VOLUME 2: CHAPTER 5 – LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Figures and Visualisations (Volume 3a and 3b of this EIA Report)

Appendices (Volume 4 of this EIA Report)

5. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

5.1 Introduction

This Chapter provides the findings of the Landscape and Visual Impact Assessment (LVIA) of the proposed Carnaig 400 kV Substation (the Proposed Development). The purpose of the LVIA is to identify and describe the potential significant effects on the landscape as a resource in addition to visual amenity and the views of people resulting from the construction and operation of the Proposed Development.

The Chapter is structured as follows:

- Assessment Methodology and Guidance;
- Scope and Consultation;
- Existing Baseline - Existing landscape and visual conditions;
- Potential Impacts;
- Mitigation;
- Residual Impacts; and,
- Summary and Conclusions.

For the purposes of the assessment a clear distinction has been drawn between landscape impacts and visual impacts. These two separate but interlinked aspects can be described as:

- landscape impacts relate to the changes arising from a development upon the physical characteristics or components of the landscape, which together form the character of that landscape, e.g. landform, vegetation and buildings; whereas
- visual impacts relate to the changes to the views of individual or groups of receptors e.g. the views experienced by local residents or people passing through the area.

The assessment has been conducted by a registered practice with the Landscape Institute and in accordance with best practice guidance.

5.2 The Proposed Development

A detailed description of the Proposed Development is provided in **Volume 2 Chapter 2** Project Description. In summary the Proposed Development comprises a new 400 kV substation on a levelled platform, access arrangements, security fencing, SuDS, peat restoration and Landscape and Ecological mitigation planting.

Subject to planning permission and other required consents and approvals being granted, the indicative construction programme for the Proposed Development would comprise:

- Tree felling and vegetation clearance: September 2025;
- Construction start: January 2026; and
- Operation: January 2029.

The detailed construction phasing and programme are subject to change as the design progresses and necessary consents and wayleaves are agreed.

5.3 Assessment Methodology and Guidance

5.3.1 General Approach

The LVIA has been undertaken in accordance with the guidance provided in the following documents:

- Landscape Institute / Institute of Environmental Management and Assessment (2013), 'Guidelines for Landscape and Visual Impact Assessment', 3rd Edition ('GLVIA3')[1];

[1] Landscape Institute and Institute of Environmental Management and Assessment, 2013, *Guidelines for Landscape and Visual Impact Assessment*, 3rd Edition, Routledge, London. (Accessed 03/08/2023))

- Landscape Institute (2013), GLVIA3 Statement of Clarification 1/13[2];
- Landscape Institute (2021), 'Assessing landscape value outside national designations', Technical Guidance Note 02/21[3];
- Landscape Institute (2019), 'Visual Representation of Development Proposals', Technical Guidance Note[4];
- Landscape Institute (2019), Residential Visual Amenity Assessment TGN 2/19[5];

A detailed description of the assessment methodology and guidance which has been adopted in this assessment is provided in **Volume 4 Appendix 5.1** LVIA Methodology.

In the application of GLVIA3 and best practice guidance the assessment has assessed the following stages of development:

- Baseline – The existing landscape and visual conditions;
- Construction (2026) – The temporary impacts of construction (e.g. removal of vegetation, the location of temporary works compounds, traffic control etc.);
- Year 1 winter (2029) – Landscape and visual impacts in the year when the Proposed Development is first completed; and
- Year 15 summer (2044) – Future landscape and visual impacts during summer 15 years after the Proposed Development is implemented when the vegetation has matured.

5.3.2 Study Area

The Study Area has been defined following desk study, fieldwork and the preparation of visibility mapping of the Proposed Development. Based on an examination of the existing landscape, landform and the predicted extent of visibility from potentially sensitive visual receptors an initial Study Area of 5 km from the Proposal of Application Notice (PAN) Boundary was adopted. Following detailed site investigations and fieldwork, in combination with consideration of the likely extent of significant adverse effects, the initial study area was reduced and the following study areas have been adopted:

- A 1 km buffer area from the PAN Boundary to appraise effects on residential properties, road and public rights of way users; and
- A 2 km buffer area from the PAN Boundary to appraise effects on landscape character and landscape designations.

The 1 km Study Area for the assessment of visual amenity reflects the lightly settled nature of the area surrounding the Proposed Development and the limited nature of views due to intervening landform and vegetation. The 2 km Study Area for the assessment of landscape effects reflects the predicted extent of significant indirect effects on the landscape as a resource due to the scale of the Proposed Development and the current landscape context which includes large tracts of commercial forestry and ridgelines that restrict longer distance views (and influence).

Although the Proposed Development may be visible beyond the extent of the Study Areas for the LVIA, assessment of similar projects and fieldwork within the vicinity of the Proposed Development supports the conclusion that significant effects on landscape and visual receptors are unlikely to occur at greater distances.

5.3.3 Sources of Information

The LVIA has been prepared following review and consideration of the following sources of information:

[2] The Landscape Institute (2015) *GLVIA3 – Statements of Clarification*. Available online at: https://www.landscapeinstitute.org/technical-resource/glvia3-clarifications/ (Accessed 03/08/2023))

[3] Landscape Institute (2021), *Assessing landscape value outside national designations, Technical Guidance Note 02/21*. Available online at TGN 02-21: Assessing landscape value outside national designations | Landscape Institute (Accessed 03/08/2023))

[4] The Landscape Institute, *Visual Representation of Development Proposals, Technical Guidance Note 06/19*, 17th September 2019.

[5] Landscape Institute, *Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 02/19* 15th March 2019. Available online at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf (Accessed 03/08/2023))

- The Highland Council (2011) Assessment of Highland Special Landscape Areas[6];
- The Highland Council (2012) Highland-wide Local Development Plan[7];
- NatureScot (2019) Landscape Character Assessment for Scotland[8];
- Ordnance Survey mapping at 1:50,000 and 1:25,000 scales;
- Aerial Photography;
- Publicly available Geographic Information System (GIS) databases;
- MAGIC website; and
- Google Earth, Street View and Maps.

5.3.4 Scoping and Consultation

Consultation on the scope of the LVIA was carried out with THC and other statutory bodies to inform the assessment. A summary of the consultation undertaken and responses received is provided in **Table 5.1** below. Full details of the consultation undertaken on the Proposed Development are provided in the Pre-Application Consultation (PAC) Report.

Table 5.1 Consultation and Scoping Opinion Responses (2023-2024)

Consultee	Response	Action
The Highland Council	The Council expects the EIAR to consider the landscape and visual context of the development and a full Landscape and Visual Impact Assessment (LVIA) forming part of the EIAR is required. This must consider the mitigation inherent in the original substation's design and consider the long term masterplanning of the substation, including scope for further expansion and what form this may take. The designers should investigate where roadside planting and other measures may be included within the proposals or indeed, if advanced planting could take place ahead of determination of the application.	This LVIA has been prepared in accordance with THC's request. The approach to advance mitigation planting will be confirmed with THC as part of the post application process.
	The LVIA should provide Zone of Theoretical Visibility analysis and identify key viewpoints to represent the most sensitive surrounding visual receptors with a series of single frame images with different focal lengths taken with a 35 mm format full frame sensor camera – not an 'equivalent.' The focal lengths should be 50 mm and 75 mm. The former gives an indication of field of view and the latter best represents the scale and distance in the landscape i.e. a more realistic impression of what we see from the viewpoint. This imagery should be used to provide existing and proposed photomontages to assist with the assessment and determination of the application. The timing of the visualisation photography should reflect the worst-case scenario when existing deciduous trees and vegetation is not in full leaf. Similarly, should any additional planting be proposed, visualisations should represent the development at the point of completion, and with 10 years of landscape planting growth. Whilst this proposal is not for a wind farm, the photomontages should follow the Council's Visualisation Standards:	The LVIA includes provision of a ZTV. The viewpoint photography has been undertaken in accordance with THC's request except for the following exclusion: the photography has been undertaken in summer owing to the absence of deciduous woodland or vegetation which would screen views, better light conditions for viewpoint photography and safer working practices relating to weather and day length.

[6] The Highland Council (2011) Assessment of Highland Special Landscape Areas
[7] The Highland Council (2012) Highland-wide Local Development Plan
[8] NatureScot, *Landscape Character Assessment of Scotland* (2019) Available online: https://www.nature.scot/sites/default/files/LCA/LCT%20135%20-%20Rounded%20Hills%20-%20Caithness%20&%20Sutherland%20-%20Final%20pdf.pdf (Accessed 03/03/2023))

Consultee	Response	Action
	Assessments should cover impacts of all elements of the development, including the substation building, replacement substation infrastructure, any likely new or re-located overhead line infrastructure, any security fencing, any tree felling and any lighting.	
	Visualisations should be prepared to Highland Council Standards. These should be provided in hard copy in a A3 leaver arch ring bound folder for ease of use. The finalised list of viewpoints for the assessment should be agreed in advance of preparation with input from the Council's Landscape Officer (Anne Cowling), who is yet to respond to this scoping consultation.	The visualisations have been prepared as per THC's request.
	We acknowledge that there will be some micrositing of the viewpoints to avoid intervening screening of vegetation boundary treatments etc. We would recommend that the photographer has in their mind whether the viewpoint is representative or specific and also who the receptors are when they are taking the photos it would be helpful. We have also found that if the photographer has a 3D model on a laptop when they go out on site it helps the orientation of the photography.	These comments were taken into consideration in the undertaking of the viewpoint photography.
	The purpose of the selected and agreed viewpoints should be clearly identified and stated in the supporting information. For example, it should be clear that the viewpoint has been chosen for landscape assessment, or visual impact assessment, or cumulative assessment, or sequential assessment, or to show a representative view or for assessment of impact on designated sites, communities or individual properties.	The viewpoints selected for the LVIA have been categorised as requested by THC.
	When considering the impact on recreational routes please ensure that all core paths, the national cycle network, long distance trails are assessed. It should be noted that these routes are used by a range of receptors	The requested receptors have been identified and assessed if present within the Study Area for the Proposed Development.
	A landscaping, management and maintenance scheme for the site is required and as this will have wider habitat and biodiversity interest, this must form part of the EIAR.	The EIAR includes submission of a Landscape & Ecological Mitigation Plan (**Volume 3a Figure 5.4**) which forms part of the Landscape and Ecological Management Plan provided in **Volume 4 Appendix 5.2**.
NatureScot	In the absence of predicted effects on nationally important landscape designations NatureScot will not comment on the application.	No action.

5.3.5 Zone of Theoretical Visibility

To assist with defining the area within which the Proposed Development would be likely to be visible, and to help identify potential visual receptors and viewpoint locations, Zone of Theoretical Visibility (ZTV) mapping has been prepared (refer to **Volume 3a Figures 5.2** and **5.3**).

The ZTV is computer-generated utilising a digital terrain model (using OS Terrain 5 at 5 m resolution), with a three-dimensional (3D) model of the Development inserted (taken as 15 m above the platform level). The ZTV illustrates the theoretical visibility of the Proposed Development throughout the Study Area based on an average eye height of an adult person (taken as 2 m).

In this instance, one ZTV have been prepared: 'bare earth', which illustrates theoretical visibility of the Proposed Development without the screening afforded by buildings and vegetation and, as such, it represents a 'worst-case scenario'.

5.3.6 Scope of the Landscape and Visual Impact Assessment

Only receptors with the potential for a significant effect have been taken forward for analysis in the assessment. **Table 5.2** details the receptors scoped in or out of the LVIA providing justifications for the latter.

Table 5.2 Items Scoped In / Out of Assessment

Receptor	Scoped In	Scoped Out (with justification)
Landscape Character and Designations	Landscape character and designations within 2 km of the PAN Boundary. A preliminary assessment will accompany the LVIA to ascertain which landscape receptors are assessed in detail. This is likely to include the landscape character within the PAN Boundary, within the locality, and the 'host' LCT Rounded Hills – Caithness & Sutherland 135.	Landscape character and designations out with the 2 km Study Area due to the low height of the Proposed Development, landform undulations and the resulting constrained visual envelope, and likely limited influence of the Proposed Development on the perception of the character of the landscape beyond the Study Area.
Visual Receptors	Effects on the six representative viewpoints selected to illustrate the view from transport and recreational routes / and from the edge of settlement areas. Effects on properties and settlements within 1 km Study Area; People undertaking recreation i.e, fishing on Loch Buidhe and walking within the study area; and Sequential effects on Lochbuie Road which would provide access to the existing 275 kV Loch Buidhe Substation and the Proposed Development.	Effects on visual receptors out with the 1 km Study Area and with limited or no visibility of the Proposed Development as demonstrated by the 'Bare Earth' ZTV. Residual adverse significant effects are unlikely beyond the 1 km Study Area.

5.3.7 Assumptions and Limitations to the Assessment

The preliminary desktop study identified there would be limited adverse effects on occupiers of residential properties south of the Proposed Development. This is due to screening by existing vegetation on or immediately adjacent to the southern boundary which, together, filters or restrict views north towards the Site.

The appraisal of residential properties, or groups of properties, is limited to those within c. 1 km of the Proposed Development. A number of these properties are accessed from private farm tracks / roads, and due to the limitations of access, they have been appraised from the nearest public road or footpath with the aid of aerial photographs. No properties have been accessed from their curtilage and as such the appraisals are an estimation and have been undertaken from the nearest available public viewpoint using professional judgement.

It is acknowledged that there would be other views to the Proposed Development. A selection of representative viewpoints has been analysed from a variety of directions and distances and to illustrate potential effects on the landscape context, and a range of visual receptors (e.g. road users, core path users, residential receptors and those undertaking recreation), to provide an overview 'in the round'.

5.4 Planning Policy

Planning policies relevant to Landscape and Visual matters are detailed within the accompanying Planning Statement.

5.5 Baseline Conditions

5.5.1 General

This section sets out the current landscape and visual conditions within the PAN Boundary and the associated Study Area(s). The landscape and visual baseline conditions were established by undertaking a detailed desk study, a ZTV study and fieldwork; the latter verified the ZTV findings.

5.5.2 Baseline Conditions

The Proposed Development is located approximately 9.5 km to the north east of Bonar Bridge and immediately adjacent to the south western boundary of the existing 275 kV Loch Buidhe Substation as shown in **Volume 3a Figure 2.1** Proposed Development.

The Proposed Development is located on the eastern side of a broad, open valley area, on the lower, north west facing slopes of Meall Mor. These slopes are covered with coniferous plantation which is actively managed. Access to the location is taken from the Lochbuie Road, a minor, single track road providing local access. The landscape surrounding the Proposed Development largely comprises moorland with small areas of farmland (typically found to the south, peatlands dominating the north). The location is surrounded by coniferous woodland which extends to the east across the slopes of Beinn Domhnaill.

As indicated above, to the immediate north east of the Proposed Development is the existing Loch Buidhe Substation into which two OHLs connect. This substation is largely screened from views from Lochbuie Road by a combination of the existing landform and mature coniferous woodland. The extent of the Proposed Development includes the site of the consented lattice telecommunications tower sited on Meall Mhor, to the south east of the proposed substation (THC reference 23/05825/FUL). As a consequence of its siting, and distance from visual receptors the lattice tower and associated compound exerts limited influence on the visual amenity experienced from Lochbuie Road and residences in the wider area.

Residential properties in the area comprises dispersed farmsteads and cottages largely located to the south west of the Proposed Development on the south western slopes of Sidhean Mor. These properties are typically aligned to a southern aspect with limited or no visibility to the north towards the Proposed Development.

There are no way marked walking or cycling routes or identified core paths which cross the Proposed Development. Lochbuie Road to the immediate west provides access from Bonar Bridge to Little Torboll via Loch Buidhe, the loch itself being used for informal recreational purposes. The Carnegie Road is located to the immediate west of the Proposed Development. This waymarked hill track provides access to Loch Laro and Achinduich to the west from Lochbuie Road.

5.5.3 Landscape Character

The Proposed Development and the 2 km Study Area are located wholly within Landscape Character Type (LCT) Rounded Hills – Caithness & Sutherland 135[9]. This LCT is common across southern and eastern. Sutherland. Key characteristics of this LCT with relevance to the Proposed Development are described below:

- ”Rolling hills forming broad, subtly rounded summits but with some more pronounced hills also occurring, these often featuring steeper slopes along the coast or where deeply truncated by deep glens.
- Predominantly dense heather ground cover and mooorland grasses, but also some areas of bog.
- Fragments of broadleaf woodland in inaccessible locations.

[9] NatureScot, *Landscape Character Assessment of Scotland* (2019) Available online: https://www.nature.scot/sites/default/files/LCA/LCT%20135%20-%20Rounded%20Hills%20-%20Caithness%20&%20Sutherland%20-%20Final%20pdf.pdf (Accessed 03/03/2023))

- Scarcely settled with a largly uninhabitated interior and widely scattered crofts and farms on lower slopes adjoining straths and farmed landscapes.
- Wind farms located in more accessible and generally lower rolling hills, either close to extensive forestry or the high voltage transmission line aligned broadly parallel to the south east Sutherland coast.
- Convex character of hill slopes limiting distant visibility and views of the hill tops when travelling through the landscape.
- Views into the interior of the hills very restricted.
- Strong sense of wild character can be experienced within the more remote and little modified parts of this landscape".

The landscape character for much of the area gives the impression of being open, large scale and relatively undeveloped by human intervention and retains natural qualities. However, the presence of overhead power lines and the geometric forms of the coniferous plantation woodland introduce locally prominent man-made elements, reducing the sense of naturalness. Based on these qualities, the sensitivity of the LCT to change associated with the Proposed Development is judged to be Medium.

The location of the Proposed Development in relation to LCT's is provided in **Volume 3a Figure 5.1** Landscape Character Types and Designations.

5.5.4 Designated and Protected Landscapes

There are no nationally or regionally designated landscapes covering the PAN Boundary or falling within the 2 km Study Area of the Proposed Development.

5.5.5 Representative Viewpoints

In accordance with GLVIA3 representative (and as consulted on with THC's landscape officer), viewpoints have been identified to inform the LVIA and provide evidence on which the assessment of landscape and visual effects have been based. The viewpoints have been selected in locations where visual effects would be anticipated, or to demonstrate the reduction of effects with distance, or no effects due to the screening.

Four of the five viewpoints selected for the assessment provide representative views of the sequential experience of the Proposed Development that would be experienced from the Lochbuie Road. They include the initial, partial views that southbound and northbound users would experience (Viewpoints 1 and 5) in addition to more open views that would be gained as the Proposed Development is passed (Viewpoints 2 and 4). In addition to these a viewpoint has been provided from the Carnegie Road hill track (Viewpoint 3).

The list of representative viewpoints is provided in **Table 5.3** along with the reasons for their selection and distance relative to the Proposed Development.

Table 5.3 LVIA Selected Viewpoints

VP Ref.	Viewpoint Name / Location	Receptor Type	Reason for Selection	Distance to PAN Boundary (m)
1	Lochbuie Road (west of existing substation)	LCT Road users	Viewpoint is representative of a sequential view from Lochbuie Road providing an initial view of the Proposed Development for southbound road users.	285 m
2	Lochbuie Road (in proximity to the Proposed Development Access)	LCT Road users	Viewpoint is representative of a sequential view from Lochbuie Road providing a view in proximity to the proposed site entrance.	140 m
3	Carnegie Road	LCT	Viewpoint provides illustrative view of wider landscape context to the Proposed Development.	750 m

VP Ref.	Viewpoint Name / Location	Receptor Type	Reason for Selection	Distance to PAN Boundary (m)
		Hill walkers / users of footpath	Viewpoint is representative of views experienced by users of the Carnegie Road hill track to Loch Laro.	
4	Lochbuie Road (south of An Uidh Crossing)	LCT Road users	Viewpoint provides illustrative view of wider landscape context to the Proposed Development and current screening. Viewpoint is representative of a sequential view from Lochbuie Road experienced by northbound road users.	2.0 km
5	Lochbuie Road (adjacent to Water Works)	LCT Road users / residents	Viewpoint provides illustrative view of wider landscape context to the Proposed Development and current screening. Viewpoint is representative of a sequential view from Lochbuie Road providing an initial view of the Proposed Development for northbound road users.	2.5 km

5.6 Potential Impacts

The potential impacts resulting in significant effects identified for the different phases of the Proposed Development include:

Construction:

- Temporary direct and indirect landscape effects on landscape character both within the PAN Boundary and at the local level, resulting from the change in land use from commercial forestry to the construction of the Proposed Development and concomitant increase in traffic and machinery.
- The presence of construction compounds, fencing and temporary spoil heaps.
- Areas of bare earth from temporary stockpiles and new landforms before they have had a chance to ‘green up’ from the landscape works.
- Artificial light in a currently relatively dark landscape, resulting from floodlighting to allow a full working day in winter.
- Temporary effects on the visual amenity of Lochbuie Road users adjoining the Proposed Development who would have views to construction activities and traffic movements and potentially construction lighting.

Operation:

- The increase in electricity transmission infrastructure (adjacent to the existing Loch Buidhe Substation) with an industrial appearance into a rural landscape.
- The creation of new landforms, including cut and fill slopes, and the creation of new drainage and SuDS features around the Proposed Development.
- Effects on landscape character both within the PAN Boundary and at the local level at Year 1, although these effects would reduce over time as visual screening and additional landscape establish and mature.
- Potential effects on the Rounded Hills – Caithness & Sutherland 135 LCT from the change in land use from commercial forestry to energy storage and transmission. This would be mitigated for by landscape planting which would create a graded edge to the forestry following construction. This would provide some filtering to views if additional felling of the forestry is required.
- Effects on the visual amenity of users of Lochbuie Road in Year 1, although these effects would reduce over time as visual screening and additional landscape establish and mature.

5.7 Mitigation

Mitigation measures are undertaken as a response to anticipated adverse impacts, in order to either reduce the magnitude of change, or where possible ensure that the nature of adverse impacts is positive or neutral in the long term.

Mitigation for landscape and visual impacts has been considered during the options appraisal stage and throughout the design phase of the Proposed Development. An iterative design process (involving collaboration between the Developer, the engineering design team and environmental specialists) has been used to produce an engineering design which includes mitigation for potential environmental impacts, including landscape and visual impacts. The environmental mitigation has also been designed in consultation with THC and other statutory bodies.

In addition to primary mitigation (options appraisal and site selection), a Landscape and Ecological Mitigation Plan (**Volume 3a Figure 5.4**) has been developed which incorporates a mix of planting and earthworks and is integral to the Proposed Development proposals. Details of the proposed implementation and management of the mitigation planting is provided in **Volume 4 Appendix 5.2** Landscape and Ecological Management Plan. A list of mitigation items specific to landscape and visual matters is provided in **Volume 2 Chapter 16** Schedule of Mitigation.

5.8 Assessment of Effects on the Landscape Resource

The assessment provided below sets out the landscape effects resulting from the Proposed Development incorporating the mitigation measures described in **Section 5.7**.

5.8.1 Assessment of Effects on the Local Landscape

Construction

The construction phase of the Proposed Development would be conducted over a period of approximately 36 months.

The presence of construction compounds, fencing and temporary spoil heaps, and the emerging Proposed Development would result in direct permanent changes to the existing landscape features and fabric under the development footprint during the construction phase. As the construction of the Proposed Development progresses, the presence, noise and movement of large machinery would be intrusive and alter the relatively tranquil nature of the moorland area. This would be a high magnitude of change to the PAN Boundary itself and the immediate local landscape. This impact would result in a Major adverse landscape effect at the local level. This effect is Significant. Effects on the LCT as a whole would be not significant.

Operation (Year 1 and Year 15)

The Proposed Development would result in direct and permanent changes to the existing landscape resource of the Proposed Development. The Proposed Development would change the physical characteristics and appearance of the location itself and it would increase the presence of electricity transmission infrastructure. At Year 1 the magnitude of change would be High and the resulting effect would be Major / Moderate and adverse. This effect is Significant. However, on the assumption that woodland mitigation planting between the Proposed Development and Lochbuie Road would establish and mature, and that forestry operations surrounding the Proposed Development would be ongoing, views from Lochbuie Road and the Carnegie Road would be largely screened and the change to the landscape would not be widely perceived. On this basis the magnitude of change at Year 15 would be low and the resulting effect would be Minor / Moderate and adverse. This effect is Not Significant.

5.8.2 Assessment of Effects on Landscape Character

Rounded Hills – Caithness & Sutherland LCT

The Proposed Development would be located within the Rounded Hills – Caithness & Sutherland LCT. The landscape effects would be localised on the hillside side, and by the screening afforded by coniferous plantation

to the south. The Proposed Development would, in combination with the existing Loch Buidhe Substation, increase the footprint of electricity transmission infrastructure albeit in a localised portion of the upper reaches of Strath Carnaig.

Construction Effects

During the construction phase, the installation of the Proposed Development would be an obvious undertaking within the LCT. The magnitude of change would be High and the resulting effect would be Major / Moderate and adverse. This effect would be Significant.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development would be a readily apparent feature in the landscape. Mitigation planting would be in the early stage of establishment and offer limited integration of the Proposed Development into the landscape and limited screening. In this regard the magnitude of change would be High and the resulting effect would be Moderate and adverse. This effect would be Significant.

Effects at Year 15

At Year 15 it is anticiapted that the mitigation planting associated with the Proposed Development would have established sufficiently to afford integration of the Proposed Development into the landscape and screen views such that the change resulting from its implementation would not be readily apparent. In this regard the magnitude of change would be Low and the resulting effect would be Moderate / Minor and neutral. This effect would be Not Significant.

5.9 Assessment of Effects on Visual Amenity

5.9.1 Introduction

The visual assessment draws from the ZTV in **Volume 3a Figure 5.2** Zone of Theoretical Visibility and Visual Receptors, site visits and viewpoint analysis and assesses the potential visual effects on views and visual amenity likely to be experienced by receptors (people) within the landscape as follows:

- Views from nearby residential properties, hamlets, and settlements.
- Views experienced while travelling through the landscape (recreational road users, walkers, horse riders, cyclists for example); and,
- Views from tourist and recreational destinations.

As indicated above in **Section 5.5**, visual receptors comprise:

- Users of Lochbuie Road;
- Users of the Carnegie Road; and
- Residents of Sleastary, Clashbahn, Badbog and Reidhbreac.

Assessment of Effects on Users of Lochbuie Road

Users of Lochbuie Road gain relatively open and undeveloped views of the landscape adjacent to the road and the wider surrounds in combination with the OHLs which traverse the area. At present, views of the existing Loch Buidhe Substation are screened from view by a combination of landform and coniferous woodland on the lower slopes of Meall Mor. In consideration of the experience of the landscape that users of Lochbuie Road gain, and likely high value, users have been ascribed a High sensitivity to change. Representative views experienced from the route are represented in Viewpoints 1, 2, 4, and 5. These viewpoints illustrate the sequential experience of views towards the Proposed Development at Year 1 and Year 15.

Construction Effects

During the construction phase users of Lochbuie Road are likely to experience partial views of construction activities except where the view is impeded by landform over a relatively short duration and within a narrow field of view. The construction activities would appear to be localised and not necessarily interrupt wider views and

appreciation of the area surrounding the Proposed Development. The magnitude of change would be High and the resulting effect would be Major and adverse. This effect would be Significant.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development would be a readily apparent feature in the landscape from locations in close proximity to the Proposed Development and not screened by landform and / or vegetation. The earthworks associated with the scheme would be readily apparent from Lochbuie Road. Mitigation planting would be in the early stage of establishment and offer limited integration of the Proposed Development into the landscape and limited screening. In this regard the magnitude of change would be High and the resulting effect would be Moderate and adverse. This effect would be Significant.

Effects at Year 15

At Year 15 it is anticipated that the mitigation planting associated with the Proposed Development would have established sufficiently to afford integration of the Proposed Development into the Landscape and screen views from Lochbuie Road such that the change resulting from its implementation would not be readily apparent. In this regard the magnitude of change would be Low and the resulting effect would be Moderate / Minor and neutral. This effect would be Not Significant.

Assessment of Effects on Users of Carnegie Road

Users of Carnegie Road gain relatively open and undeveloped views of the landscape, the extent of views increasing as a function of the relative elevation of the road in combination with the OHLs which traverse the area. At present, views of the existing Loch Buidhe Substation are largely screened from view by coniferous woodland on the lower slopes of Meall Mor. In consideration of the experience of the landscape that users of Carnegie Road gain, and likely high value, users have been ascribed a High sensitivity to change. A representative view experienced from the route is represented in Viewpoint 3.

Construction Effects

During the construction phase users of Carnegie Road are likely to experience views of construction activities except where the view is impeded by landform. The activities will be localised and not necessarily interrupt wider views and appreciation of the area surrounding the Proposed Development. The magnitude of change would be High and the resulting effect would be Major and adverse. This effect would be Significant.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development would be a readily apparent feature in the landscape from locations and largely unscreened by landform and / or vegetation. Mitigation planting would be in the early stage of establishment and offer limited integration of the Proposed Development into the landscape and limited screening. In this regard the magnitude of change would be High and the resulting effect would be Moderate and adverse. This effect would be Significant.

Effects at Year 15

At Year 15 it is anticipated that the mitigation planting associated with the Proposed Development would have established sufficiently to afford integration of the Proposed Development into the Landscape and screen views from Lochbuie Road such that the change resulting from its implementation would not be readily apparent. In this regard the magnitude of change would be Low and the resulting effect would be Moderate / Minor and neutral. This effect would be Not Significant.

Assessment of Effects on Residential Properties

On the whole, the residential properties falling within the Study Area for the Proposed Development (Sleastary, Clashbahn, Badbog and Reidhbreac) experience limited visibility to the north east and the Proposed Development, views being largely screened by landform in combination with vegetation. None of the residential properties identified are predicted to currently experience views of the existing Loch Buidhe Substation. All

residential receptors have been ascribed a high sensitivity to change associated with the Proposed Development.

Construction Effects

During the construction phase, while construction traffic on Loch Buidhe Road may be evident in views from the four residential properties there would be no direct impacts on views resulting from the on-site construction activities associated with the Proposed Development. In this regard there would be no effect on visual amenity.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development it is predicted that there would be no change to the views experienced from residential properties and no resulting effect.

Effects at Year 15

At Year 15 it is predicted that there would be no change to the views experienced from residential properties and no resulting effect.

5.9.2 Viewpoint Assessment

*Viewpoint 1: Lochbuie Road (West of Existing Loch Buidhe Substation) (**Volume 3b Figure 5.5**)*

Viewpoint 1 is located on the bend of the road where near the entrance of the existing Loch Buidhe Substation, north of the Proposed Development. It represents one of the initial southbound views that road users would experience of the Proposed Development. Road users at this location have been ascribed a high sensitivity to change associated with the Proposed Development in consideration of the high value associated with appreciation of the wider landscape that might be experienced from this location.

Construction Effects

During the construction phase, at this location, users of Lochbuie Road are likely to experience partial views of construction activities including the creation of the platform, views of the Proposed Development screened by a combination of coniferous woodland and landform. The magnitude of change would be Low and the resulting effect would be Moderate and adverse. This effect would be Significant.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development would be partially visible. The earthworks associated with the scheme would be visible but not necessarily readily apparent. Mitigation planting would be in the early stage of establishment and offer limited screening of the Proposed Development. In this regard the magnitude of change would be Low and the resulting effect would be Moderate / Minor and adverse. This effect would be Not Significant.

Effects at Year 15

At Year 15 it is anticipated that the mitigation planting associated with the Proposed Development would have established sufficiently to afford integration of the Proposed Development into the Landscape and screen views from Lochbuie Road such that the change resulting from its implementation would not be readily apparent. In this regard the magnitude of change would be Low and the resulting effect would be Moderate / minor and neutral. This effect would be Not Significant.

*Viewpoint 2: Lochbuie Road (in proximity to the Proposed Development Access) (**Volume 3b Figure 5.6**)*

Viewpoint 2 is located on Lochbuie Road to the north of the access arrangement to the Proposed Development. It represents one of a series of views that road users would experience of the Proposed Development as they pass. Road users at this location have been ascribed a high sensitivity to change associated with the Proposed Development in consideration of the high value associated with appreciation of the wider landscape that might be experienced from this location.

Construction Effects

During the construction phase, at this location, users of Lochbuie Road are likely to experience open and extensive views of construction activities including the creation of the platform. The magnitude of change would be High and the resulting effect would be Major and adverse. This effect would be Significant.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development, road users would experience partial views of the buildings and transformers in the western portion of the Proposed Development in combination with the earthworks (the ground cover planting on the earthworks anticipated to have established). Mitigation planting between the Proposed Development and the road would be in the early stage of establishment and offer limited screening. In this regard the magnitude of change would be Medium and the resulting effect would be Major / Moderate and adverse. This effect would be Significant.

Effects at Year 15

At Year 15 it is anticipated that the mitigation planting associated with the Proposed Development would have established sufficiently to afford integration of the Proposed Development into the landscape and screen views from Lochbuie Road such that the change resulting from its implementation would not be readily apparent. In this regard the magnitude of change would be Low and the resulting effect would be Moderate / Minor and neutral. This effect would be Not Significant.

*Viewpoint 3: Carnegie Road (**Volume 3b Figure 5.7**)*

Viewpoint 3 is located on Lochbuie Road to the north of the access arrangement to the Proposed Development. It represents one of a series of views that road users would experience of the Proposed Development as they pass. Road users at this location have been ascribed a high sensitivity to change associated with the Proposed Development in consideration of the high value associated with appreciation of the wider landscape that might be experienced from this location.

Construction Effects

During the construction phase, at this location, users of Carnegie Road are likely to experience views of construction activities including the formation of the platform and associated earthworks. The magnitude of change would be High and the resulting effect would be Major and adverse. This effect would be Significant.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development users of the hill track would experience partial views of the buildings and transformers in the western portion of the Proposed Development in combination with the earthworks (the ground cover planting on the earthworks anticipated to have established). Mitigation planting between the Proposed Development and the road would be in the early stage of establishment and offer limited screening. In this regard the magnitude of change would be Medium and the resulting effect would be Major / Moderate and adverse. This effect would be Significant.

Effects at Year 15

At Year 15 it is anticipated that the mitigation planting associated with the Proposed Development would have established sufficiently to afford integration of the Proposed Development into the Landscape and partially screen views from Carnegie Road such that the change resulting from its implementation would not be readily apparent. In this regard the magnitude of change would be Low and the resulting effect would be Moderate / Minor and neutral. This effect would be Not Significant.

*Viewpoint 4: Lochbuie Road (South of An Uidh Crossing) (**Volume 3b Figure 5.8**)*

Viewpoint 4 is located on Lochbuie Road to the south of the An Uidh crossing. It represents one of a series of views that road users would experience of the Proposed Development (predominantly northbound users). Road users at this location have been ascribed a high sensitivity to change associated with the Proposed

Development in consideration of the high value associated with appreciation of the wider landscape that might be experienced from this location.

Construction Effects

During the construction phase, at this location, users of Lochbuie Road are likely to experience limited of partial views only of construction activities at the Proposed Development due to screening by a combination of the existing landform and vegetation. The magnitude of change would be Low and the resulting effect would be Minor and adverse. This effect would be Not Significant.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development users of Lochbuie Road would experience very limited views of the Proposed Development only, the majority of the Proposed Development is screened by a combination of existing landform and forestry. In this regard the magnitude of change would be Low and the resulting effect would be Minor and adverse. This effect would be Not Significant.

Effects at Year 15

At Year 15 users of Lochbuie Road would experience very limited views of the Proposed Development only, the majority of the Proposed Development is screened by a combination of existing landform and forestry. In this regard the magnitude of change would be Low and the resulting effect would be Minor and adverse. This effect would be Not Significant.

*Viewpoint 5: Lochbuie Road (Adjacent to Water Works) (**Volume 3b Figure 5.9**)*

Viewpoint 5 is located on Lochbuie Road to the west of the water works. It represents one of a series of views that road users would experience of the Proposed Development (predominantly northbound users). Road users at this location have been ascribed a high sensitivity to change associated with the Proposed Development in consideration of the high value associated with appreciation of the wider landscape that might be experienced from this location.

Construction Effects

During the construction phase, at this location, users of Lochbuie Road are likely to experience limited of partial views only of construction activities at the Proposed Development due to screening by a combination of the existing landform and vegetation. The magnitude of change would be Low and the resulting effect would be Minor and adverse. This effect would be Not Significant.

Effects at Year 1

On the completion of construction activities and commencement of the operational phase the Proposed Development users of Lochbuie Road would experience very limited views of the Proposed Development only, the majority of the Proposed Development is screened by a combination of existing landform and forestry. In this regard the magnitude of change would be Low and the resulting effect would be Minor and adverse. This effect would be Not Significant.

Effects at Year 15

At Year 15 users of Lochbuie Road would experience very limited views of the Proposed Development only, the majority of the Proposed Development is screened by a combination of existing landform and forestry. In this regard the magnitude of change would be Low and the resulting effect would be Minor and adverse. This effect would be Not Significant.

5.10 Cumulative Assessment

Consideration of potential cumulative effects on landscape and visual receptors has been of other electrical infrastructure projects falling within the Study Area to the Proposed Development. Such developments include the associated proposed Spittal - Loch Buidhe - Beauly 400 kV OHL in addition to proposed associated Carnaig 400 kV – Loch Buidhe 275 kV underground cable.

The Spittal - Loch Buidhe - Beauly 400 kV Reinforcement Project comprises a new 400 kV OHL between Spittal in Caithness and Beauly, 19 km to the west of Inverness, the southern and northern sections of the OHL connecting at the Proposed Development. At the time of reporting an application to the Energy Consents Unit has not been made and the proposal is at pre-Scoping stage, the final design and alignment of the OHL still to be confirmed. The proposed underground cable would be 200 m long and installed via a cut and fill trench approximately 0.6 m wide. Assuming all disturbed ground cover would be re-instated, and the cable would not be visible, it has not been considered further in this assessment.

In this regard the assessment of cumulative effects associated with the OHL in combination with the Proposed Development has assumed the OHL will comprise steel lattice towers up to c.60 m tall at approximately 350 m centres aligned on the route as shown in **Volume 3a Figures 4.1** and **5.1**. This information is sufficient for the undertaking of a high-level assessment of the potential landscape and visual effects. It is anticipated that a detailed assessment of the cumulative effects arising from the OHL in combination with the Proposed Development will be undertaken as part of the LVIA reporting to the OHL.

For the purposes of this assessment, it has been assumed that the OHL would comprise steel lattice towers (10 -15 m taller than the existing 132 kV OHLs present in the local area. Indicative views of the Proposed Development in combination with the OHL are provided in **Volume 3b Figure 5.10** (which provides the indicative cumulative view from Carnegie Road (Viewpoint 3)) and **Volume 3b Figure 5.11** (which provides the indicative cumulative view from Lochbuie Road adjacent to Water Works (Viewpoint 5))**.** These figures illustrate the Proposed Development at Year 15 in combination with the proposed OHL.

Cumulative Landscape Effects

The Proposed Development in combination with the OHL would result in the direct loss of vegetation and modification to landform within the Rounded Hills – Caithness & Sutherland LCT. Direct effects on landscape receptors would be localised.

Construction

There would be no cumulative landscape effects at construction stage as the construction phases to both developments would not coincide, the Proposed Development being constructed prior to the OHL.

Operation

Cumulative effects on landscape receptors would arise during the construction of the OHL and as a result of the operation of both developments (where both developments would be essentially viewed as one entity). The OHL would be a very noticeable feature within the landscape passing across the Study Area from east to west during both the construction and operational phases (more so during construction). In combination, the Proposed Development and OHL would increase the extent of electricity transmission infrastructure within the Study Area (further increasing the footprint of infrastructure within the Study Area in combination with the existing OHL and the 132 kV Loch Buidhe Substation.

While the mitigation planting to the Proposed Development would initially offer limited integration of the Proposed Development into the landscape and provide limited screening, as the planting matures and establishes, the built elements of the Proposed Development would become less noticeable features. The OHL however would be likely to continue to influence the perceived character of the landscape across a wider area as a result of its tall linear form.

During construction of the OHL and in consideration of the medium sensitivity to change of the Rounded Hills – Caithness & Sutherland LCT, the magnitude of change on the LCT locally, within the region of the Proposed Development would be High and the resulting effect Moderate and adverse. This effect would be Significant. With establishment of the mitigation planting to screen the Proposed Development the perceived effect resulting from the Proposed Development in combination with the OHL would would reduce to Low and the resulting effect would be Moderate / Minor and neutral. This effect would be Not Significant.

Cumulative Visual Effects

Construction

There would be no cumulative effects on visual receptors at construction stage as the construction phases to both developments would not coincide, the Proposed Development being constructed prior to the OHL.

Operation

Cumulative effects on visual receptors would arise during the construction of the OHL and as a result of the operation of both developments (where both developments would be essentially viewed as one entity). Cumulative effects on visual amenity experienced by residents, users of Lochbuie Road and Carnegie Road and others engaged in recreational activities would be likely to be greatest during the construction phase of the OHL while mitigation planting to screen the Proposed Development is at the early stages of establishment and both developments are readily apparent. During construction of the OHL and in consideration of the generally high sensitivity to change of visual receptors (residents, users of Lochbuie Road and Carnegie Road and others engaged in recreational activities), the magnitude of change would be High and the resulting effect Major and adverse. This effect would be Significant.

As the mitigation planting matures, and construction of the OHL is completed, it is anticipated that the effects on visual receptors would reduce. Cumulative effects resulting from visibility of the Proposed Development and the OHL would generally continue to reduce for visual receptors where the establishment of the proposed planting screens views of the built components of the Proposed Development. The OHL however, owing to its tall vertical nature and linearity would continue to influence the views experienced by people across a wider area.

With establishment of the mitigation planting to screen the Proposed Development and integrate the substation into the landscape, the perceived effect resulting from the Proposed Development in combination with the OHL would reduce to Low and the resulting effect would be Minor and adverse. This effect would be Not Significant.

5.11 Summary

In summary, the Landscape and Visual Impact Assessment for the Proposed Development has been undertaken in accordance with GLVIA 3 and following consultation on the scope of the assessment (inlcuding viewpoint selection) with The Highland Council.

The assessment has identified the baseline landscape and visual context to the Proposed Development and assessed the effects resulting from the Proposed Development during the construction phases in addition to the operational phase (at Year 1 and Year 15). The PAN Boundary is located on the eastern side of a broad, open valley area, on the lower, north west facing slopes of Meall Mor. These slopes are covered with coniferous plantation which is actively managed. Access to the Proposed Development is taken from the Lochbuie Road, a minor, single-track road providing local access. The landscape surrounding the Proposed Development largely comprises moorland with small areas of farmland (typically found to the south, peatlands dominating the north). The Proposed Development is surrounded by coniferous woodland which extends to the east across the slopes of Beinn Domhnaill. Visual receptors within the Study Area to the Proposed Development comprise users of Lochbuie Road, users on Carnegie Road and four scattered residential properties (Sleastary, Clashbahn, Badbog and Reidhbreac). Five viewpoint locations were selected for assessment of the Proposed Development. Four of these viewpoints are located on Lochbuie Road and illustrate the short duration change in views resulting from the Proposed Development. The location of the Proposed Development is immediately to the south west of the existing Loch Buidhe Substation. This substation is largely screened from views from Lochbuie Road by a combination of the existing landform and mature coniferous woodland.

The potential for landscape and visual impacts were identified at an early stage and helped guide the siting and design of proposed mitigation planting measures and the approach to mitigation of effects resulting from the earthworks. These measures helped to reduce the potential landscape and visual impacts of the Proposed Development on the wider area.

The assessment identified that the Proposed Development would be sited in the Rounded Hills Caithness and Sutherland LCT and would not be sited within a designated landscape. The Proposed Development would

result in a permanent change to the landscape within a discrete parcel of land, with the loss of commercial woodland and change to the landform as a result of the formation of the platform. However, changes to the character of the landscape would be localised and Major at construction phase reducing to Major / Moderate (Year 1) and then Moderate / Minor 15 years after construction is completed when mitigation planting has established.

Effects on visual amenity of visual receptors would be greatest during the construction phase, reducing as mitigation planting establishes. Effects would be greatest on users of Lochbuie Road (and Carnegie Road) where users are in close proximity to the Proposed Development and / or there is no screening of the Proposed Development by landform or vegetation. For users of Lochbuie Road effects would be Major at construction reducing to Moderate at Operational Phase Year 1 and further reducing to Moderate / Minor at Operational Phase Year 15. For users of Carnegie Road effects would be of a similar rating, effects at Construction Phase being Major and reducing to Moderate at Operational Phase Year 1, reducing to Moderate / Minor at Operational Phase Year 15. Due to screening by landform and / or vegetation no significant effects on the visual amenity experienced from the four residential properties within the Study Area were identified.

Cumulative effects on landscape and visual receptors would be likely to arise as a result of the construction and operation of the proposed Spittal - Loch Buidhe - Beauly 400 kV OHL. It is predicted that for both landscape and visual receptors effects would be greatest during the construction phase of the OHL which would occur post-construction of the Proposed Development and while the mitigation planting to the Proposed Development is still at the early stages of establishment and that effects on both landscape and visual receptors would be significant and adverse.

As the planting matures, effects on landscape and visual receptors resulting from the Proposed Development would reduce as the planting helps to integrate the Proposed Development into the landscape and screen views of the built components. Due to its nature, views of the proposed OHL would remain. However, the cumulative effects would, by this stage, be assessed as Not Significant.

5.12 Conclusions

In conclusion, the Proposed Development would result in a permanent change to landscape features across the area of Proposed Development and in combination with the existing Loch Buidhe Substation, increasing the footprint of electricity transmission infrastructure within the Rounded Hills LCT. The Proposed Development would be likely to significantly affect landscape and visual receptors in the vicinity of the Proposed Development during the Construction Phase and Operational Phase Year 1. At Operational Phase Year 15, the establishment of mitigation planting would reduce visibility of the Proposed Development and integrate the substation into the landscape such that effects would be reduced to the extent that there would be no significant adverse effects at any of the viewpoint locations. Furthermore, the establishment of the mitigation planting would reduce the level of cumulative effects on landscape and visual receptors resulting from Proposed Development to the extent that there would be no residual significant adverse cumulative effects. Effects on the wider landscape and visual amenity of the surrounding experienced in the region of the Proposed Development would not be significant.