and walkers along the routes of the West Highland Way, John Muir Way, and Rob Roy Way, and the NCR7. The removal of the overhead line would also improve the visual amenity and views from residential properties (scattered farmstead and houses) at the eastern edge of Drymen.	
Key negative aspects	
Expensive mitigation option in an area of the National Park which although well visited, is not renowned for its scenic value. The impacts of undergrounding through this area may outweigh the potentially limited benefits. The re-routeing of the overhead line to the east, out with the National Park boundary, is likely to lead to more substantial visual impacts from the A81 when accessing the National Park by motor vehicle or bicycle.	

C: Landscape improvement along key access routes to screen views	
Landscape improvements to improve the integration of the overhead line in the area of the West Highland Way, John Muir Way, Rob Roy Way, NCR7, and the development of forest management strategy or community woodland project which responds to the presence of the overhead line in providing long term permanent screening and recreation opportunities.	
Indicative capital cost: **£**	Effectiveness of mitigation: ★-★★
Key positive aspects	
Improve the visual experience form West Highland Way, John Muir Way and Rob Roy Way long distance footpath and National Cycle Route 7 at eastern extent of overhead line section. Reverse the overgrazing from sheep and poor forestry management across Moor Park, and east of Muir Park Reservoir. Opportunities to tie in landscape enhancement with a long-term forestry management plan for the area, which ensures woodland screening along the route of the overhead line is retained over time. Much stakeholder support for this option as it was judged to be a cost effective means of delivering large scale change, which would be experienced by a relatively large number of recreational visitors to the National Park.	
Key negative aspects	
Mitigation option would require multiple landowners to buy-in to any proposal, to ensure the long-term effectiveness of the established woodland. Long-term time scale to mitigate the visual impacts of the infrastructure along the more open and exposed sections of the overhead line (e.g. east of Muir Park Reservoir and the route of the Rob Roy Way and NCR7).	

D: Art installation(s) on key access routes to draw views	
Art installation on the West Highland Way, John Muir Way, Rob Roy Way and NCR7, located to distract viewers from the presence of the overhead line and divert their attention towards other visual foci.	
Indicative capital cost: **£-££**	Effectiveness of mitigation: ★
Key positive aspects	
A new installation could distract viewers away from the presence of the overhead line, focusing their attention on key views elsewhere. Installation may become an added visitor attraction/point of interest in an already popular location, with opportunities to link into existing Scottish Scenic Routes initiative installations around the National Park and the existing network of long distance footpaths and cycle routes which pass close to the existing overhead line in this area. An installation may provide an opportunity to run a design competition in conjunction with this mitigation option.	
Key negative aspects	
Introduction of further man-made influence into this landscape would lead to inevitable visual impacts which would need to be justified. Artworks and installations, especially in sensitive scenic landscapes, are highly personal and subjective and therefore any intervention has the potential to be controversial or unpopular.	

Would require an appropriate location and landowner buy-in to allow implementation and ongoing management.

Summary
This was not an area identified as being of the highest priority within the National Park, however, due to the relatively large number of visitors who access the National Park, and recreate within this area it had wide ranging support from stakeholders for some form of mitigation proposals to be progressed. The costly options of undergrounding and re-routeing, Options A and B, received little support from stakeholders, as they were not judged to represent best value when taking account of the transitional nature of this peripheral edge of the National Park and the likely impacts on other receptors which the implementation of either mitigation option would likely result in. Option C was generally accepted by stakeholders as the most favourable mitigation option proposed as although it would require medium to long-term time scale for it to be effective, it would deliver cost effective mitigation of the most important visual impacts from key recreational routes whilst delivering potential mutual benefits for access, tourism, biodiversity and management of the existing forestry and woodland in this area. This option was therefore seen as the preferred mitigation proposal to be progressed. Option D received mixed support from stakeholders as introducing a further man-made intervention into this landscape was not seen as advantageous, although the merits of this option were supported by those stakeholders with an interest in tourism and improving visitor experience, and it was agreed amongst most stakeholders that a number of modest interventions delivered in combination with large scale landscape enhancement may offer a good compromise (e.g. sculpture trail), providing an effective distraction for receptors and creating a local point of interest.
Highest priority mitigation project
Option C: Landscape improvement along key access routes to screen views — **High**

CL/CK1 Glen Fruin

A: Undergrounding through Glen Fruin	
Undergrounding of a section of both overhead lines through the National Park to appropriate terminal tower positions located outside the National Park boundary.	
Indicative capital cost: **££££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
Opportunity to improve the landscape setting of this lost corner of the National Park through the removal of the existing infrastructure. Removal of the infrastructure from the National Park would improve the experience of users along the Three Lochs Way.	
Key negative aspects	
Expensive mitigation option in an area of the National Park is not renowned for its scenic value and is not experienced by a particularly large number of visitors. The impacts of undergrounding through this area may also may outweigh the potentially benefits. Undergrounding would require the introduction of sealing end compounds and terminal towers at the western and eastern extents of the underground cable route, which would need to be incorporated into the existing landscape, potentially leading to similar significant impacts.	

B: Re-route overhead line outside the National Park	
Re-routeing of parallel 132 kV overhead lines outside of the National Park boundary to the south, on the western slopes of Tom na h-Airidh between Glen Fruin and Helensburgh.	
Indicative capital cost: **££££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
Opportunity to improve the landscape setting of this lost corner of the National Park through the removal of the existing infrastructure. Removal of the infrastructure from the National Park would improve the experience of users along the Three Lochs Way, however the re-routed overhead line is likely to cross the route of this long distance footpath, and also the John Muir Way, albeit outside the National Park boundary to the south-east.	
Key negative aspects	
If re-routed to the south of the enclosing ridge pylons would be seen above the ridge, highly visible from the settlement of Helensburgh, and views from across the Clyde estuary. Pylons would potentially impact on longer distance views towards the National Park. Impacts on tourism and the local economy of Helensburgh were noted by a number of stakeholders, who considered that the re-routeing of the overhead line was likely to lead to more substantial impacts out with the National Park. The mitigation option was not seen as a cost effective means of mitigating the existing visual impacts.	

C: Landscape enhancement along the Three Lochs Way and alternative walking route

Green network/landscape improvements along the route of the Three Lochs Way long distance footpath, including an alternative route inland through upper Glen Luss - including landscaping - wide scale planting in the glen, improvement to the appearance of the track.

Indicative capital cost: **£**	Effectiveness of mitigation: ★★

Key positive aspects

Landscape enhancement along the glen has the potential to greatly improve the current degraded condition of the landscape in this corner of the National Park. Focused along the route of the Three Lochs Way long distance footpath, the introduction of woodland and scrub planting to mitigation visual impacts from key sections of the route could be coupled with minor re-routeing of the existing footpath route, away from the infrastructure.

The Three Lochs Way connects communities as well as providing recreation access for visitors and tourists. The proposal has landowner support from Luss Estates, and would take users away from the pylons and other visual distractions such as Faslane submarine base, into a currently underused part of the park, with opportunities for interpretation along its course.

Relatively low cost to implement and could be delivered within a short timescale with landowner buy-in and collaboration of key stakeholders.

Key negative aspects

Plans need to allow for long-term management and maintenance of the route and any landscape enhancement and screen planting.

Mitigation would be a long-term measure, with the benefits of visual screening from woodland not established for a relatively long period of time. Introduction of woodland to the glen would potentially conflict with existing agricultural land use in the glen, and would require a management plan to be agreed for the ongoing maintenance of the implemented mitigation.

Summary

Although this section of line was not identified as being of the highest priority for mitigation within the National Park stakeholders were generally supportive of the need to mitigate the visual impacts of the infrastructure through the glen, and there was agreement that proposals to benefit the objectives of the local communities of Helensburgh on the doorstep of the National Park would be advantageous.

Options A and B were not supported by the majority of stakeholders, due mainly to the high likely cost and the relatively low scenic value attached to this part of the National Park. A number of stakeholders raised concerns about Option B in particular, due to the likely impacts on views from Helensburgh and impacts on the setting of this settlement which has undergone somewhat of an economic renaissance in recent times, due mainly to tourism which may be directly affected by any re-routeing of the infrastructure to the south of the enclosing ridge of Tom na h-Airidh above Helensburgh at the National Park Boundary.

Option C received widespread support from stakeholders, and was clearly the preferred mitigation option which it was felt offered best value and justification for progression. Although the mitigation measures would not completely remove the visual impacts of the overhead lines, when considered in the context of improved visitor experience along the Three Lochs Way, the proposals were judged to make the greatest contribution to the objectives of the National Park, and complement the tourism and visitor interests of the nearby community of Helensburgh. This proposal also had major landowner buy-in from Luss Estates who are a key stakeholder involved in the Three Lochs Way and wish to see the route of the long distance footpath extended or diverted away from the existing transmission infrastructure into the Luss Hills/

Highest priority mitigation project

Option C: Landscape enhancement along the Three Lochs Way and alternative walking route	**High**

Eildon & Leaderfoot NSA

AT / U / V Leaderfoot Valley

A: Undergrounding of line through the NSA	
Removal of 8km of existing overhead line (AT route) and undergrounding (within the NSA)	
Indicative capital cost: **£££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
Removal of overhead line would eradicate all presence of transmission infrastructure within the NSA, and potentially set a precedent for other nationally designated landscapes elsewhere in Scotland. Mitigation of visual impacts would be complete following implementation of undergrounding. The removal of the infrastructure from the northern extent of the NSA would contribute to the general good condition of the landscape within the NSA, and remove visibility of infrastructure from Black Hill which is a key characteristic of the local landscape.	
Key negative aspects	
Expensive mitigation option of not particularly substantial visual impacts which in the context of the initiative were not judged to be of the highest priority. Impacts are generally experienced by a relatively small number of visitors. The impacts of undergrounding through this area may also may outweigh the potentially benefits, especially at the foot of the intimate and densely wooded Leader Water Valley. Undergrounding would require the introduction of sealing end compounds and terminal towers at the western and eastern extents of the underground cable route, which would need to be incorporated into the existing landscape, potentially leading to similar significant impacts. Impacts of undergrounding, at least in the short-term, may be more substantial than the existing impacts associated with the overhead line. This option received little stakeholder support due to the costs involved and the relatively limited extent of the identified impacts.	

B: Re-route or replace overhead lines so they run outside the NSA	
Re-routeing of 8km of existing overhead line (AT route) along an alternative alignment to the north of the NSA.	
Indicative capital cost: **£££-££££**	Effectiveness of mitigation: ★★★★★
Key positive aspects	
Removal of overhead line would eradicate all presence of transmission infrastructure within the NSA, and potentially set a precedent for other nationally designated landscapes elsewhere in Scotland. Mitigation of visual impacts would be complete following implementation of re-routing. The removal of the infrastructure from the northern extent of the NSA could contribute to the general good condition of the landscape within the NSA, and remove visibility of infrastructure from Black Hill which is a key characteristic of the local landscape if routed far enough north to be imperceptible from this location. The removal of the overhead line is unlikely to lead to substantial impacts on the landscape or other receptors when compared to undergrounding through the NSA.	

Key negative aspects

Mitigation option would be relatively expensive to implement in the context of the impacts and the benefits which would be derived. The re-routeing out with the NSA is likely to result in significant impacts elsewhere.

This option received little stakeholder support due to the costs involved and the relatively limited extent of impacts.

C: Development of an Eildon and Leaderfoot NSA Management Plan

Development of an Eildon and Leaderfoot NSA Management Strategy/Plan. The plan must include objectives linked to the mitigation of visual impacts associated with overhead line infrastructure, and a chapter on the topic (rationalisation of infrastructure, removal of clutter, and potential future re-routeing out of the NSA).

Indicative capital cost: **£**	Effectiveness of mitigation: ★

Key positive aspects

An NSA wide management strategy or plan could act as a key facilitator for other initiatives within the NSA, and aid in the delivery of other objectives (e.g. increased tourism, access, recreation etc.).

A great deal of stakeholder support from locally based stakeholders, but with a Nationally focused objective, which could be implemented elsewhere in other NSAs across Scotland.

A long-term management plan for the NSA may include the future removal of transmission infrastructure or the implementation of landscape enhancement to reduce the existing impacts of the overhead lines both within the NSA and its immediate setting.

Key negative aspects

Any strategy require the collaboration of many other parties (e.g. stakeholders and landowners) in order to develop a strategy with clear objectives for the NSA as a whole. This may lead to a number of conflicts and it may be difficult to reach consensus.

A long-term vision for the NSA, the outputs of which may not directly mitigate the visual impacts identified. The ongoing management costs may need to become the responsibility of stakeholders (e.g. the local authority or third sector organisations).

Summary

Stakeholder support for mitigation proposals concerned with this NSA received a mixed level of support, due in part to the general unfamiliarity of some stakeholders with the area being considered. There was a general consensus that due to the scale of the infrastructure and the associated impacts, it was not an area which represented one of the highest priorities within the initiative. As a result Options A and B were not supported as viable or cost effective ways to address the impacts of the existing overhead line which crosses the NSA.

Option C was suggested by a number of stakeholders with a local interest and knowledge of the NSA, and was identified as means of planning, implementing and managing the landscape of the NSA whilst mitigating to so some extent the existing visual impacts associated with the transmission infrastructure.

There development of a broader landscape management strategy which may include or contribute to enhancement of recreation and tourism interests was seen as providing benefits to the locality of the transmission infrastructure and the NSA as a whole.

Highest priority mitigation project

Option C: Development of an Eildon and Leaderfoot NSA Management Plan	**High**

Stakeholder Consultation

7.8 Discussions with stakeholders during the above consultation meetings and workshops, focussed on assigning 'high priority' or 'low priority' to each of the long-list mitigation options. **Table 7.4** presents a summary of the responses, where for ease of reference the options are colour coded to highlight the least favoured (red) through to the most favoured (green).

7.9 It is notable that undergrounding projects were among the least favoured initiatives, while strongest support was shown for landscape enhancement measures. However, it must be emphasised that this was an initial reaction gathered during the consultation meetings, rather than a considered response, and the overall prioritisation of projects is based on a relatively small sample of stakeholders who attended the meetings and workshops.

Table 7.4: Results of stakeholder mitigation project priorities

Line section and proposal	Priority
Loch Lomond & The Trossachs National Park	
YW.1 Gleann nan Caorann	
A: Undergrounding through Ben Lui Wild Land Area	**Low**
B: Landscape enhancement: native woodland planting/restoration	**Medium**
YW.2 Inverarnan	
A: Undergrounding from Inverarnan into Glen Gyle	**Low**
B: Alternative/sculptural pylon design between Inverarnan and Cruach	**Medium**
C: Landscape enhancement around substation/A82/West Highland Way	**High**
D: Installation of a sculptural incident or attraction	**Medium**
YW.3 Glen Gyle	
A: Undergrounding through Glen Gyle	**Low**
B: Landscape enhancement: native woodland planting/restoration	**High**
YW.4 Stronachlachar, Loch Katrine	
A: Undergrounding a short section above Stronachlachar Pier	**High**
B: Minor re-route of short section above Stronachlachar Pier	**Medium**
C: Landscape enhancement: native tree and shrub planting	**High**
D: Installation of a sculptural incident or attraction	**Medium**
YW.6 / 7 Loch Ard Forest	
A: Restructuring of forestry and wayleaves, improved access along aqueduct route	**High**
YW.8 East of Drymen	
A: Undergrounding from National Park boundary towards Flanders Moss	**Low**
B: Re-route overhead line away from National Park gateway	**Low**

Line section and proposal	Priority
C: Landscape improvement along key access routes to screen views	**High**
D: Art installation(s) on key access routes to draw views	**Medium**
CL/CK1 Glen Fruin	
A: Undergrounding through Glen Fruin	**Low**
B: Re-route overhead line outside the National Park	**Low**
C: Landscape enhancement along the Three Lochs Way and alternative walking route	**High**
Eildon & Leaderfoot NSA	
AT / U / V Leaderfoot Valley	
A: Undergrounding of line through the NSA	**Low**
B: Re-route or replace overhead lines so they run outside the NSA	**Low**
C: Development of an Eildon and Leaderfoot NSA Management Plan	**High**

Formal representations

7.10 Subsequently, formal representations were received from SNH, LLTNPA and the Luss Estates Company articulating their considered view as to the areas and proposals that should be prioritised under the Changing the VIEW initiative, and parallel SHE Transmission VISTA initiative. These formal stakeholder representations are documented in **Appendix 4** of the **Stage 1 & 2 Appendices** which accompany this report.

7.11 The representation from SNH provided commentary on all the proposed options within the LLTNP. In relation to SPEN infrastructure, SNH suggest that high priority should be assigned to line section YW.3 Glen Gyle, especially at its southern end where undergrounding of the overhead line along with that along section YW.4 Stronachlachar, Loch Katrine would mitigate visual impacts in what is a high profile tourist area. In addition, YW.8 East of Drymen could 'possibly' be considered high priority, where the overhead line is in close proximity to the West Highland Way, John Muir Way and Roby Roy Way long distance footpaths in an area which serves as a gateway to the LLTNP. The response also suggests that section YW.2 Inverarnan, where towers appear prominent on the skyline when travelling on the A82, could 'possibly' be identified as high priority, however they raise concerns that an alternative pylon design could draw further attention, and a new installation would be too close to that of the Inveruglas and Falls of Falloch Scenic Routes installations. Although undergrounding of this section could be effective, they highlight issues associated with cost and reinstatement of vegetation. Landscape enhancement to screen lower level infrastructure such as the Inverarnan substation[41] is highlighted as a relatively low cost option in this area.

7.12 In relation to SPEN infrastructure the letter from LLTNPA stated that their *"preferred option should there only be one opportunity due to capital costs."* would be "*Underground or minor re-routeing of a short section above Stronachlachar Pier"* (line section YW.4). In particular the letter refers to the "*…key view at the head of Loch Katrine is experienced by a large number of tourists whether travelling by steamer, visiting the viewpoint at the Pier and café by foot, car or bicycle and would*

[41] Inverarnan substation is owned and operated by SHE Transmission, and therefore mitigation of impacts associated with this infrastructure is being considered under the VISTA initiative.

result in the most benefit to the experience of all members of the public including residents, tourists to the Great Trossachs Forest, Great Trossachs Trail and the aims of the National Park."

7.13 In addition, LLTNPA would welcome the development of landscape enhancement measures in the YW.6/.7 Loch Ard Forest area, which sits within the area covered by the ongoing Strathard Ecosystems Services Project[42] *"which has considerable wider stakeholder interest in terms of natural flood management and community aspirations"*. The letter expresses support for the "*restructuring of the forestry and wayleaves to enable water capture, improve visual qualities and visual experience as well as improvements to access routes*" as part of the Changing the VIEW initiative, which could be delivered in collaboration with the Strathard Project to bring mutual benefits to this area of the LLTNP.

7.14 A further formal representation was made by the Luss Estates Company, via the LLTNPA, in relation to both the SPEN Changing the VIEW and SHE Transmission VISTA initiatives. The letter from Luss Estates draws specific attention to outline proposals for a project which mitigates impacts associated with transmission infrastructure in Glen Fruin (CL/CK.1) and Arrochar, referred to as the Three Lochs Way Luss Glens Project.

7.15 The letter states that the existing Three Lochs Way long distance footpath route "suffers significant adverse visual impact from high voltage lines and their supporting pylons throughout its length, especially so in its northern sections from Glen Fruin to Inveruglas" and suggests *"rerouting the TLW through the Luss Glens the VISTA/VIEW project offers an excellent opportunity to mitigate these negative impacts"*. A suggested alignment for this alternative route is also outlined in the letter "*An obvious alternative route for the trail using historic rights of way exists through Auchengaich Glen, Glens na Caorainn, Mollochan and Douglas and "The String", a high pass between Glen Douglas and Arrochar. Apart from mitigating the visual impact of the power lines, this new route would create a link with Luss, which at present is the only community in the area which does not have an effective link with The Three Lochs Way."*

7.16 The Luss Estates Company highlight that this alternative route may offer a range of benefits beyond those associated with visual impact mitigation including *"By opening up the beautiful Luss Glens to TLW users, we believe that these improvements would have a transformational impact on recreational opportunities in our area. In principle we would support the construction of such a path."*

[42] http://www.thecommunitypartnership.org.uk/project/strathard-a-place-to-live-work-play/ and http://www.thecommunitypartnership.org.uk/wp-content/uploads/2015/12/Map-Starathard-boundary.pdf

8 Provisional short-list of projects

8.1 Following the input from stakeholders, the long-list of proposals was refined to a provisional short-list of projects that would each be suitable for further development in **Stage 3** of the Changing the VIEW initiative. This provisional short-list is presented in **Table 8.1**. The selection process was undertaken with reference to the three key criteria of successful mitigation, stakeholder support, and initial high level technical deliverability and affordability within the limits of the OFGEM funding.

8.2 Of these criteria, stakeholder support has been considered the most important factor in the final selection of mitigation projects.

Table 8.1: Provisional short-list of projects

Line section and proposal	Priority
Loch Lomond & The Trossachs National Park	
YW.2 Inverarnan	**High**
Option C: Landscape enhancement around substation/A82/West Highland Way ** Alternative alignment of existing overhead line to be explored in parallel*	
YW.3 Glen Gyle	**High**
Option B: Landscape enhancement: native woodland planting/restoration	
YW.4 Stronachlachar, Loch Katrine	**High**
Option A: Re-routeing Undergrounding a short section above Stronachlachar Pier	
YW.6/7 Loch Ard Forest Central & South	**High**
Option A: Restructuring of forestry and wayleaves, improved access along aqueduct route	
YW.8 East of Drymen	**High**
Option C: Landscape improvement along key access routes to screen views	
CL/CK1 Glen Fruin	**High**
Option C: Landscape enhancement along the Three Lochs Way and alternative walking route	
Eildon & Leaderfoot NSA	
AT / U / V Leaderfoot Valley	**High**
Option C: Development of an Eildon and Leaderfoot NSA Management Plan	

Outline descriptions of mitigation projects

8.3 The following section presents a brief description of each of the provisional short-listed mitigation projects, setting out what each project is anticipated to entail, and providing the reasons for its selection.

Landscape enhancement at Inverarnan (YW.2)

Description of the Project

8.4 SPEN will seek to enhance the landscape around the existing 275kV overhead line at Inverarnan by undertaking a range of measures to screen views or to redirect them away from the overhead line, specifically from the route of the Great Glen Way and the A82.

8.5 This project will require design and development to arrive at a final scheme of works. It is envisaged that local stakeholder groups will be involved in developing the detail of this project.

8.6 This project will potentially be developed in collaboration with SHE Transmission, who have also identified this as a priority area mitigation, specifically the area immediately surrounding the Inverarnan substation and the adjacent 132kV lines which connect into this substation to the north (Glen Falloch) and south (Upper Loch Sloy).

8.7 The likely extent of the works involved in this project is shown indicatively in **Figure 8.1**.

8.8 In parallel to the development of landscape enhancement proposal at Inverarnan, and owing to the high degree of prominence of the existing towers in this location (as highlighted by the majority of stakeholders), SPEN will explore options for re-routeing of this section of the overhead line. Initial engineering feasibility work will be undertaken by SPEN to determine the technical feasibility of potentially innovative options before consulting with stakeholders on the relative benefits of any mitigation solutions which may emerge.

Mitigation of impacts

8.9 The landscape and visual impacts associated with the overhead line at Inverarnan (YW.2) were judged to be of moderate importance, however, cumulative impacts in combination with SHE Transmission infrastructure were judged to be greatest where several lines, including the SPEN 275kV line (YW) converge into the Inverarnan substation, leading to cumulative impacts on the naturalistic landscape of the glen. The YW.2 section of line gives rise to moderate visual impacts on a range of receptor groups, including users of the A82 and West Highland Line, walkers on the West Highland Way and visitors to local recreational facilities. There are cumulative visual impacts associated with the SPEN (275kV) and SHE Transmission 132kV) lines converging at the substation, most notably from sections of the West Highland Way, and views from the Beinglas campsite.

Stakeholder support

8.10 Inverarnan was highlighted by the majority of stakeholders as being of the highest priority for mitigation. There was stakeholder support for addressing impacts on views from the West Highland Way, and for addressing the cumulative impacts of both SPEN and SHE Transmission infrastructure in this location. Stakeholders noted that there may be opportunities to tie potential proposals into the planned upgrade of the A82, and commented that proposed planting would need to be sensitive to the landscape setting.

Landscape enhancement in Glen Gyle (YW.3)

Description of the Project

8.11 SPEN will seek to enhance the landscape around this section of overhead line (YW.3 Glen Gyle), developing a landscape scale landscape enhancement plan which complements the objectives and plans of the Great Trossachs Forest NNR initiative, as well as contributing to the wild land characteristics of the Ben More – Ben Ledi WLA, whilst also seeking to mitigate views of the infrastructure from key recreational routes in close proximity to the 275kV overhead line (e.g. Great Trossachs Path).

8.12 This project will require design and development to arrive at a final scheme of works. It is envisaged that local stakeholder groups will be involved in developing the detail of this project.

8.13 The likely extent of the works involved in this project is shown indicatively in **Figure 8.2**.

Mitigation of impacts

8.14 The overhead line within Glen Gyle (YW.3) has a high landscape and visual impact, and were judged to be of highest importance for potential mitigation. The impacts are greatest when experienced in the narrow glen and remote upland areas of the Ben More – Ben Ledi (7) Wild Land Area (WLA) accessed by hill walkers, and where the overhead line appears in juxtaposition to the key characteristics of the landscape and exerts a relatively wide visual influence across the surrounding hill slopes and summits.

8.15 The overhead line passes through predominantly open moorland/rough grassland which is devoid of native woodland and vegetation as a consequence of intensive grazing. The project aims to mitigate the impacts of the overhead line by introducing large scale native woodland planting in keeping with the objectives of the Great Trossachs Forest Imitative, whilst improving access provision to the glen and surrounding upland areas which diverts receptors away from the transmission lines.

Stakeholder support

8.16 Glen Gyle (YW.3) was highlighted by a range of stakeholders as being of highest priority for potential mitigation. Although not a heavily visited and largely inaccessible part of the National Park, the area overhead line was considered to have a substantial influence on the glen and wider area, including the WLA through which it passes. Although undergrounding of this section of overhead line was suggested by some stakeholders (SNH), due to its location within a remote WLA consisting of challenging terrain the potential impacts associated with undergrounding were not deemed to outweigh the potential benefits. Landscape enhancement had support from a number of stakeholders, many of which highlighted the potential for proposals to tie into the Great Trossachs Forest initiative and improve accessibility to this part of the National Park.

Re-routeing at Stronachlachar, Loch Katrine (YW.4)

Description of the Project

8.17 SPEN will seek to reduce the impact of overhead line infrastructure in the immediate vicinity of the settlement of Stronachlachar and north-western banks of Loch Katrine. The use of cables in place of a single circuit of the current 275kV overhead line, use of alternative towers and/or re-routeing of the line are to be investigated. This assessment will focus on a study area between the B829 near Loch Arklet and Point na Lich, directly north of Stronachlachar. The project will require the identification of potential cable routes, sites for two sealing end compounds or alternative routes for the existing line.

8.18 SPEN has set out in detail to stakeholders that owing to the strategic nature of this infrastructure (YW route) and the terms of its licence conditions (return to service), undergrounding of any

infrastructure may not be possible. Any project will require significant design and development to arrive at a final project, which will then be subject to detailed Environmental Impact Assessment (EIA) and relevant planning consent procedures.

8.19 The likely extent of the works involved in this project is shown indicatively in **Figure 8.3**.

Mitigation of impacts

8.20 The visual and landscape impacts associated with this section of overhead line (YW.4 Stronachlachar, Loch Katrine) were both considered to be of high importance. The greatest impacts generally arise in close proximity to Stronachlachar and its immediate setting, where a small number of transmission towers are located on elevated and complex ground, appearing prominent above the small settlement and are unavoidably distinguishable in views towards Stronachlachar when approach the pier along Loch Katrine. The visual impacts are experienced by a range of different receptors, however most importantly due to the scenic and cultural heritage significance of this area, high numbers of tourists and visitors experience these impacts, as well as local people. Recreational users of the Great Trossachs Path also experience close proximity views of the infrastructure. In some views the pylons diminish the scale of the hills that form the backdrop of views across the loch, and detract from the scenic qualities of the area.

Stakeholder support

8.21 Stronachlachar was highlighted by most stakeholders as highest priority for mitigation, including the LLTNP Authority and SNH, who both indicated that their preferred mitigation option for this area would be undergrounding of a short section of the overhead line which is responsible for the greatest visual and landscape impacts. Other stakeholders were also supportive of this option, and overall, stakeholder support for an appropriate engineering led solution was considered sufficient to include this project in the short-list for further development.

Wayleave project across the Loch Ard Forest (YW.6-7)

Description of the Project

8.22 SPEN will seek to develop a refreshed approach to the treatment of wayleaves and forestry management across the Loch Ard Forest, whilst improving access along the aqueduct route and to areas of the Loch Ard Forest. Focusing on existing areas where the 275kV overhead lines passes through areas of broadleaf woodland and coniferous forestry. The project will identify best practice, through research, for planting within wayleaves and means of securing more naturalistic edges.

8.23 Working with landowners and in collaboration with key stakeholders involved in the Strathard Ecosystems Services Project, SPEN will identify locations along the existing alignment of the overhead line where restructuring could deliver greatest mitigation of the existing visual impacts as well as further environmental and recreational benefits.

8.24 There is also potential to develop this project in collaboration with SHE Transmission in other locations across the National Park where the new approach could be trialled. Where felling is carried out, the approach will be implemented and the results monitored over a number of years. Including modifications where necessary, the approach will be adopted more widely with the intention of being applied to all situations in future.

8.25 The likely extent of the works involved in this project is shown indicatively in **Figure 8.4**.

Mitigation of impacts

8.26 The landscape impacts associated with these sections of overhead line (YW.6-7) are moderate, whilst the visual impacts were judged to vary from moderate for the central section (YW.6) and high for the southern section (YW.7). Landscape impacts were judged to be generally focused on the linear form of the overhead line and its accompanying 80m wide wayleave which creates a

very noticeable and large scale feature within a monotone land cover of predominantly coniferous woodland.

8.27 As a result, an approach to the restructuring of forestry, tied into a management plan and access strategy for the Loch Ard Forest was suggested, coupled with improvement of access (circular routes for walking/mountain biking) and softening of wayleaves through the forest. Stakeholder support. This approach would seek to reduce the prominence of the infrastructure from sections of existing recreational routes such as the Rob Roy Way whilst offering potential alternative routes which take receptors away from the transmission line.

8.28 Although the impacts of the overhead line through the Loch Ard Forest area were not generally seen as being of the highest priority there was extensive stakeholder support for mitigation projects which addressed this area and a great deal of discussion about potential initiatives which could be run in parallel with landscape scale restructuring of the existing commercial forestry.

8.29 This proposal had support from a number of stakeholders including the LLTNPA, Forestry Commission Scotland and Scottish Water, however support was based on the general principles of addressing forestry wayleave design more widely, coupled with improving access and interpretation along specific sections of the overhead line and nearby aqueduct route.

Landscape enhancement east of Drymen (YW.8)

Description of the Project

8.30 SPEN will seek to enhance the landscape around this section of overhead line (YW.8 East of Drymen) by undertaking a range of measures to screen views from key recreation routes (including Roby Roy Way, NCR7, West Highland Way, John Muir Way) or to divert or redirect routes away from the 275kV overhead line.

8.31 This project will require design and development to arrive at a final scheme of works. It is envisaged that local stakeholder groups will be involved in developing the detail of this project.

8.32 The likely extent of the works involved in this project is shown indicatively in **Figure 8.5**.

Mitigation of impacts

8.33 Parts of this section of line (YW.8) were judged to have a moderate landscape and high visual impact. The impact is greatest where the infrastructure is seen in views experienced from various recreational/tourist routes including the West Highland Way, Rob Roy Way and the National Cycle Route 7, especially where receptors experience these views in close proximity and the large scale of the infrastructure dominates views for sections of these routes. The project aims to mitigate these impacts introducing native broadleaf woodland to partial screen and filter views from sections of these routes, and introduce potential alternative routes for the existing alignments of popular and well used walking and cycling routes, taking receptors away from the transmission lines.

Stakeholder support

8.34 This area was identified as high priority within the National Park due to the relatively large number of visitors who access the National Park, and recreate within this area (e.g. The West Highland Way, Rob Roy Way, National Cycle Route 7) it had wide ranging support from stakeholders (including the LLTNPA) for some form of mitigation proposal.

8.35 Although the proposal would require medium to long-term time scale for it to be effective, it was judged to be able to deliver cost effective mitigation of the most important visual impacts from key recreational routes whilst delivering potential mutual benefits for access, tourism, biodiversity and management of the existing forestry and woodland in this area.

Landscape enhancement in Glen Fruin (CL/CK.1)

Description of the Project

8.36 SPEN will seek to enhance the landscape around this section of overhead line (CL/CK.1 Glen Fruin) by undertaking a range of measures to screen views from the route of the Three Lochs Way and seek to identify potential opportunities to divert or redirect routes away from the parallel 132kV overhead lines.

8.37 This project will require design and development to arrive at a final scheme of works. It is envisaged that local stakeholder groups will be involved in developing the detail of this project.

8.38 The likely extent of the works involved in this project is shown indicatively in **Figure 8.6**.

Mitigation of impacts

8.39 The parallel overhead lines through Glen Fruin (CL/CK.1) have a moderate landscape impact and high visual impact. The impacts are greatest when experienced from sections of the Three Lochs Way long distance footpath in close proximity to the overhead lines. The presence of the two parallel lines often exacerbates the impacts, and the current land management regime of grazing has removed the vast extent of vegetative screening within the glen which could reduce the prominence of the infrastructure.

8.40 The project aims to mitigate these impacts by reducing the quantity of overhead infrastructure, by enhancing the experience of the Three Lochs Way, restoring native mixed and riparian woodland to the glen and improving the experience of receptors recreating within this south-western corner of the National Park. Focused woodland planting will screen parts of the lines through Glen Fruin, and creating an alternative walking route for the Three Lochs Way along Fruin Water within the glen, and an alternative route for the Three Lochs Way which will take walkers into the Luss Hills. This alternative route will take receptors away from the transmission lines which exit the National Park at the head of Glen Fruin and run parallel to the Three Lochs Way to the east of Loch Long. In addressing impacts on the Three Lochs Way, SPEN will coordinate efforts with SHE Transmission, who have also identified impacts on this route as a priority for mitigation in the Arrochar and Loch Long area.

Stakeholder support

8.41 This area was seen by stakeholders as a key location within the National Park for potential mitigation and enhancement. Projects that would reduce the visibility of infrastructure, with the resulting potential to increase walker numbers and improve the experience of users of the Three Lochs Way, received strong support. Stakeholders, including the LLTNPA, Helensburgh & District Access Trust and Luss Estates Company noted that mitigation would improve views from the route of this long distance footpath.

Management Plan for the Eildon & Leaderfoot NSA (AT/U/V)

Description of the Project

8.42 SPEN will seek to develop a Management Plan or Strategy for the Eildon & Leaderfoot NSA in collaboration with key stakeholders, in order to generally enhance the quality and value of the landscape and key special qualities of the NSA. The existing baseline landscape character assessment notes the presence of transmission infrastructure as a detracting feature of several LCTs which cover the NSA, therefore a management plan will seek to address this perceived negative attribute, as well as others identified through its development. SPEN will seek to work with stakeholders to identify mitigation measures which could be identified through the development of the management plan, including provision for the long-term management of the NSA.

8.43 The likely extent of the works involved in this project is shown indicatively in **Figure 8.7**.

Mitigation of impacts

8.44 The overhead line which crosses the NSA (AT) was judged to have a moderate landscape and visual impact, with impacts mainly concentrated within the immediate setting of the infrastructure as it crosses the Leaderfoot Valley. There was a general consensus that due to the scale of the infrastructure and the associated impacts, it was not an area which represented one of the highest priorities within the initiative. Direct mitigation options were not supported as viable or cost effective ways to address the impacts of the existing overhead line which crosses the NSA, or those in close proximity to the NSA.

8.45 A long-term management plan for the NSA may include the future removal of transmission infrastructure or the implementation of landscape enhancement to reduce the existing impacts of the overhead lines both within the NSA and its immediate setting.

Stakeholder support

8.46 Stakeholder support for mitigation proposals concerned with this NSA received a mixed level of support, due in part to the general unfamiliarity of some stakeholders with the area being considered. There was a great deal of stakeholder support from locally based stakeholders such as the Southern Uplands Partnership and Scottish Borders Council, however for as suggested by a number of stakeholders with a local interest and knowledge of the NSA, and was identified as means of planning, implementing and managing the landscape of the NSA whilst mitigating to so some extent the existing visual impacts associated with the transmission infrastructure.

8.47 The development of a landscape management strategy which may include or contribute to enhancement of recreation and tourism interests was seen as providing benefits to the locality of the transmission infrastructure and the NSA as a whole.

SPEN & SHE Transmission short-lists

8.48 The output of Stage 1 and 2 of the Changing the VIEW initiative, as presented in this report, is the provisional short-list of viable projects for further development.

8.49 Similarly, SHE Transmission have developed a provisional short-list of projects as part of their VISTA initiative. As noted in the preceding sections, there are areas of overlap where both transmission operators have identified mitigation projects. SPEN are committed to working with SHE Transmission to develop these overlapping projects in a collaborative way wherever possible.

8.50 The short-lists developed by both transmission operators are summarised in **Table 8.2** below.

Table 8.2: Provisional short-list of Changing the VIEW & VISTA Projects

SPEN Line section and proposal	SHE Transmission Line section and proposal
Loch Lomond & The Trossachs National Park	
YW.2 Inverarnan	**SHET.7 Inverarnan**
Option C: Landscape enhancement around substation/A82/West Highland Way * Alternative alignment of existing overhead line to be explored in parallel	Option C: Landscape enhancement around A82/West Highland Way
YW.3 Glen Gyle	**SHET.5 Glen Dochart**

SPEN Line section and proposal	SHE Transmission Line section and proposal
Option B: Landscape enhancement: native woodland planting/restoration	Option B: Glen Dochart cycle path
YW.4 Stronachlachar, Loch Katrine	**SHET.6 Glen Falloch**
Option A: Re-routeing a short section above Stronachlachar Pier	Option A: Undergrounding in Glen Falloch
YW.6/7 Loch Ard Forest	**Wayleave project across the National Park**
Option A: Restructuring of forestry and wayleaves, improved access along aqueduct route	*Could represent a way to collaborate across both transmission licence areas (Similar to that proposed for YW.6/7)*
YW.8 East of Drymen	**SHET.9 Inveruglas and Glen Sloy**
Option C: Landscape improvement along key access routes to screen views	Option A: Rationalisation (partial undergrounding) combined with landscape enhancement in Glen Sloy
CL/CK1 Glen Fruin	**SHET.10/11 Loch Long Arrochar**
Option C: Landscape enhancement along the Three Lochs Way and alternative walking route	Option C-D: Landscape enhancement around Arrochar
Eildon & Leaderfoot NSA	
AT/U/V Eildon and Leaderfoot NSA	
Option C: Development of an Eildon and Leaderfoot NSA Management Plan	n/a

Next steps

8.51 **Stage 3** of the Changing the VIEW initiative will involve detailed deliverability review and feasibility studies to examine the provisional short-listed projects in more detail, and to determine priorities within the short-list. Development of projects will be undertaken, including routeing studies for undergrounding or realignment projects, and development of landscape proposals in collaboration with landowners and stakeholders. This process will be led by technical teams within SPEN supported by the project team at LUC, but will involve consultation with local stakeholder groups where appropriate. Stakeholders will include those already engaged at Stages 1 and 2, as well as community councils or other groups with a particular local interest. Landowners will be contacted by SPEN during this process.

8.52 At the end of Stage 3 each of the projects identified above will, if still considered feasible and deliverable, become a fully detailed and costed proposal, before progressing towards consenting and implementation in **Stage 4**.

Figures