SP Energy Networks

400kV OHL ZV Diversion

Environmental Appraisal Report

August 2024

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Environmental Appraisal Report (EAR)

Prepared by

LUC

on behalf of

SP Energy Networks

August 2024

Preface

This Environmental Appraisal Report (EAR) has been prepared in support of an application by SP Energy Networks (SPEN) ('the Applicant') to the Scottish Government Energy Consents Unit (ECU) for consent under Section 37 of the Electricity Act 1989 (as amended) ('the Electricity Act') and deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended), to remove two existing towers (and associated overhead line (OHL) connections) from the existing 400 kilovolts (kV) Scotland to England interconnector (ZV route) and replace with three new installed towers and associated OHL connections between the towers to maintain a continuous connection. The proposal is referred to as the 400kV OHL Diversion and located in South Lanarkshire Council and covers a distance of approximately 1.1km of the existing ZV route at Redshaw, circa 3.5km east of Douglas, South Lanarkshire.

A hardcopy of the EAR (excluding confidential information) along with a map showing the land over which the 400kV OHL ZV Diversion passes will be available for viewing during normal opening hours at the following locations:

Location	**Opening Hours**
South Lanarkshire Council Floor 6, Council HQ, Almanda Street, Hamilton, ML3 0AA	Monday: 8:45am to 4:45pm Tuesday: 8:45am to 4:45pm Wednesday: 8:45am to 4:45pm Thursday: 8:45am to 4:45pm Friday: 8:45am to 4:45pm Saturday: Closed Sunday: Closed
Douglas and St Brides Community Centre Braehead, Douglas, Lanark, ML11 0PT	Monday: 8am to 9pm Tuesday: 8am to 9pm Wednesday: 8am to 9pm Thursday: 8am to 9pm Friday: 8am to 3pm Saturday: Closed Sunday: Closed

The EAR will also be made available for viewing online on the ECU planning portal (https://www.energyconsents.scot/ApplicationSearch.aspx?T=1) and the SPEN project website (https://www.spenergynetworks.co.uk/pages/zv_route_400kv_diversion.aspx).

Any public representations to the application may be submitted via the ECU website at www.energyconsents.scot/Register.aspx; by email to the Government, Energy Consents Unit mailbox at representations@gov.scot; or by post to the Scottish Government, Energy Consents Unit, 4th Floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU, identifying the proposal and specifying the grounds for representation. The Applicant will advertise the submission of the Section 37 and Section 57(2) application in the local press. The advert will state the deadline for submitting representations to Scottish Ministers.

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1. Introduction

1.1.1 LUC has prepared this Environmental Appraisal Report (EAR) on behalf of SP Energy Networks (SPEN) in support of an application to the Scottish Government Energy Consents Unit (ECU) for consent under Section 37 of the Electricity Act 1989 (as amended) ('the Electricity Act') and deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended) for the 'Proposed Development'. The Proposed Development comprises the removal of two existing towers (and associated overhead line (OHL) connections) from the existing 400 kilovolts (kV) Scotland to England interconnector (ZV route) and replace with three newly installed towers and associated overhead line connections between the towers to maintain a continuous connection. Full details of the proposals are described below and the location and site plan of the Proposed Development is shown on **Figure 1.1** and **Figure 1.2**.

1.2 The Applicant and Statutory Licence Duties

1.2.1 SPEN owns and operates the electricity transmission and distribution networks in Southern and Central Scotland through its wholly-owned subsidiaries, SP Transmission plc (SPT) and SP Distribution plc (SPD). SPT is the holder of a transmission licence. SPEN's transmission network is the backbone of the electricity system within its area, carrying large amounts of electricity at high voltages from generating sources such as wind farms, power stations and various other utilities across long distances to connected homes and businesses. The transmission network consists of approximately 4,000 kilometres (km) of overhead lines and over 600km of underground cables. The electricity is then delivered via the distribution network which has over 150 substations and in excess of 100 grid supply points which serves approximately two million customers in Southern and Central Scotland.

1.2.2 As transmission licence holder for Southern Scotland, SPEN is required under Section 9(2) of the Electricity Act 1989 to:

- Develop and maintain an efficient, co-ordinated and economical system of electricity transmission; and
- Facilitate competition in the supply and generation of electricity.

1.2.3 SPEN is required in terms of its statutory and licence obligations to provide for new electricity generators wishing to connect to the transmission system in its licence area. SPEN is also obliged to make its transmission system available for these purposes and to ensure that the system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity.

1.3 The Need for the Proposed Development

1.3.1 The existing transmission grid infrastructure in the South of Scotland will, in the next few years, be operating at full capacity and will therefore no longer be able to accommodate the planned and potential new generation in the area. To ensure sufficient capacity for electricity that needs to be transmitted throughout the area, SPEN proposes to construct a new 400kV/132kV substation (Redshaw substation) close to the existing ZV route which will be able to accommodate a new overhead line connection from Glenmuckloch substation (Glenmuckloch to Redshaw Reinforcement Project (GRRP)[1]) alongside other potential connections in the future. The Redshaw substation is expected to contribute to a more reliable, fit for purpose, and economical transmission network.

1.3.2 Redshaw substation is being progressed for planning consent separately under the Town and Country Planning (Scotland) Act 1997 (as amended). A scoping opinion was provided on 9th February 2024 by South Lanarkshire Council (Planning Reference: P/23/1552)[2] and the Town & Country Planning Application supported by an Environmental Impact Assessment Report is expected to be submitted to South Lanarkshire Council (SLC) in Winter 2024.

1.3.3 Background details regarding the siting process for the proposed Redshaw substation and the substation appraisal can be found on the SPEN project website[3].

[1] GRRP is currently undergoing routeing process and was subject of public consultation from 12th February to 28th March 2024. Details of the project can be found on the project page here: https://www.spenergynetworks.co.uk/pages/grrp.aspx
[2] Scoping Opinion (Planning Reference: P/23/1552) received for the proposed new Redshaw Substation: https://publicaccess.southlanarkshire.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=S5I1REOP09500
[3] Redshaw 400kV Substation details can be found on the project website here: https://www.spenergynetworks.co.uk/pages/redshaw_400kv_substation.aspx

1.3.4 The Proposed Development (subject of this EAR) is required to accommodate the proposed new Redshaw substation. The existing ZV route will require to be diverted prior to the commencement of the proposed Redshaw substation construction.

1.3.5 Currently the existing ZV route passes through the site of the proposed Redshaw substation. To minimise outages on the ZV circuit during the construction and for safe working, a short section of the OHL needs to be relocated north of its current alignment to accommodate the proposed Redshaw substation. The location of the diversion of the ZV route was identified using the nearest tension (angle) towers (towers ZV108 and ZV111) to the site of the proposed new Redshaw substation. The location of the proposed new 400kV/132kV Redshaw substation and the existing ZV route and the diversion proposals are illustrated in **Figures 1.3** and **1.4**.

1.3.6 There is a requirement for the Proposed Development to connect into the Proposed Redshaw substation via gantry connections (**Figures 1.3 and 1.4**). This connection can only be made once the Proposed Redshaw substation is constructed. To maintain a continuous connection of the 400kV ZV route (as diverted) until such time as the Proposed Redshaw substation is constructed, there will be a temporary alignment connection between tower ZV110A and ZV110B; as shown on **Figure 1.3**. This temporary alignment is expected to be in place for a period of three years and then the diversion will be turned into the Proposed Redshaw substation and the temporary alignment between towers ZV110A and ZV110B will be removed.

1.4 Screening for Environmental Impact Assessment

1.4.1 It was necessary to determine whether the Proposed Development would require an Environmental Impact Assessment (EIA) to be undertaken in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ('the EIA Regulations'). EIA development falls into two categories: Schedule 1 development, for which EIA is mandatory; and Schedule 2 development, which is classified as EIA development where the development is "*likely to have significant effects on the environment by virtue of factors such as its nature, size or location"* (Part 1(2) of the EIA Regulations).

1.4.2 The Proposed Development falls under Schedule 2 of the EIA Regulations as it has voltage of 132kV or more (Schedule 2 Part (2)(a)) and the 400kV OHL ZV Diversion may have significant adverse effects on the environment (Schedule 2 Part 3). As a result, LUC, on behalf of SPEN, requested an EIA Screening Opinion from the Scottish Ministers in accordance with Regulation 8(1) of the EIA Regulations on 4th March 2024 (ECU case reference ECU00005071). To inform the decision of the Scottish Ministers as to whether EIA was required, the information set out in Regulation 8(2) and 8(3) of the EIA Regulations as well as the selection criteria in Schedule 3 was provided in the EIA Screening Letter[4]. The Scottish Ministers provided its EIA Screening Opinion[5] on 5th June 2024 which confirmed that EIA was not required based on the information presented in the EIA Screening Letter.

1.4.3 In accordance with the latest Scottish Government guidance for Section 37 projects which are not subject to EIA[9], this EAR provides an appraisal of the environmental effects of the Proposed Development to show how SPEN has considered its obligations under Section 38 and Schedule 9 of the Electricity Act, and demonstrate how it has complied with its duty to do what it can to mitigate effects of the proposals on the environment.

1.4.4 Noise and Traffic and Transport were considered within the EIA Screening Report (see EIA Screening Letter[4]). Given the size, nature and location of the Proposed Development, it was considered that effects would not be material for noise and further inclusion in this EAR was deemed to not be necessary[6]. However, for Traffic and Transport, a Transport Statement (TS) and Construction Traffic Management Plan (CTMP) has been undertaken and provided in support of the S37 application for the Proposed Development.

[4] 400kV OHL ZV Diversion EIA Screening Letter can be found on the project website here: https://www.spenergynetworks.co.uk/pages/zv_route_400kv_diversion.aspx#tablist1-panel1
[5] Scottish Government (June 2024) 400kV OHL ZV Diversion Screening Determination. Available [online] at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00005071
[6] The nearest identified property, the Red Moss Hotel, is currently not operating or occupied and therefore not considered as a residential receptor. As a result, it is not considered to be highly sensitive to noise (even if it should become re-occupied by the time of the proposed works). Other more sensitive residential locations are located further away such that construction noise levels would be substantially lower. Vibration effects of construction activities are localised and would decrease to negligible levels beyond a few hundred metres.

1.5 Content and Structure of the EAR

1.5.1 **Chapter 2** of the EAR provides a description of the proposals for which Section 37 consent and deemed planning permission is being sought. **Chapters 3** to **8** set out the findings of the appraisal of effects of the construction and operation of the Proposed Development on the following topics:

- **Chapter 3: Landscape and Visual Amenity;**
- **Chapter 4: Ecology;**
- **Chapter 5: Ornithology;**
- **Chapter 6: Hydrology, Hydrogeology, and Peat; and**
- **Chapter 7: Cultural Heritage;**

1.5.2 **Chapter 8** provides a summary and the conclusions of the EAR.

1.6 Approach to the EAR Appraisals

1.6.1 This EAR presents the findings of an appraisal of the potential effects associated with the construction and where applicable, the operation of the Proposed Development to demonstrate SPEN's consideration of its obligations under Section 38 and Schedule 9 to the Electricity Act 1989; and evidence that it has complied with its duty to do what it can to mitigate the effects of the development on the environment.

1.6.2 Where possible, a consistent approach to the appraisal of the environmental effects of the Proposed Development has been taken for each topic (as noted above), reflecting and building upon the proposed method of appraisal and utilising the information contained within the EIA Screening letter.

1.6.3 For consistency purposes, each topic chapter is structured as follows:

- Introduction;
- Scope of Appraisal and Study area;
- Policy and Guidance;
- Methodology;
- Baseline;
- Good Practice/Embedded Mitigation;
- Appraisal of Effects;
- Proposed Additional Mitigation; and
- Summary and Conclusions.

1.6.4 Following the establishment of the appraisal methodology used, including the criteria by which each level of effect is defined and the presentation of baseline environmental conditions, each chapter considers direct, indirect and cumulative effects of the Proposed Development taking into account any proposed good practice/design measures[7]. Should any effects require additional mitigation to further reduce their magnitude, then additional mitigation measures are proposed and residual effects appraised. **Appendix 1.1** provides a consolidated list of all good practice/embedded mitigation, additional mitigation measures and any enhancement measures being proposed.

1.6.5 Each chapter has considered the cumulative effects resulting from the introduction of the Proposed Development to the following:

- **Current baseline conditions** which include infrastructure projects (within 10km of the Proposed Development) which are operational and under construction;

[7] Embedded mitigation measures, comprising general good practice construction measures and design will be employed as standard techniques. Therefore, these are not considered to be mitigation as such, but an integral part of construction. This is considered a realistic scenario given the current regulatory context and accepted good practice across the construction industry. A list of embedded mitigation/good practice and any additional mitigation measures are identified in each topic chapter. The assessments in this EAR assume the implementation of these embedded/good practice measures.

- **Future baseline scenario 1**: in which Redshaw substation is consented and constructed (cumulative assessment scenario); and
- **Future baseline scenario 2**: which includes all other proposed (applications submitted) and consented developments (cumulative assessment scenario).

1.6.6 Given the number of proposed developments within the area, the cumulative schemes considered (within 10km of the Proposed Development) (as shown on **Figure 1.5**) focus on the following, as detailed in **Table 1.1** below.

Table 1.1 Other Developments considered in Cumulative Appraisal

Development Name	Type	Approximate Distance	Status
Middle Muir	Wind farm	1.04km	Operational
Andershaw	Wind farm	2.61km	Operational
Hazelside	Wind farm	6.75km	Operational
Douglas West	Wind farm	7.18km	Operational
Hagshaw Hill Extension	Wind farm	8.19km	Operational
Nether Fauldhouse	Wind farm	8.63km	Operational
Birkhill Commercial Park	Wind farm	8.77km	Operational
Galawhistle	Wind farm	9km	Operational
JJ's Farm	Wind farm	9.14km	Operational
Dalquhandy	Wind farm	9.86km	Operational
Kennoxhead	Wind farm	10.23km	Operational
Clyde	Wind farm	9.54km	Operational
Hagshaw Hill Repowering	Wind farm	8.17km	Under construction
Broken Cross	Wind farm	9.2km	Under construction
Douglas West Extension	Wind farm	8.03km	Consented
Priestgill	Wind farm	8.18km	Consented
Priestgill	OHL	6.05km	Consented
Broken Cross surface mine	Wind farm	8.5km	Consented
Kennoxhead Extension	Wind farm	9.2km	Consented
Birkhill	Wind farm	9.55km	Consented
MET Mast Centre	Metrological Mast	1.8km	Consented
Little Gala	Wind farm potential energy storage	4.3km	Application submitted
Bodinglee	Wind farm	1.04km	Application submitted

Development Name	Type	Approximate Distance	Status
West Andershaw	Wind farm with energy storage	4.06km	Scoping[8]
M74 West Renewable Energy Park	Wind/Solar/BESS	Interacts with the Site	Scoping[8]
Duneaton Quarry	Quarry	Interacts with the Site	Application for variation – previously consented

1.6.7 As noted previously, GRRP, if consented, is one OHL project which will connect into Redshaw substation. Whilst this is a known SPEN project, it is currently still undergoing a detailed design review following public consultation and sufficient information on the proposed route/alignment of the new OHL is not yet available to enable it to be adequately considered in the appraisal of this Proposed Development. The GRRP environmental impact assessment (EIA) will consider a future baseline which considers Redshaw substation and the Proposed Development as operational as without Redshaw substation and the Proposed Development, the GRRP OHL will not be constructed.

1.6.8 For OHL developments, it is generally accepted that the effects during decommissioning would be of a lesser magnitude and extent than those during construction and operation. In addition, there are also difficulties in predicting future baseline conditions upon which to base an assessment of decommissioning effects. For these reasons, decommissioning effects are not appraised in this EAR.

1.6.9 The EAR has been prepared in accordance with the latest Scottish Government guidance[9], and the topic chapters draw upon the most up-to-date guidelines where relevant.

[8] Pre-application discussions with South Lanarkshire Council planning department confirmed the inclusion of West Andershaw and the M74 West Renewable Energy Park in the cumulative scenario given their proximity to the Proposed Development.
[9] Scottish Government (August 2019). Applications to the Scottish Ministers under Section 37 of the Electricity Act 1989 without an EIA Report. Available [online] at: https://www.gov.scot/publications/energy-consents-overhead-line-applications-without-an-eia-report/.

2. Project Description

2.1 Project Overview and Location

2.1.1 The Proposed Development comprises the removal of two existing towers (and associated OHL conductors) from the existing 400kV Scotland to England interconnector (known as ZV route) and replacement with three new installed towers and associated OHL conductors between the towers to maintain a continuous connection.

2.1.2 The Proposed Development is located wholly within the administrative boundary of South Lanarkshire Council and covers a distance of approximately 1.1km (as shown in **Figure 1.3 and Figure 1.4**) of the existing ZV route at Redshaw, circa 3.5km south-east of Douglas, South Lanarkshire. The section of the ZV route subject of the Proposed Development is located between the M74 and B7078, north-east of the vacant Red Moss Hotel. The Proposed Development will comprise the following:

- Upgrades to the foundations of two existing ZV route towers (ZV108 and ZV111) and (subject to ground investigation) an upgrade of the tower arms of both ZV108 and ZV111 at the existing locations with removal of old and installation of new associated conductors;
- Removal of two existing ZV route towers (ZV109 and ZV110) and associated conductors (**Figures 1.3 and 1.4** and **Table 2.1**);
- Installation of three new L8c towers at ZV109R, ZV110A, ZV110B and associated conductors and foundation works (**Figures 1.3 and 1.4** and **Table 2.1**);
- Approximately 90m of downleads to gantry structures within the Redshaw substation. The Proposed Development will be operational for a temporary period of three years with a temporary alignment between towers ZV110A and ZV110B as shown on **Figure 1.3**. The downlead connections to the gantry will only be constructed once the proposed Redshaw substation is constructed and prior to the substation being brought into operation. The temporary alignment between ZV110A and ZV110B will then be removed; and
- Temporary construction access tracks.

2.1.3 Further Proposed Development details are provided in **Table 2.1** below:

Table 2.1 Proposed Development Details

Location No.	Foundation	Tower	Conductor & Earth Wire Stringing
ZV108 existing	Only strengthening of foundation at current location (if design recommends).	Only tower arm will be upgraded/strengthened at current location (if design recommends). No change in Tower.	Remove old and install new.
ZV109 existing	Remove completely after energisation of new line.	Remove completely after energisation of new line.	Remove completely after energisation of new line.
ZV110 existing	Remove completely after energisation of new line.	Remove completely after energisation of new line.	Remove completely after energisation of new line.
ZV111 existing	Only strengthening of foundation at current location (if design recommends).	Only tower arm will be upgraded/strengthened at current location (if design recommends). No change in Tower.	Remove old and install new.
ZV109R New	New foundation	New Tower	Install new
ZV110A New	New foundation	New Tower	Install new
ZV110B New	New foundation	New Tower	Install new

Tower Type

2.1.4 The existing and proposed tower types (**Figure 2.1**) and grid coordinates of the towers are provided in **Table 2.2** and **Table 2.3** below. The positioning of the existing and proposed towers is shown in **Figure 1.3 and Figure 1.4**. Each tower will have an approximate temporary working area of 50m x 50m and temporary access tracks during construction (**Figure 1.3 and Figure 1.4**).

Table 2.2 Existing Tower Type and Grid Co-ordinates

Existing Tower No.	Existing Tower Type (& height)	Existing Tower Grid co-ordinates
ZV108	L8c D60 E24 (51.82m)	286727, 627853
ZV109 (tower to be removed completely)	L8c D STD (46.43m)	286992, 627652
ZV110 (tower to be removed completely)	L8c D E16 (51.31m)	287240, 627468
ZV111	L8c D30 STD (43.82m)	287487, 627282

Table 2.3 Proposed Tower Type and Grid Co-ordinates[10]

Proposed Tower No.	Proposed Tower Type (& height)	Proposed Tower Grid co-ordinates
ZV109R	L8c D E9.8 (56.19m)	287008, 627751
ZV110A	L8c DJT E7.3 (55.55m)	287234, 627664
ZV110B	L8c DJT E7.3 (55.55m)	287366, 627528

2.2 Construction Process

2.2.1 The ZV route will be required to be diverted north of its current alignment (as represented by the Proposed Development) to create the necessary space for the safe construction of the proposed new Redshaw substation. The relocation will involve each circuit experiencing separate outages and will require preparatory work to optimise the use of these outages. This includes strengthening the existing foundation, dismantling the existing foundation and towers and building new foundation and towers, as well as removing the existing conductor and installing a new one during the outages (see the Proposed Development details in **Table 2.1** above).

2.2.2 Once the circuit is re-energised, the old foundations of the removed towers ZV109 and ZV110 will be demolished as part of the Redshaw substation's construction earthworks and either reinstated to the existing landcover of rough grazed grassland (ZV109) or in the case of ZV110, the land will be encompassed within the proposed Redshaw substation works.

2.2.3 During the construction phase it is anticipated that the following types of machinery will be utilised: heavy goods vehicles (HGVs), excavators, cranes, breaker, tractor trailer, ride on roller and stringing machine.

Design

2.2.4 The design process for the Proposed Development was led by the SPEN OHL design team. SPEN identified the towers to be removed and replaced, and locations for towers of the proposed diversion. Access tracks and working areas were informed by key environmental and technical constraints, including landscape and visual amenity, cultural heritage and hydrology including watercourses.

[10] Towers ZV108 and ZV111 are excluded from Table 2.3 as there are no proposed changes to the tower type, heights or grid co-ordinates.

Access

2.2.5 Temporary vehicular access to the Site (as shown by the development works proposed in **Figure 1.3 and Figure 1.4**) will be via the B7078, which is a local road administered by South Lanarkshire Council and runs parallel to the nearby M74. Construction traffic access routes will vary but likely routes to be utilised by construction vehicles (HGVs) are as follows:

- For travel to/from the north:
  - M74 Junction 11 (via the A70 and B7078)
- For Travel to/from the south:
  - M74 Junction 13.

2.2.6 The final route will be agreed with the appropriate Road Authorities and an integral part of the approved CTMP to be adopted by the appointed contractor(s).

2.2.7 A new temporary access track from the B7078 (the primary access track) will be formed which will then allow the creation of the temporary formed access tracks required for access to the towers and onsite works. Secondary access to the Site will be taken from an existing access track to the west, adjacent to Redshaw, to a temporary access track north-west of tower ZV108 as shown in **Figure 1.3 and Figure 1.4**.

2.2.8 The primary access track is also proposed to be upgraded to a permanent access track to form part of the proposed Redshaw Substation (subject to separate planning application). The access tracks subject of this application for consent relate only to the temporary access tracks proposed as per **Figure 1.3 and Figure 1.4**.

2.2.9 The initial preference when taking temporary access is to use low ground pressure vehicles and plant. The temporary track will be removed after completion of construction works, with land being restored to as close to its former condition.

2.2.10 The temporary access within the Site will be confirmed by the appointed contractor as an integral part of the adopted CTMP.

Temporary Working Areas

2.2.11 Prior to the diversion works, temporary working areas (approximately 50m x 50m) around each tower will be required for foundation excavation and tower removal/erection. Any vegetation that requires removal will be removed and appropriately stored for re-vegetation of disturbed ground following completion of the construction works. Each working area will be taped off to delineate the area for environmental protection reasons. Following the completion of the construction works, the temporary working areas will be reinstated and restored to former conditions.

Construction Timescales

2.2.12 The diversion process will take approximately 91 working days (from July 2025 to November 2025 (subject to S37 consent)) and construction activities will be undertaken Monday to Friday between approximately 07:00 to 19:00 hours in summer (April to September), and 08:00 to 17:00 hours (or as daylight allows) in winter (October to November[11]). Working hours will be 07:00 to 13:00 hours on Saturdays and there will be no working on Sundays or public holidays. Each circuit will experience separate outages lasting 12 working days and 17 working days respectively. Within the 91-day timeline, there will be preparatory work to optimise the use of these outages. This includes strengthening the existing foundation, dismantling the existing foundation and towers and building new foundation and towers, as well as removing the existing conductor and installing a new one during the outages.

Operation and Maintenance

2.2.13 The Proposed Development will be operational for a temporary period of three years with a temporary alignment between towers ZV110A and ZV110B as shown on **Figure 1.3**. The downlead connections to the gantry will only be constructed once the proposed Redshaw substation is constructed and prior to the substation being brought into operation. The temporary alignment between ZV110A and ZV110B will then be removed.

[11] Winter months will extend through to March if there are construction delays.

2.2.14 Whilst most OHL components are maintenance free, exposed elements which suffer from corrosion, wear, deterioration and fatigue may require inspection and periodic maintenance. OHL cables generally require refurbishment after approximately 40 years.

Site Reinstatement and Aftercare

2.2.15 Following construction, all temporary areas of disturbed land will be reinstated. This will form part of the contract obligation for the Principal Contractor and will involve the removal of any temporary access tracks, all working areas and the re-vegetation of disturbed ground.

2.3 Use of Natural Resources and Production of Waste

Use of Natural Resources

2.3.1 The Proposed Development will not require significant use of natural resources including resources which are non-renewable or in short supply. There will be no major changes to land use within the local area as a result of the OHL diversion, with only minimal long-term land take required for the towers.

2.3.2 There will be no loss of soil, and peat, and no requirement for potable water consumption.

Production of Waste

2.3.3 The Proposed Development will not give rise to any significant quantities of waste. Any soils or peat removed as part of the excavation of tower footings will be replaced in situ as per standard industry practice. Good practice waste management methods will be implemented during the construction phase. These will encourage the reduction, reuse and recycling of wastes. Mitigation measures will be put in place to further minimise the potential environmental effects associated with the storage and transportation of waste, with further details provided below:

- Waste will be generated, and will require management, at a number of construction stages including:
  - Stripping of topsoil and excavation of materials for construction of towers; and
  - Construction of ancillary works, including temporary working areas.

2.3.4 Measures to reduce possible environmental effects associated with the storage and transportation of waste will include:

- The careful location of stockpiles and other storage areas;
- The use of good practice in the design of waste storage areas and the use of suitable waste containers;
- The use of sheeting, screening and damping where appropriate and practicable;
- The control and treatment of runoff from soil and waste soil stockpiles;
- Minimising storage periods;
- Minimising haulage distances; and
- The sheeting of vehicles.

2.3.5 Any materials that cannot be reused will be disposed of according to relevant waste management legislation which will serve to address a number of possible environmental effects.

2.3.6 All of the above details will be enforced through a Site Waste Management Plan (SWMP) as part of the Construction Environmental Management Plan (CEMP). This will be provided subject to fulfilling relevant conditions prior to commencement of onsite work.

2.4 Biodiversity Enhancement

2.4.1 In accordance with National Planning Framework (NPF) 4 (Policy 3), SPEN is committed to achieving No Net Loss (NNL) and Biodiversity Net Gain (BNG) across all of its projects. This means that SPEN are actively moving away from simply mitigating effects on species and ecosystems to enhancing the stock of natural resources on land within our control. This ambition also reflects the Scottish Government's requirement that all projects should conserve, restore and enhance biodiversity so that it is in a demonstrably better state than before the project was proposed. To

ensure that the Proposed Development achieves SPEN's internal NNL policy, and therefore NPF4's requirements for biodiversity enhancement, it will be necessary to deliver habitat creation and enhancement measures, off-site, via a detailed Biodiversity Enhancement Strategy (BEP) which will be secured via a planning condition to the Section 37 consent. The BEP will be prescribed to ensure that newly created, retained and enhanced habitats continue to benefit the habitats and species and provide connectivity to the wider landscape long into the future. **Appendix 4.2: Biodiversity Net Gain Report** provides examples of which potential habitat creation and interventions would aid SPEN in achieving NNL and BNG (**Appendix 4.2**, **Chapter 4**).

2.5 Environmental Management

2.5.1 Prior to the construction of the Proposed Development, SPEN will develop a detailed CEMP with its appointed contractors. The CEMP will identify those responsible for the management and reporting on the environmental aspects during construction. The CEMP will be used to ensure a commitment to meeting all relevant conditions attached to the Section 37 consent and deemed planning permission. Adherence to the CEMP will be a contractual requirement of each contractor that SPEN appoints.

2.5.2 The purpose of the CEMP will be to:

- Provide a mechanism for ensuring that construction methods avoid, minimise and control potentially adverse significant environmental effects;
- Ensure that good construction practices are adopted and maintained throughout construction;
- Provide a framework for mitigating unexpected effects during construction and decommissioning;
- Provide assurance to third parties that agreed environmental performance criteria are met;
- Establish procedures for ensuring compliance with environmental legislation and statutory consents; and
- Detail the process for monitoring and auditing environmental performance.

2.5.3 The CEMP will be updated when necessary to account for changes or updates to legislation and good practice methods throughout the construction and decommissioning phases. The CEMP will also be amended to incorporate information obtained during detailed ground investigations which will be undertaken post consent and prior to construction activities. Compliance with the CEMP (including procedures, record keeping, monitoring and auditing) will be overseen by a suitably qualified and experienced Environmental Manager from SPEN.

2.5.4 The CEMP will contain the following information:

- Policies and objectives;
- Regulatory controls and guidance to be followed;
- A completed register of contacts confirming the contact details for all key personnel for managing environmental issues, including SPEN representatives, the Ecological Clerk of Works (ECoW), Principal Contractor contacts, and appropriate environmental regulator contacts;
- Construction Programme and detailed working method statements;
- A site-specific action plan, providing a register of environmental risks and outlining the requirement for accompanying site-specific mitigation, monitoring and management system reporting procedures;
- Audit and inspection procedures;
- Training plans; and
- Communication plans (onsite, key stakeholders, neighbours and community).

2.5.5 In addition, the CEMP will contain the following documents, which the Principal Contractor and their sub-contractors will be required to adhere to throughout the construction process:

- A Construction Traffic Management Plan (CTMP); and
- Bird Protection Plan (BPP) and Species Protection Plan (SPP).

2.5.6 The CEMP and associated plans will be submitted to SLC, and others as appropriate, prior to the commencement of construction works for sign-off.

2.5.7 The Principal Contractor will be responsible for the continual development of the CEMP to take account of monitoring and audit results during the construction phase and changing environmental conditions and regulations.

2.5.8 The services of other specialist advisers will be retained as appropriate, to be called on as required to advise on specific environmental issues.

2.5.9 Performance against these documents will be monitored by SPENs Construction Project Manager and the ECoW throughout construction.

2.6 Health and Safety

2.6.1 Health and safety is of primary importance to SPEN, with commitment from the highest levels. In constructing and operating the Proposed Development, SPEN will take account of the health and safety of all those who could potentially be affected, including construction workers, SPEN company operatives and the general public.

Construction

2.6.2 All construction activities will be managed within the requirements of The Construction (Design and Management) Regulations 2015 and will not conflict with the Health and Safety at Work etc Act 1974. To further reduce possible health and safety risks, a Health and Safety Plan will also be drawn up. All staff and contractors will be required to comply with the safety procedures and work instructions outlined in the Plan at all times.

2.6.3 To ensure that hazards are appropriately managed, risk assessments will be undertaken for all major construction activities, with measures put in place to manage any hazards identified.

2.6.4 Current industry standards will be followed to manage the risks posed by heavy equipment, falls from heights and rough and dangerous terrain. Information will be made available to the public with respect to any possible safety hazards and open excavations will be fenced off.

Operation and Maintenance

2.6.5 OHL components, including conductors and insulators will be designed and tested at the manufacturers to ensure compliance with relevant UK and European Standards. This will include testing the performance of insulators under stress, the carrying capability of conductors and the effects of voltage and current on the mechanical strength of the fittings.

3. Landscape and Visual Amenity

3.1 Introduction

3.1.1 This chapter presents the findings of a Landscape and Visual Appraisal (LVA) of the potential effects of the Proposed Development on landscape and visual amenity, including residential visual amenity and cumulative effects. It details the baseline environment, based on both desk-based studies and a comprehensive field survey. A description of potential effects is also provided.

3.1.2 The appraisal has been undertaken by LUC and is accompanied by the following appendix:

- **Appendix 3.1: Landscape and Visual Appraisal Methodology**

3.1.3 The appraisal is also supported by the following figures and visualisations:

- **Figure 3.1: Landscape Receptors;**
- **Figure 3.2: Visual Receptors;**
- **Figure 3.3: LVA Viewpoint 1: Wider path network, east of M74 (Outer Law);**
- **Figure 3.4: LVA Viewpoint 2: B7078 Core Path/NCN 74;** and
- **Figure 3.5: LVA Viewpoint 3/Cultural Heritage Viewpoint 2: Auchensaugh Hill, cairn (SM 4234).**

3.1.4 Landscape and visual appraisals are separate, although linked, processes considering landscape and visual effects separately. This landscape and visual appraisal therefore considers the effects of the Proposed Development on:

- Landscape as a resource in its own right (caused by changes to the constituent elements of the landscape, its specific aesthetic or perceptual qualities, the character of the landscape, and the special qualities of designated landscapes); and
- Views and visual amenity as experienced by visual receptors (people) (caused by changes in the appearance of the landscape).

3.1.5 The methods and approach used to carry out the appraisal were informed by the 'Guidelines for Landscape and Visual Impact Assessment' (Third Edition) (GLVIA3)[12]. Landscape and Visual Appraisal (LVA) is distinct from Landscape and Visual Impact Assessment (LVIA) in that it is not a requirement of the Environmental Impact Assessment (EIA) Regulations[13] and, although it describes effects, it is not required to determine 'significance', which is a term with specific meanings related to formal EIA processes. As the Proposed Development has been determined as non-EIA development, the reporting of the significance of effects is not required.

3.1.6 The methodology for the appraisal (contained in **Appendix 3.1**) has been developed by Chartered Landscape Architects at LUC (Chartered Members of the Landscape Institute (CMLI)), who have extensive experience in the assessment and appraisal of landscape and visual effects arising from a range of different types and scale of development, including energy infrastructure, ranging from overhead electricity transmission and distribution lines, electricity substations and multiple forms of renewable energy generation and storage.

3.1.7 Effects of the Proposed Development are identified and described by considering the sensitivity of the landscape or visual receptor, and the magnitude of the landscape or visual change. The factors considered in describing landscape and visual effects include:

- Susceptibility of the landscape or visual receptor to the specific change of the Proposed Development, and the value of the landscape or visual resource affected (which combine to form a judgement on sensitivity); and
- The scale, geographical extent, duration and reversibility of effect (which combine to form a judgement on magnitude of landscape or visual change).

[12] Landscape Institute and Institute of Environmental Management & Assessment (2013), Guidelines for Landscape and Visual Impact Assessment (Third Edition).
[13] The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

3.2 Scope of Appraisal and Study Area

Scope of Appraisal

3.2.1 The different visual receptors that will experience views of the Proposed Development were identified during the appraisal process, desk-study and field work. Operational effects (including cumulative) on the following receptors were identified for consideration in the appraisal:

- Effects on the physical landscape and landscape character of the Study Area;
- Effects on residential receptors including at the property of Redshaw (grid ref: 286029, 628525) approximately 0.9km to the north-west, the property of Thirstane located approximately 1.9km to the south-east of the site. The Red Moss Hotel (grid ref: 287414, 627043) located approximately 350m to the south[14];
- Effects on road users on the M74, B7078 and B740;
- Effects on recreational receptors (e.g. cyclists) on the National Cycle Network (NCN) Route 74/ and surrounding Core Paths; and
- Effects on recreational receptors (e.g. hill walkers) at local hill summits, including Auchensaugh Hill (392m AOD), approximately 1.5km to the west of the Proposed Development.

3.2.2 Effects (including cumulative effects) on the following receptors were not considered:

- Effects on Landscape Character Types (LCTs) within the Study Area with no or very limited visibility of the Proposed Development;
- Effects on all designated landscapes within the Study Area, including the Douglas Valley Special Landscape Area (SLA)[15] and Leadhills and Lowther Hills SLA, as the Proposed Development will not give rise to significant effects on the special qualities of the SLAs given the limited visibility of the Proposed Development and existing influence of the ZV route (illustrated by the ZTV shown on **Figure 3.1**);
- Effects on visual receptors (including recreational receptors, residential receptors and road users) for which no or limited theoretical visibility of the Proposed Development is indicated by the ZTV mapping;
- Landscape and visual effects arising during the construction phase, given the transient and temporary nature of these effects; and
- Cumulative landscape and visual effects arising during the construction phase, given the transient and temporary nature of these effects.

Study Area

3.2.3 Informed by the type and scale of steel lattice tower (approximate maximum height of up to 56m) overhead line infrastructure proposed, the Study Area for the landscape and visual appraisal extends to a 5km radius from the Proposed Development, as shown on **Figures 3.1** and **3.2**.

3.2.4 The extent of the Study Area has been informed by professional judgement and defined on the basis that at distances greater than 5km significant effects on landscape character and, views and visual amenity are unlikely to occur for towers of approximately 56m in height. The Study Area is also consistent with that agreed with South Lanarkshire Council for the assessment of potential landscape and visual effects arising in relation to the proposed Redshaw substation[16].

3.2.5 To consider cumulative effects of the Proposed Development in relation to other developments, the Study Area for the cumulative appraisal considers a 10km radius from the Proposed Development to encapsulate effects arising for receptors located up to 5km distance from the Proposed Development, which may be located an equivalent 5km

[14] The Red Moss Hotel is currently not operating or occupied, but has been considered within the appraisal undertaken based on the assumption that it may in the future be occupied as a residential property.
[15] South Lanarkshire Council (2010), Validating Local Landscape Designations.
[16] Redshaw substation is being progressed for planning consent separately under the Town and Country Planning (Scotland) Act 1997 (as amended). The Town & Country Planning Application supported by an Environmental Impact Assessment Report is expected to be submitted to South Lanarkshire Council (SLC) in Winter 2024.

distance from other developments considered in the appraisal (i.e. in alternative directions to the Proposed Development) and which may give rise to similar landscape and/or visual effects.

3.3 Policy and Guidance

3.3.1 The appraisal has been undertaken following all relevant current policy, legislation and guidance of relevance to landscape and visual amenity.

3.4 Baseline

The Proposed Development

3.4.1 The Proposed Development, as described in **Chapter 2**, includes the removal of two existing towers (ZV109 and ZV110 and associated OHL conductors from the existing 400kV Scotland to England interconnector (known as ZV route) and replacement with three new installed towers and associated overhead line conductors between the towers (ZV109, ZV110A and ZV110B) to maintain a continuous connection. The Proposed Development is located wholly within the administrative boundary of South Lanarkshire Council and the diversion alignment is approximately 1.1km in length (as shown in **Figure 1.3** and **Figure 1.4**). The diversion is located near Redshaw, circa 3.5km south-east of Douglas, South Lanarkshire. The section of the ZV route subject to the Proposed Development is located between the M74 and B7078, north-east of the vacant Red Moss Hotel.

The Study Area

3.4.2 The Study Area extends between Abington and Uddington, within the South Lanarkshire Council local authority area.

3.4.3 The landscape of the Study Area comprises low lying and gently sloping terrain north and south of the B7078 and M74, between approximately 270m AOD and 320m AOD. Landform ascends in the north-east of the Study Area towards Robert Law (406m AOD) and Ewe Hill (377m AOD), with the Tinto Hills located further north-east beyond the 5km Study Area. Landform in the south of the Study Area ascends towards Mountherrick Hill (427m AOD), Mill Scar (427m AOD) and Black Hill (385m AOD), with the summits of the wider Leadhills and Lowther Hills located further south beyond the 5km Study Area.

3.4.4 Land-cover within the Study Area comprises predominantly rough grazing and open moorland. Small pockets of woodland and shelterbelts are located throughout the Study Area, including mixed woodland that lines the M74 in the north of the Study Area, coniferous woodland that occasionally lines sections of the B7078, and a small block of coniferous forestry on the southern flanks of Wildshaw Hill (349m AOD) within close proximity to the west of the Proposed Development. More extensive areas of coniferous forestry are located at distance of approximately 2.5-5km from the Proposed Development, including at Townhead Wood to the north-west, near Middle Muir and Andershaw Wind Farms to the west, and near Mill Scar to the south. A number of sand and gravel quarries (both active and disused) are located in the east and south-east of the Study Area.

3.4.5 The existing electricity transmission network within the Study Area includes the existing ZV Route running from north-west to south-east broadly parallel with the M74, whilst a network of 11kV electricity distribution lines cross the Study Area to the north and south of the Proposed Development. The operational Andershaw and Middle Muir Wind Farms form a cluster of turbines located approximately 1.5km to the south-west of the Proposed Development.

Landscape Character

3.4.6 The 'Scottish Landscape Character Assessment', published by SNH in 2019[17] describes the landscape character of the site and the Study Area, organised via Landscape Character Types (LCTs).

3.4.7 The Proposed Development is located within the Plateau Moorlands – Glasgow & Clyde Valley LCT (213)[18] (as shown on **Figure 3.1**). Key characteristics include:

- *'Large scale landform;*
- *Undulating hills and sloping ridges in the western areas; a more even plateau landform in the east;*

[17] NatureScot (2019) Scottish Landscape Character Types Maps and Descriptions. [online] Available at: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions
[18] Plateau Moorlands – Glasgow & Clyde Valley LCT (213)

- *Distinctive upland character created by the combination of elevation, exposure, smooth plateau landform, moorland vegetation;*
- *Predominant lack of modern development;*
- *Extensive wind turbine development, including one of the largest wind farms in Scotland, Black Law; and*
- *Sense of apparent naturalness and remoteness which contrasts with the farmed and settled lowlands, although this has been reduced in places by wind energy development'.*

3.4.8 The Upland River Valley – Glasgow & Clyde Valley LCT (207)[19] is located in the north-east and south-west of the Study Area, located along the Douglas Water and Duneaton Water valleys, respectively.

3.4.9 South Lanarkshire Council conducted its own local landscape character assessment in November 2010[20]. According to this assessment the Proposed Development is located within the Foothills (10) LCA, and within close proximity to the east of the Plateau Moorland (6) LCA and the Rolling Moorland (7) LCA. The key characteristics of the Foothills (10) LCA are broadly similar to those identified for the national-level NatureScot 2019 Plateau Moorlands – Glasgow & Clyde Valley LCT.

3.4.10 The following management guidelines are noted for the Foothills (10) LCA:

- *'The erection of tall structures such as masts and pylons can lead to disproportionate levels of landscape impact, affecting the remote character of the hills, and sometimes encroaching on the skyline when viewed from surrounding lowland areas; the aim of landscape planning and management should, in order of priority, be to:*
  - *'Discourage the erection of additional masts or other tall structures within the hills;*
  - *Encourage operators to share infrastructure with the aim of minimising the number of masts that are needed;*
  - *Steer any new masts to sites where the landscape and visual impact is minimised;*
  - *Minimise the requirement for ancillary developments such as service roads or servicing buildings.'*

3.4.11 The Proposed Development will upgrade, replace and/or supplement towers of the existing ZV route with comparable scale towers and overhead lines and within the same area of the Plateau Moorlands – Glasgow & Clyde Valley LCT.

Visual Baseline

3.4.12 This section identifies the extent of theoretical visibility of the Proposed Development and identifies visual receptors that are considered as part of the LVA. This section also introduces the viewpoints that are used to appraise effects on receptors, including reasons for their selection.

Analysis of Visibility of the Proposed Development

3.4.13 Given the Proposed Development will upgrade, replace and/or supplement towers of the existing ZV route with comparable scale towers and overhead lines within the same area, comparative Zone of Theoretical Visibility (ZTV) mapping is provided on **Figure 3.1** and **Figure 3.2**. The ZTV on **Figure 3.1** and **Figure 3.2** illustrates the following:

- Areas of theoretical visibility of existing ZV towers (limited to ZV108, ZV109, ZV110, and ZV111), in isolation (indicated in purple)[21];
- Areas of theoretical visibility of the Proposed Development (including the retained ZV108, proposed ZV109R, proposed ZV110A, proposed ZV110B, and retained ZV111), in isolation (indicated in yellow); and
- Areas of combined theoretical visibility of the existing ZV towers and the Proposed Development (indicated in green).

3.4.14 As illustrated by the ZTV on **Figures 3.1** and **3.2**, the extents of theoretical visibility of the Proposed Development will be comparable to the extents of existing visibility of the existing towers of ZV route. The ZTV indicates that areas

[19] Upland River Valley – Glasgow & Clyde Valley LCT (207)
[20] SLC (2010), South Lanarkshire Landscape Character Assessment
[21] Limited to very localised areas including near Pillmore Hill and Backstane Hill.

of introduced visibility resulting from the Proposed Development will generally be located on the fringes of areas with existing visibility. Other towers of the ZV route (located elsewhere on the route further to the north and south-east of ZV108, ZV109, ZV110, and ZV111) are visible in some of these locations. The additional theoretical visibility resulting from the Proposed Development will be marginal, and will not result in additional significant landscape and visual effects, as the proposed diversion towers (ZV109R, ZV110A and ZV110B) will always been seen in the context of other existing towers of the ZV route located either north and/or south of the proposed diversion.

Key Visual Receptors

3.4.1 Potential visual receptors include:

- Residents;
- Road users;
- People at their place of work, including agricultural workers; and
- Those engaged in recreational activities, e.g. walkers and cyclists utilising Core Paths and cycle routes.

Selection of Viewpoints for Appraisal

3.4.2 The viewpoints that are used to represent and appraise the visual effects of the Proposed Development are detailed below. The viewpoint list is a representative selection of locations; it is not an exhaustive list of locations form which the Proposed Development will be visible.

3.4.3 A total of three representative viewpoints were selected through desk study, field work and consultation. Representative viewpoints have been identified to represent a range of receptors, distances and viewing experiences. These viewpoints are all in locations which can be accessed by the public. The viewpoints include:

- Locations selected to represent the experience of different types of visual receptor;
- Locations at different distances to provide a representative range of viewing angles and distances (i.e. short, medium, and long-distance views);
- Locations which represent a range of viewing experiences (i.e. static views and points along sequential routes); specific viewpoints selected because they represent promoted views or viewpoints within the landscape;
- Illustrative viewpoints chosen specifically to demonstrate a particular visual effect or specific issue (which could include restricted visibility in particular locations); and
- Locations which illustrate key cumulative interactions with other existing, consented and/or proposed developments (i.e. either in combination or succession). All three of the representative viewpoints will also be used as representative viewpoints for the Redshaw substation LVIA.

3.4.4 The proposed viewpoint locations are listed in **Table 3.1** below and are illustrated on **Figure 3.2**.

Table 3.1 LVA Representative Viewpoint Locations

Viewpoint	Easting	Northing	Reasons for Selection
Viewpoint 1: Wider path network, east of M74 (Outer Law)	288532	627684	Represents views experienced be recreational receptors and road users on the M74.
Viewpoint 2: B7078 Core Path/NCN 74	287547	627010	Represents views experienced by recreational receptors on NCN Route 74 and Core Path route (CL/3464/1) and road users on the B7078.
Viewpoint 3: Auchensaugh Hill, cairn (SM 4234)	285337	627200	Represents views experienced by recreational receptors/visitors to the Scheduled Monument (SM), and users of the nearby aspirational Core Path route (CL/5713/1).

Settlements

3.4.5 Settlements within the 5km Study Area include Douglas, located approximately 3.7km to the north-west of the Proposed Development, and Crawfordjohn, located approximately 3.4km to the south of the Proposed Development. Distant views towards the existing ZV route, which passes approximately 3.1km to the north-east of Douglas, are screened and filtered by intervening landform and vegetation. The existing ZV route passes 1.4km to the north-east of Crawfordjohn. Intervening localised landform partially contains outward views from the settlement. However, distant views north-east of the existing ZV route are available from the northern edge of the settlement.

Residential Properties

3.4.6 Residential properties within 5km of the Proposed Development are shown on **Figure 3.2**[22]. Within 2km of the Proposed Development, these include the following:

- Redshaw (grid ref: 286029, 628525) located approximately 0.9km to the north-west:

  Redshaw is a single storey property accessed via a private access track leading from the B7078 to the east. The property is located along the lower slopes of the incised watercourse valley along Long Burn. Landform rises towards Parkhead Hill (to the north of the property), Pagie Hill (to the west of the property) and Mid Rig (to the south of the property). Primary views are orientated east and west. Views from the property and its curtilage are relatively open, as there is limited vegetation surrounding the property, and the property is located at slightly higher elevation than the B7078. Views overlook the surrounding pastoral landscape of paddocks and semi-improved grassland. Rising landform to the north and west of the property foreshorten views in these directions. Some hubs and blades of turbines at the operational Middle Muir and Andershaw Wind Farms are visible in the middle distance views south and south-west. The existing ZV route forms an evident feature in outward views north-east to south-east from the property and its curtilage. The Proposed Development will be seen in views south-east from the property at distances exceeding 950m. Other sections of the existing ZV route pass within closer proximity to the residential property than the Proposed Development. Given the similar design and scale of the Proposed Development to the existing ZV route, which exerts an existing influence on views north-east to south-east from the residential property, effects on residential visual amenity are not considered further.

- Thirstane (grid ref: 289176, 626317) located approximately 1.9km to the south-east of the Proposed Development:

  Thirstane is a single storey property accessed via the B7078 to the west. The property is located to the west of the Duneaton Quarry. Views from the property and its curtilage are relatively open, as there is limited vegetation surrounding the property and its curtilage, though the surrounding gently rolling terrain limits views in some directions. Primary views are focused east and west. An outbuilding is located to the south of the property, partially screening views in that direction. Views overlook the surrounding pastoral landscape and the quarry to the east. The existing ZV route forms an evident feature in views west to south-west and extends across more distant views north-west. Some hubs and blades of turbines at the operational Middle Muir and Andershaw Wind Farms are visible in middle distance views south-west, though screened and filtered by intervening coniferous trees lining the southern edge of the B7078. The Proposed Development will be seen in relatively distant views north-west at distances exceeding 1.9km. Other sections of the existing ZV route pass within closer proximity to the residential property than the Proposed Development. Given the similar design and scale of the Proposed Development to the existing ZV route, which exerts an existing influence on views north-west to south-west from the residential property, effects on residential visual amenity are not considered further.

- The Red Moss Hotel (grid ref: 287414, 627043) located approximately 350m to the south[23]:

  Red Moss Hotel is a two storey property accessed via the B7078 to the east. Primary views are focused north and south. Views from the property and its curtilage are relatively open, though partially filtered by vegetation

[22] The residential property of Maidengill, located approximately 2.3km to the north of the proposed development, is being proposed to be removed from residential use as part of the proposed Bodinglee Wind Farm (ECU reference: ECU00004839). Technical Appendix 4.2: Residential Visual Amenity Assessment of the EIA Report notes that the Maidengill property '*will be removed from residential use and will be repurposed and retrofitted as a site welfare facility during operation of the Proposed Development. The substation and Battery Energy Storage System will also be located here*'.

[23] This property is not currently occupied but has been considered within the appraisal undertaken based on the assumption that it may in the future be occupied as a residential property. The Screening Request for the Redshaw BESS proposal (ECU reference: ECU00004930) notes that the Red Moss Hotel is permanently closed and "*through land agreements, this property cannot be operated as a hotel for the duration of the development*".

located along the southern edge of the B7078 and outbuildings to the south and east of the property. Views overlook the B7078 to the north, and wider context of the surrounding pastoral landscape. The existing ZV route forms an evident feature in views north-west to south-east. The hubs and blades of turbines at the operational Middle Muir and Andershaw Wind Farms are visible in middle distance views south-west. Given the similar design and scale of the Proposed Development to the existing ZV route, which exerts an existing influence on views north-west to south-east from the residential property, effects on residential visual amenity are not considered further.

3.4.7 Other properties located within the Study Area and at distances exceeding 2km from the Proposed Development are not considered likely to experience discernible views of the Proposed Development. Where theoretical visibility is indicated from properties within the Study Area beyond 2km from the Proposed Development (as shown on **Figure 3.2**), the existing ZV route passes within closer proximity of these properties, and views of the Proposed Development will not result in significant effects on views experienced from these properties.

Routes

3.4.8 The main communication routes within the Study Area comprise:

- The M74, which runs broadly on a north to south-east alignment through the Study Area, passing within approximately 0.6km to the east of the Proposed Development at its nearest point;
- The B7078 which also runs broadly on a north to south-east alignment through the Study Area, passing within approximately 0.2km to the west of the Proposed Development at its nearest point;
- The B740, which meets at a junction with the B7078 approximately 2.0km to the south-east of the Proposed Development at its nearest point and passes further south-west; and
- The A70, which runs broadly on a south-west to north-east alignment within the north-west of the Study Area, approximately 4.1km to the north-west of the Proposed Development at its nearest point.

3.4.9 Within the 5km Study Area, the existing ZV route passes within closer proximity to these routes than the Proposed Development.

3.4.10 As shown on **Figure 3.2**, there are a number of Core Paths within the 5km Study Area. The following Core Paths are located within approximately 2km of the Proposed Development:

- CL3464/1 and CL3463/1 run along the B7078, approximately 0.2km to the west of the Proposed Development at its nearest point.
- CL5125/1 and CL5123/1 pass under the northernmost extents of the Proposed Development, connecting to CL3464/1 and CL3463/1 along the B7078.
- CL5884/1 and CL5884/2 pass west, south-west from the CL3464/1, CL3463/1 and B7078 towards Middle Muir.
- CL5115/1 and CL5116/1 pass broadly on a north-west to south-east alignment to the east of the M74.
- CL5831/1 passes in the west of the Study Area, connecting Auchensaugh Hill to the wider Core Path network.

3.4.11 An ‘Aspirational Core Path’ (CL5706/1 and CL5713/1) extends from Crawfordjohn, in the south of the Study Area, towards Douglas, in the north-west of the Study Area, passing CL5831/1 near Auchensaugh Hill.

3.4.12 Within the Study Area, National Cycle Network (NCN) Route 74 runs parallel with the B7078, passing within approximately 0.2km to the west of the Proposed Development at its nearest point.

3.4.13 The Proposed Development will be evident in views from the M74, the B7078, the National Cycle Network (NCN) Route 74 and a number of Core Paths within the Study Area, however views will be limited to short sections of these routes in proximity to the proposed towers, and where the ZV route and operational wind farms have a considerable influence in existing views.

Identification of Schemes to be included in the cumulative appraisal

A1.1.1 The landscape and visual appraisal considers the potential effects resulting from the introduction of the Proposed Development to the following:

- **Current baseline conditions** which include infrastructure projects (within 10km of the Proposed Development) which are operational and under construction (as shown on **Figures 3.3d, 3.4d** and **3.5d**);
- **Future baseline scenario 1**: in which Redshaw substation is consented and constructed (cumulative assessment scenario) (as shown on **Figures 3.3e, 3.4e** and **3.5e**); and
- **Future baseline scenario 2**: which includes all other proposed and committed developments listed in **Table 1.1: Other Developments considered in Cumulative Appraisal** in Chapter 1 of this EAR (cumulative assessment scenario) (as shown on **Figures 3.3a, 3.4a** and **3.5a**).

3.5 Good Practice Measures/Embedded Mitigation

Construction Phase

3.5.1 All mitigation of potential landscape and visual effects arising from the construction phase of the Proposed Development, such as the protection of vegetation during construction and the restoration of disturbed areas after construction will be detailed in a Construction Environmental Management Plan (CEMP) which includes reference to construction method statements.

Operational Phase

3.5.2 The minimising of landscape and visual effects during the operational phase of the Proposed Development is predominantly the result of embedded mitigation incorporated into the siting and design of the Proposed Development as set out in the **Chapter 2**.

3.6 Appraisal of Effects

3.6.1 The appraisal of landscape and visual effects follows the methodology presented in **Appendix 3.1** and is based on the project description outlined in **Chapter 2**.

Landscape Effects during Operation

3.6.2 The following appraisal describes the likely landscape effects on the Study Area resulting from the introduction of the Proposed Development during the operational phase of the project.

Table 3.2 Landscape Effects on Plateau Moorlands – Glasgow and Clyde Valley LCT (213)

Plateau Moorlands – Glasgow and Clyde Valley LCT (213)	
Location and baseline description	The unit of the Plateau Moorlands – Glasgow and Clyde Valley LCT (213) located within the Study Area comprises a large area of open moorland and low hills between the Douglas Water and Duneaton Water valleys. The LCT provides the moorland setting to the farmed river valleys of the Douglas Water and Duneaton Water, broadly rising in elevation towards the Southern Uplands. Key Characteristics include:[24] ■ *"Large scale landform;* ■ *Undulating hills and sloping ridges in the western areas; a more even plateau landform in the east;* ■ *Distinctive upland character created by the combination of elevation, exposure, smooth plateau landform, moorland vegetation;* ■ *Predominant lack of modern development;* ■ *Extensive wind turbine development, including one of the largest wind farms in Scotland, Black Law;* and ■ *Sense of apparent naturalness and remoteness which contrasts with the farmed and settled lowlands, although this has been reduced in places by wind energy development."*

[24] NatureScot – Plateau Moorlands – Glasgow and Clyde Valley LCT (213)

Plateau Moorlands – Glasgow and Clyde Valley LCT (213)	
	The existing Scotland to England Interconnector 400kV ZV OHL passes through the LCT unit, while Andershaw and Middle Muir Wind Farms occupy moorland to the west of the B7078.
Sensitivity	The large scale landform and simple landcover of the LCT indicate a lower susceptibility to the type and scale of the Proposed Development. The LCT unit is subject to the existing influence of wind energy, telecommunications, and electricity transmission infrastructure, including occasional telecommunications masts, Andershaw and Middle Muir Wind Farms to the south-west of the Site, and the Scotland to England Interconnector 400kV ZV OHL. Coniferous forestry plantations and transport corridors (particularly the M74) further reduce "*the perception of undeveloped character*" within the LCT. The overall susceptibility of the landscape is judged to be low. A small proportion of the LCT is located within the Douglas Valley SLA by virtue of the moorland setting it provides to the settled valley below. A small proportion of the LCT is also located within the northern fringe of the extensive Leadhills and Lowther Hills SLA. The LCT is considered to be of medium value. Taking account of the judgements of susceptibility and value, overall sensitivity is judged to be **medium.**
Magnitude of Change and Level of Landscape Effect	
Operational Phase	Direct landscape changes during the operational phase will occur within the project area. The introduction of the Proposed Development will result in direct landscape change experienced at a localised level and indirect effects resulting from visibility of the Proposed Development. The ZTV on **Figure 3.1** indicates that visibility of the Proposed Development across this LCT will be similar to that of existing towers ZV108, ZV109, ZV110, and ZV111 of the ZV route. The existing presence of the 400kV ZV route directly and indirectly influences the *"moorland vegetation"*, "*predominant lack of modern development"* and *"sense of apparent naturalness and remoteness"* of the host LCT. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of landscape change is considered to be small. The duration of these landscape effects will be long-term, throughout the operational phase of the project. The magnitude of landscape change during operation is judged to be low, resulting in a **Minor** landscape effect for this LCT.
Potential for cumulative effects under future baseline Scenario 1 (with Redshaw Substation)	The proposed Redshaw substation will result in direct, large scale landscape change experienced at a localised level. The introduction of operational components of the substation and associated earthworks will form the most notable landscape change. Given the presence of the existing ZV route in the view, and the similar design and scale of the Proposed Development to the existing ZV route, the magnitude of landscape change resulting specifically from the introduction of the Proposed Development under this future baseline scenario will remain as low, resulting in a **Minor** effect.

Plateau Moorlands – Glasgow and Clyde Valley LCT (213)	
Potential for cumulative effects under future baseline Scenario 2 (with all other developments listed in **Table 1.1**)	Other operational, under construction, consented and proposed developments will exert a relatively widespread influence across the north-east of the LCT, resulting in attrition to the perception of the '*large scale landform*' and '*sense of apparent naturalness and remoteness*' resulting from the '*lack of modern development*'. The Proposed Development will be located near the proposed M74 Project (currently at scoping) and proposed Bodinglee Wind Farm (at application)and will result in more localised effects on the LCT than these other proposed developments. In combined and successive views with these other developments experienced from the LCT more widely, the Proposed Development will appear smaller in scale than these other proposed wind farms. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of landscape change resulting from the introduction of the Proposed Development under this cumulative baseline scenario is considered to be small. The magnitude of landscape change under this cumulative baseline scenario is judged to be low, resulting in a **Minor** landscape effect for this LCT. Other operational, under construction, consented and proposed developments in combination with the Proposed Development will result in a large-scale change to parts of the LCT within the study area. However, the Proposed Development would contribute less to the combined cumulative effect than the proposed M74 Project and the proposed Bodinglee Wind Farm.

Visual Effects during Operation

3.6.3 The following appraisal describes the likely effects on visual amenity across the Study Area resulting from the Proposed Development during the operational phase of the project.

Effects on Views from Representative Viewpoints

Viewpoint 1 – Wider path network east of M74 (Outer Law)

Viewpoint 1 – Wider path network east of M74 (Outer Law)			
Grid Ref	288532, 627684	**Figure Number**	Figure 3.3
LCT	Plateau Moorlands – Glasgow and Clyde Valley LCT (213)	**Landscape Designations**	N/A
Direction of View	West, south-west	**Approximate Distance from the Proposed Development**	1.2km
Description of Existing View and Potential Visual Receptors	This viewpoint is located to the south of Outer Law, on a path running through elevated moorland to the north of the M74. The viewpoint represents views experienced by recreational receptors on the path and similar views experienced by people travelling on the M74. Open, long distance views extend west from the viewpoint, encompassing a wide expanse of moorland between the Southern Uplands and the Douglas Valley. The foreground of views to the west, south-west comprises rough moorland grassland which slopes towards the busy transport corridor of the M74 that cuts across the view in the middle distance. Rough moorland continues beyond the motorway, with a small block of coniferous forestry seen adjacent to the west of the project area. Auchensaugh Hill forms part of the skyline in views west, south-west, with the more distant summits of Cairn Table, Stony Hill and Cairn Kinney in views south-west. The steel lattice towers of the existing 400kV ZV OHL form prominent features as they cross the Site and run parallel to the B7078. Numerous wind turbines at Andershaw and Middle Muir Wind Farms are visible beyond, occupying a wide horizontal extent of moorland between Auchensaugh Hill and Mountherrick Hill. The turbine		

Viewpoint 1 – Wider path network east of M74 (Outer Law)	
	towers are partially back clothed by moorland and hill summits in the far distance, though hubs and blades are seen above the skyline. In wider views to the north-west, numerous wind turbines north of the Douglas Valley can be seen in the distance above the horizon. Views to the north and east are foreshortened by rising landform, though longer distance views extend south and south-east to the upland skyline of the Southern Uplands, where wind turbines at Clyde Wind Farm are visible, and in closer proximity, a telecommunications mast.
Sensitivity	Recreational receptors are considered to be of high susceptibility. Similar, though less open, views will be experienced by road users on the M74, who are considered to be of lower susceptibility to changes in the view. The viewpoint is not located within a designated landscape and is not a recognised stopping point or promoted view. The value of the view is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **medium**.
Magnitude of Change and Level of Visual Effect	
Operational Phase (refer to Figure 3.3d)	The design, scale and visibility of the Proposed Development will be similar to that of the existing ZV route. Two proposed towers (ZV110B and ZV110A) will appear slightly closer in the view and at higher elevation than the existing towers of the ZV route. One additional proposed tower (ZV109R) will appear mostly against the skyline, though in more distant views. However, the existing ZV route passes across a wide angle of the view. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of visual change is considered to be small. The duration of these visual effects will be long-term, throughout the operational phase of the project. Similar views will be limited to approximately 1km of the path near Outer Law and parallel sections of the M74, though intervening embankment occasionally screens outward views from the road (as indicated by the ZTV on **Figure 3.2**). The geographical extent is considered small. The magnitude of visual change during operation is judged to be low, resulting in a **Minor** visual effect.
Potential for cumulative effects under future baseline Scenario 1 (with Redshaw Substation) (refer to Figure 3.3e)	The Proposed Development will be seen in combined views with the proposed Redshaw substation, beyond the M74. The proposed Redshaw substation will sit at slightly lower elevation than the Proposed Development and will appear in the context of other operational developments, including Andershaw, Middle Muir and the more distant Kennoxhead Wind Farms, which influence the view. Given the presence of the existing ZV route in the view, and the similar design and scale of the Proposed Development to the existing ZV route, the magnitude of visual change resulting specifically from the introduction of the Proposed Development under this future baseline scenario will remain as low, resulting in a **Minor-Moderate** visual effect.
Potential for cumulative effects under future baseline Scenario 2 (with all other developments listed in **Table 1.1**)	Other operational, under construction, consented and proposed developments will exert a relatively widespread influence across views south-west from this location. The proposed M74 Project (currently at scoping) will appear prominently across a wide angle of the view south-west, east and north. The proposed Bodinglee Wind Farm will be seen against the skyline in the middle distance of the view, on either side of the M74. The proposed West Andershaw Wind Farm (currently at scoping) will be seen beyond the operational Middle Muir and Andershaw Wind Farms. The Proposed Development will be seen in a similar angle of the view as the proposed Bodinglee Wind Farm. The turbines of Bodinglee Wind Farm will generally appear larger in scale than the Proposed Development, though some towers of the Proposed Development will appear on a similar height of the skyline as more distant turbines of Bodinglee Wind Farm.

Viewpoint 1 – Wider path network east of M74 (Outer Law)	
	In combined and successive views with other operational, under construction, consented and proposed developments, the Proposed Development will appear across a relatively small angle of the overall view, which will be strongly influenced by other development. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of change resulting from the introduction of the Proposed Development under this cumulative baseline scenario is considered to be small. The magnitude of visual change under this cumulative baseline scenario is judged to be low, resulting in a **Minor** visual effect. Other operational, under construction, consented and proposed developments in combination with the Proposed Development will result in a large-scale change to views from this location. However, the Proposed Development would contribute less to the combined cumulative effect than the proposed M74 Project and the proposed Bodinglee Wind Farm.

Table 3.3 Viewpoint 2 – B7078 Core Path / NCN74

Viewpoint 2 – B7078 Core Path / NCN74			
Grid Ref	287547, 627010	**Figure Number**	Figure 3.4
LCT	Plateau Moorlands – Glasgow and Clyde Valley LCT (213)	**Landscape Designations**	N/A
Direction of View	North-west	**Approximate Distance from the Proposed Development**	0.5km
Description of Existing View and Potential Visual Receptors	This viewpoint is located adjacent to the Red Moss Garage on the Core Path and NCN Route 74 that runs parallel to the B7078. The viewpoint represents views experienced by recreational receptors on the Core Path and NCN Route 74, and similar views experienced by people travelling in cars on the B7078. The foreground of views to the north-west comprises the parallel Core Path and B7078 separated by a small grass verge. The former Red Moss Hotel can be seen adjacent to the Core Path, set amongst small clusters of deciduous and broadleaf trees. Beyond a post and wire fence adjacent to the eastern edge of the B7078 and a low drystone dyke, rising moorland forms the undulating horizon in the middle distance. The defined edges of a small block of mature coniferous forestry adjacent to the Site forms a prominent feature, contrasting with the lighter coloured moorland below. A wood pole overhead line and the large steel towers of the existing 400kV ZV OHL extend across the skyline in close proximity. In wider views to the west, numerous wind turbines at Andershaw and Middle Muir Wind Farms form prominent features above the skyline, occupying moorland between Auchensaugh Hill and Mountherrick Hill across a wide horizontal extent of the view. Views to east are contained to the middle distance by rising moorland contiguous with the Site, with numerous power lines crossing the open skies above in the foreground. To the south, long distance views extend along the B7078 towards the Southern Uplands. The 400kV ZV OHL and adjacent wood pole OHL run parallel, providing an indicator of distance as they recede in scale. In the distance, Clyde Wind Farm is visible extending across the horizon formed by the Southern Uplands with a large telecommunications mast atop Craighead Hill (429m AOD) also forming a prominent vertical feature.		

Viewpoint 2 – B7078 Core Path / NCN74	
Sensitivity	Recreational receptors are considered to be of high susceptibility. Similar views will be experienced by road users, which are considered to be of medium susceptibility to changes in the view. The viewpoint is not located within a designated landscape and is not a recognised stopping point or promoted view. The value of the view is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **medium**.
Magnitude of Change and Level of Visual Effect	
Operational Phase (refer to Figure 3.4d)	The design, scale and visibility of the Proposed Development will be similar to that of the existing ZV route. The three proposed towers (ZV109R, ZV110A, ZV110B) will appear slightly more prominent in views from the B7078 than existing towers within this section of the existing ZV route, given the location of the proposed towers at slightly higher elevation. However, the retained ZV108 tower will appear more prominently and closer in the view from this location. One additional tower will be introduced into this section of the ZV route and will be seen in views from this location. The existing ZV route passes across a wide angle of the view looking north to south-east, with multiple towers seen against the skyline. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of visual change is considered to be small. The duration of these visual effects will be long-term, throughout the operational phase of the project. Similar views will be experienced along the Core Path, B7078 and surrounding moorland, representing a medium geographical extent. The magnitude of visual change during operation is judged to be low, resulting in a **Minor** effect.
Potential for cumulative effects under future baseline Scenario 1 (with Redshaw Substation) (refer to Figure 3.4e)	The Proposed Development will be seen in close-distance combined views with the proposed Redshaw substation from this location. The introduction of earthworks associated with the substation will form the most notable change to the view, with some operational components of the substation partially screened by this intervening landform. Given the presence of the existing ZV route in the view, and the similar design and scale of the Proposed Development to the existing ZV route, the magnitude of visual change resulting specifically from the introduction of the Proposed Development under this future baseline scenario will remain as low, resulting in a **Minor** effect.
Potential for cumulative effects under future baseline Scenario 2 (with all other developments listed in **Table 1.1**)	Other operational, under construction, consented and proposed developments will exert a relatively widespread influence across successive panoramic views from this location. The proposed Bodinglee Wind Farm will be seen against the skyline extending across a wide angle of the view north-west to north-east. The Proposed Development will be seen in a gap in between the two clusters of turbines of Bodinglee Wind Farm (which are separated by the M74). However, the existing ZV route extends across a similar angle of the view. The proposed West Andershaw Wind Farm (currently at scoping) will be seen beyond the operational Middle Muir and Andershaw Wind Farms in views west. The proposed M74 Project (currently at scoping) will form a prominent feature in close-distance views west, south and east from this location, in the opposite direction of the view as the Proposed Development. In combined and successive views with other operational, under construction, consented and proposed developments, the Proposed Development will appear across a relatively small angle of the overall view, which will be strongly influenced by other development. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of change resulting from the introduction of the Proposed Development under this cumulative baseline scenario is considered to be small.

Viewpoint 2 – B7078 Core Path / NCN74	
	The magnitude of visual change under this cumulative baseline scenario is judged to be low, resulting in a **Minor** visual effect. Other operational, under construction, consented and proposed developments in combination with the Proposed Development will result in a large-scale change to views from this location. However, the Proposed Development would contribute less to the combined cumulative effect than the proposed Redshaw substation, M74 Project and the proposed Bodinglee Wind Farm.

Table 3.4 Viewpoint 3 – Auchensaugh Hill, cairn (SM4234)

Viewpoint 3 – Auchensaugh Hill, cairn (SM4234)			
Grid Ref	285337, 627200	**Figure Number**	Figure 3.5
LCT	Plateau Moorlands – Glasgow & Clyde Valley LCT (213)	**Landscape Designations**	N/A
Direction of View	East	**Approximate Distance from the Proposed Development**	1.8km
Description of Existing View and Potential Visual Receptors	This viewpoint is located at the summit of Auchensaugh Hill which rises to the north of the moorland of Middle Muir. The viewpoint is representative of recreational receptors at the summit and on Core Path CL5831/1. Effects on the historic setting of the cairn (which is a Scheduled Monument) are considered in **Chapter 7: Cultural Heritage**. Panoramic views are available from the summit. The foreground of views east comprises the nearby twin summit which obstructs views of the lower slopes of the hill and middle distance views in this direction. This accentuates the sense of elevation above the expansive plateau moorland which extends between the viewpoint and the distinctive forms of Tinto Hill and Dungavel Hill in the far distance. The parallel roads of the B7078 and M74 can be seen traversing the plateau moorland with the large steel towers of the existing 400kV ZV OHL running between them, backclothed by moorland. Open moorland is partially visible beyond a sharply defined coniferous forestry block and a steep, tree-lined embankment above the B7078. A long, drystone dyke running between the M74 and B7078 is visible adjacent to the eastern boundary of the Site. In the far distance, multiple wind turbines at Clyde Wind Farm are visible above the undulating skyline formed by the northern edge of the Southern Uplands. Wider views towards the south and south-west are strongly influenced by large scale wind turbines at Andershaw and Middle Muir Wind Farms which occupy moorland and predominantly felled or immature coniferous forestry across a wide horizontal extent of the view. To the west, long distance views extend across the partly forested plateau moorlands either side of the Douglas Valley, with the upland skyline occupied by wind turbines at Kennoxhead, Galawhistle, and Hagshaw Hill Wind Farms. Views to the north are predominantly characterised by the rolling landform of the plateau moorlands that extend towards Douglas, appearing large in scale in comparison to the B7078, M74 and 400kV ZV OHL.		
Sensitivity	Recreational receptors are considered to be of high susceptibility to changes in the view. The viewpoint is not located within a designated landscape, though it is located adjacent to the Scheduled Monument of Auchensaugh Hill cairn. The value of the view is considered to be medium.		

Viewpoint 3 – Auchensaugh Hill, cairn (SM4234)	
	Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **medium**.
Magnitude of Change and Level of Visual Effect	
Operational Phase (refer to Figure 3.5d)	The Proposed Development will be seen in relatively distant views east from this location. The design, scale and visibility of the Proposed Development will be similar to that of the existing ZV route. Towers ZV110A and ZV110B will be introduced to a slightly more elevated area to the north-east of the existing ZV route, however towers will be seen backclothed by more distant landform. The base of tower ZV110B will be partially screened by the intervening proximate coniferous forestry block. The existing ZV route passes across a wide angle of the view looking north-east to south-east, with the retained tower ZV108 appearing most prominent and closest in the view. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of landscape change is considered to be small. The duration of these landscape effects will be long-term, throughout the operational phase of the project. The magnitude of landscape change during operation is judged to be low, resulting in a **Minor** visual effect.
Potential for cumulative effects under future baseline Scenario 1 (with Redshaw Substation) (Refer to Figure 3.5e)	The Proposed Development and the proposed Redshaw substation will be seen in relatively distant combined views west from this location. The proposed Redshaw substation will sit at slightly lower elevation than the Proposed Development and will be partially screened by intervening coniferous forestry located directly west of the substation. Given the presence of the existing ZV route in the view, and the similar design and scale of the Proposed Development to the existing ZV route, the magnitude of visual change resulting specifically from the introduction of the Proposed Development under this future baseline scenario will remain as low, resulting in a **Minor** effect.
Potential for cumulative effects under future baseline Scenario 2 (with all other developments listed in **Table 1.1**)	Other operational, under construction, consented and proposed developments will exert a relatively widespread influence across panoramic views from this location. In views east, towards the Proposed Development, the proposed M74 Project (currently at scoping) will appear prominently across a wide angle of the view with some blades seen against the skyline. The proposed Bodinglee Wind Farm (at application) will also appear as a prominent feature, partially against the skyline in views north-east, with the proposed Little Gala Wind Farm (at application) seen beyond Bodinglee Wind Farm. Other more distant operational and proposed wind farms will be seen beyond the M74 Project, including the operational Clyde Wind Farm and proposed Priestgill Wind Farm. In combined and successive views with other operational, under construction, consented and proposed developments, the Proposed Development will appear as a smaller-scale feature than other developments across a relatively small angle of the overall view, which will be strongly influenced by other development. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of change resulting from the introduction of the Proposed Development under this cumulative baseline scenario is considered to be small. The magnitude of visual change under this cumulative baseline scenario is judged to be low, resulting in a **Minor** visual effect. Other operational, under construction, consented and proposed developments in combination with the Proposed Development will result in a large-scale change to views from this location. However, the Proposed Development would contribute less to the combined cumulative effect than the proposed M74 Project and the proposed Bodinglee Wind Farm.

Effects on Views from Routes

Table 3.5 B7078

B7078	
Representative Viewpoints	Viewpoint 2: B7078 Core Path/NCN 74 (see **Figure 3.4**)
Approximate Distance from the Proposed Development	0.2km
Description of existing view and potential visual receptors	Within the context of the Study Area, the B7078 travels through plateau moorland located between the Douglas Valley and the Upper Clyde Valley. Travelling south from the Douglas Valley, views from the road are contained by steeply rising, partly wooded hill slopes either side of Parkhall Burn. Once beyond Mid Rig, views from the road become more open and expansive to the south, extending across the low moorland of Red Moss to the Southern Uplands, and west across Middle Muir to low hills. East of the road, views are focused on sloping moorland which rises to the M74 and prevents any longer distance views. The Site is visible from this section of the road, adjacent to a small block of coniferous forestry and opposite a layby at the former Red Moss Hotel. Beyond the junction with the B740 the road increases in elevation between the small hills of Knock Leaven and Black Hill, before descending towards the junction with the M74. From this section of the road, views tend to be characterised by adjacent pasture fields and occasional woodland and broad, interleaving hill sides which recede into the distance towards the Southern Uplands. NCN Route 74 and Core Path CL/3464/1 run parallel immediately to the west of the road, separated from traffic by a broad grass verge. The steel lattice towers of the existing 400kV ZV OHL are seen in close proximity from much of the route, running broadly parallel, before diverting south, south-east in the vicinity of the B740 junction. Wind turbines at Andershaw and Middle Muir also feature prominently in views west from the route as it crosses the low moorland of Red Moss. In the vicinity of Thirstone Quarry, workings and plant machinery can be glimpsed from the road, particularly for northbound road users, as can traffic on the M74, which runs parallel to the east.
Sensitivity	Road users are considered to be of medium susceptibility to changes in the view. A small proportion of the route passes through the Douglas Valley SLA in the northern extent of the Study Area. In closer proximity to the Site views from the road are not considered to be of particular scenic value and are subject to the influence of wind farm development, the existing 400kV ZV route and other infrastructure. Overall, views from the road are considered to be of medium value. Taking account of the judgements of susceptibility and value, overall sensitivity is judged to be **medium**.
Magnitude of Change and Level of Visual Effect	
Operational Phase	The three proposed towers (ZV109R, ZV110A, ZV110B) will appear slightly more prominent in views from the B7078 than existing towers within this section of the existing ZV route, given the location of the proposed towers at slightly higher elevation. One additional tower will be introduced into this section of the ZV route, and will be seen in views from the B7078. However, the design, scale and visibility of the Proposed Development will be similar to that of the existing ZV route. Changes resulting from the introduction of the Proposed Development will be most visible from sections of the road between Wildshaw Hill to Wildshaw Burn, within approximately 1km of the Proposed Development, though more distant views of the Proposed Development will be available from other sections of the road within the Study Area.

B7078	
	The existing ZV route is seen in sequential views from the B7078, occasionally appearing prominently and passing across a wide angle of the view looking north to south-east, with multiple towers seen against the skyline. The existing ZV route crosses the B7078 in the south of the Study Area. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of visual change is considered to be small. The duration of these visual effects will be long-term, throughout the operational phase of the project. The magnitude of visual change during operation is judged to be low, resulting in a **Minor** effect.
Potential for cumulative effects under future baseline Scenario 1 (with Redshaw Substation)	The Proposed Development and the proposed Redshaw substation will appear across a relatively wide angle of close-distance combined views from localised sections of the road within approximately 0.5km of the Proposed Development, with more distant combined views available from sections of the road within approximately 1km of the Proposed Development. The introduction of earthworks associated with the substation will form the most notable change to the views from the road, with some operational components of the substation partially screened by this intervening landform. Given the presence of the existing ZV route in the view, and the similar design and scale of the Proposed Development to the existing ZV route, the magnitude of visual change resulting specifically from the introduction of the Proposed Development under this future baseline scenario will remain as low, resulting in a **Minor** effect.
Potential for cumulative effects under future baseline Scenario 2 (with all other developments listed in **Table 1.1**)	Other operational, under construction, consented and proposed developments will exert a relatively widespread influence across sequential views experienced from the road. The proposed Bodinglee Wind Farm (at application) and proposed M74 Project (currently at scoping) will be seen against the skyline extending across a wide angle of views south-west and north-east, on either side of the B7078. The proposed West Andershaw Wind Farm (currently at scoping) will be seen beyond the operational Middle Muir and Andershaw Wind Farms in views west from the road. In combined and successive views with other operational, under construction, consented and proposed developments, the Proposed Development will appear across a relatively small angle of the overall view from a relatively short section of the B7078. Sequential views from the B7078 will be strongly influenced by other development. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of change resulting from the introduction of the Proposed Development under this cumulative baseline scenario is considered to be small. The magnitude of visual change under this cumulative baseline scenario is judged to be low, resulting in a **Minor** visual effect. Other operational, under construction, consented and proposed developments in combination with the Proposed Development will result in a large-scale change to sequential views from sections of the road within the study area. However, the Proposed Development would contribute less to the combined cumulative effect than the proposed M74 Project and the proposed Bodinglee Wind Farm.

Table 3.6 M74

M74	
Representative Viewpoints	Viewpoint 1: Wider path network east of M74 (Outer Law) (see **Figure 3.3**)
Approximate Distance from the	0.6km

M74	
Proposed Development	
Description of existing view and potential visual receptors	Within the Study Area, the M74 travels through plateau moorland located between the Douglas Valley and the Upper Clyde Valley, running broadly parallel to the B7078. Travelling south from the Douglas Valley, views from the road are generally contained by steeply rising, partly wooded hill slopes either side of Parkhall Burn; the moorland slopes and summits of Birshaw Rig, Wildshaw Hill, Wedder Law and Outer Law; and sections of steep cuttings. In the vicinity of Outer Law, a dip in the landform to the west of the road allows for open views across adjacent moorland which slopes towards the B7078. The Site is visible from this section of the road, adjacent to a sharply defined block of coniferous forestry. In the middle distance beyond, views extend across the open moorland of Red Moss and Middle Muir between Auchensaugh Hill and Mountherrick Hill, to the more distant hills of Cairn Kinney and Cairn Table. Numerous wind turbines at Andershaw and Middle Muir Wind Farms can be seen occupying this moorland, beyond the steel lattice towers of the existing 400kV ZV OHL. Views from this section of the road also open up to the south, towards the northern edge of the Southern Uplands where wind turbines at Clyde Wind Farm are visible, and in closer proximity, a telecommunications mast at the summit of Craighead Hill. Continuing south the road enters another section of cutting where a telecommunications mast is seen in close proximity, before descending towards open moorland backdropped by the Southern Uplands. Quarry workings are visible either side of the road within this moorland, linked by an access track that underpasses the road. Traversing low ground between Forside Hill and Knock Leaven, the road transitions from the plateau moorland of the Study Area and enters the enclosed, upland landscape of the Upper Clyde Valley beyond. As noted above the steel lattice towers of the 400kV Glenmuckloch ZV OHL are visible from sections of the road, as are wind turbines at Andershaw and Middle Muir Wind Farms where views extend to the west. Other vertical structures which influence views from the road include wood pole OHLs and telecommunications masts. In the vicinity of Thirstone Quarry, quarry workings and plant machinery can be seen within moorland either side of the road.
Sensitivity	Road users travelling at speed on the M74 are considered to be of low susceptibility to changes in the view. A small proportion of the road passes through the Douglas Valley SLA in the northern extent of the Study Area. As the road crosses moorland in the vicinity of the Site, views from it are not considered to be of particular scenic value and are subject to the influence of the 400kV Glenmuckloch ZV OHL, wind farm development and other infrastructure. Overall, views from the road are considered to be of low-medium value. Taking account of the judgements of susceptibility and value, overall sensitivity is judged to be **low-medium**.
Magnitude of Change and Level of Visual Effect	
Operational Phase	The three proposed towers (ZV109R, ZV110A, ZV110B) will appear slightly more prominent in views from the M74 than existing towers within this section of the existing ZV route, given the location of the proposed towers at slightly higher elevation and at slightly closer proximity in views from the road. One additional tower will be introduced into this section of the ZV route, and will be seen in views from the M74. However, the design, scale and visibility of the Proposed Development will be similar to that of the existing ZV route. Similar views will be limited to approximately 1km of the M74 to the west of Outer Law, though intervening embankment occasionally screens outward views from this section of the M74 (as indicated by the ZTV on **Figure 3.2**). From sections of the road north-west of Wedder Law, the Proposed Development will partially screened by intervening landform or will be seen in more distant views and therefore less perceptible. The geographical extent is considered small. The existing ZV route is seen in sequential views from the M74, occasionally appearing against the skyline and across a wide angle of the view. The existing ZV route crosses the M74 in the north of the Study Area.

M74	
	Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of visual change is considered to be small. The duration of these visual effects will be long-term, throughout the operational phase of the project. The magnitude of visual change during operation is judged to be low, resulting in a **Minor** effect.
Potential for cumulative effects under future baseline Scenario 1 (with Redshaw Substation)	The Proposed Development and the proposed Redshaw substation will be seen in middle distance combined views beyond the M74. The proposed Redshaw substation will sit at slightly lower elevation than the Proposed Development and will appear in the context of other operational developments, including Andershaw, Middle Muir and the more distant Kennoxhead Wind Farms, which influence the view. Given the presence of the existing ZV route in the view, and the similar design and scale of the Proposed Development to the existing ZV route, the magnitude of visual change resulting specifically from the introduction of the Proposed Development under this future baseline scenario will remain as low, resulting in a **Minor** effect.
Potential for cumulative effects under future baseline Scenario 2 (with other development listed in Table 1.1)	Other operational, under construction, consented and proposed developments will exert a relatively widespread influence across sequential views experienced from the road. The proposed Bodinglee Wind Farm (at application) and proposed M74 Project (currently at scoping) will be seen against the skyline extending across a wide angle of views south-west and north-east, on either side of the M74. The proposed West Andershaw Wind Farm (currently at scoping) will be seen beyond the operational Middle Muir and Andershaw Wind Farms in views west from the road. In combined and successive views with other operational, under construction, consented and proposed developments, the Proposed Development will appear across a relatively small angle of the overall view from a relatively short section of the M74. Sequential views from the M74 will be strongly influenced by other development. Given the similar design and scale of the Proposed Development to the existing ZV route, the scale of change resulting from the introduction of the Proposed Development under this cumulative baseline scenario is considered to be small. The magnitude of visual change under this cumulative baseline scenario is judged to be low, resulting in a **Minor** visual effect. Other operational, under construction, consented and proposed developments in combination with the Proposed Development will result in a large-scale change to sequential views from sections of the road within the study area. However, the Proposed Development would contribute less to the combined cumulative effect than the proposed M74 Project and the proposed Bodinglee Wind Farm.

3.7 Summary and Conclusions

3.7.1 This section summarises the residual landscape and visual effects predicted as a result of the Proposed Development.

3.7.2 During operation, visual effects from this section of the B7078 and parallel Core Path/ NCN74 are considered to be Minor, given the similar design and scale of the Proposed Development to the existing ZV route.

3.7.3 Given the similar design and scale of the Proposed Development to the existing ZV route, adverse effects, including cumulative effects, on other landscape and visual receptors considered within the appraisal during operation will be Minor.

3.7.4 Cumulative effects resulting from the introduction of the Proposed Development under a 'likely future baseline scenario' which includes the proposed Redshaw substation are considered, on the basis that the Proposed Development is required to facilitate the construction/operation of the Redshaw substation. The magnitude of landscape and visual cumulative effects under this future baseline scenario will be Minor.

3.7.5 Cumulative effects resulting from the introduction of the Proposed Development under a future cumulative baseline scenario which includes other operational, under construction, consented and proposed developments was considered. In combined and successive views with other operational, under construction, consented and proposed developments, the Proposed Development will appear across a relatively small angle of the overall view, which will

be strongly influenced by other developments. The magnitude of landscape and visual cumulative effects under this future baseline scenario will be Minor.

4. Ecology

4.1 Introduction

4.1.1 This Chapter presents the findings of an appraisal of the potential effects of the Proposed Development on Ecology. It details the baseline environment, based on desk-based studies, and a comprehensive field survey. A description of potential effects, together with proposed mitigation measures, is also provided.

4.1.2 The appraisal has been undertaken by LUC and is accompanied by the following appendices:

- **Appendix 4.1: Ecology Survey Site Photographs;** and
- **Appendix 4.2: Biodiversity Net Gain Report.**

4.1.3 The appraisal is also supported by the following figures:

- **Figure 1.1: Location Plan;**
- **Figure 1.2: Site Plan;**
- **Figure 1.3: Site Plan – Tower Diversion Proposals;**
- **Figure 1.4: Cumulative Developments;**
- **Figure 4.1: Statutory and Non-Statutory Designated Nature Conservation Sites;**
- **Figure 4.2: Phase 1 Habitat Map;**
- **Figure 4.3: Protected Species Map (Confidential); and**
- **Figure 6.3: Peat Depth and Peatland Classification.**

4.2 Scope of Appraisal and Study Area

Scope of Appraisal

4.2.1 This appraisal considers the potential effects of the Proposed Development on terrestrial ecology. Ornithological interests are considered separately in **Chapter 5**. The following construction phase effects were identified for consideration in the appraisal:

- Direct habitat loss of, disturbance to, and/ or severance of statutory and non-statutory designated sites for nature conservation purposes;
- Direct habitat loss/ severance and/ or disturbance of habitats of conservation concern[25]; and
- Direct habitat loss/ severance, disturbance and/ or, mortality of protected species.

4.2.2 The operational effects on terrestrial ecology were not considered during this appraisal as maintenance activities during the operational phase will be infrequent and similar in nature to existing agricultural activities. Operational activities will not result in loss or disturbance of habitats of conservation concern and it is unlikely that disturbance/ mortality of protected species due to the presence of the OHLs.

4.2.3 The appraisal has been prepared in cognisance of relevant legislation and policy, UK nature conservation policy and local biodiversity guidance.

Study Area

4.2.4 The Study Area adopted in this assessment varies by desk and field survey and ecological feature, as defined by best practice[26]. Study Areas are detailed in **Table 4.1.**

[25] Habitats listed on Annex I of The Conservation (Natural Habitats &c.) Regulations (1994), the Scottish Biodiversity List, Local Biodiversity Action Plan priorities and GWDTEs.
[26] CIEEM. Good Practice Guidance for Habitats and Species. Wersion 3 May 2021. Available at: Good-Practice-Guide-2023-edit.pdf (cieem.net) [Accessed 29/04/2024]

Table 4.1 Ecology Study Area Description

Ecological Feature	Buffer from Site Boundary
Desk Study	
Statutory Designated Sites To include: ■ European Sites (SACs and SPAs); ■ Ramsar Sites; ■ National Nature Reserves (NNRs); and ■ Sites of Special Scientific interest (SSSIs).	Development footprint, wayleave and 5km buffer
Non-Statutory Designated Sites To include: ■ Local Nature Conservation Sites (LNCS); ■ Local Nature Reserve (LNR); ■ RSPB and Scottish Wildlife Trust Reserves; and ■ Ancient/Long-Established Woodland.	Development footprint, wayleave and 1km buffer
Existing Records of Deep Peat and Carbon Rich Soils	Development footprint, wayleave and 1km buffer
Existing Records of European Protected Species and Nationally protected Species.	Development footprint, wayleave and 1km buffer.
Field Survey	
Habitat and Vegetation Surveys (including Ground Water Dependant Terrestrial Ecosystems (GWDTEs))	Development footprint, wayleave and a buffer up to 250m where survey methods dictate.
Protected Species	Development footprint, wayleave and plus and a buffer up to 200m where survey methods dictate.

4.3 Policy and Guidance

4.3.1 The appraisal has been undertaken following all relevant current policy, legislation and guidance of relevance to ecology.

4.4 Methodology

Desk Study and Information Sources

Desk Study

4.4.1 A desk study was carried out to review existing records of designated sites, protected and notable[27] species within the Study Area. South Lanarkshire Council is not currently covered by a Local Environmental Records Centre, therefore the following information sources were utilised during the desk study:

[27] Notable species include those species included within: Scottish Biodiversity List and South Lanarkshire Biodiversity Strategy 2024-2030

- NatureScot Site Link tool[28];
- Scotland's Environment Web[29];
- Multi-Agency Geographic Information for the Countryside (MAGIC)[30];
- South Lanarkshire Council Biodiversity Strategy[31];
- South Lanarkshire Council list of Local Nature Conservation Sites (Non-statutory designated sites)[32];
- National Biodiversity Network (NBN) Atlas Scotland under CC-BY licence[33]; and
- Ancient Woodland Inventory[34].

Field Survey

Extended Phase 1 Habitat Survey

4.4.2 An Extended Phase 1 Habitat Survey was completed by an experienced ecologist in accordance with JNCC methodology[35] on 17th August 2023 in warm, sunny and dry weather conditions.

4.4.3 The survey was undertaken to identify and record all natural and semi-natural habitats located within the Study Area with particular attention given to habitats of conservation concern[25]. The Phase 1 Habitat Survey method provides a rapid and standardised approach to documenting and classifying broad habitat types, and recording associated floral species (including Invasive Non-Native Species (INNS)). Where potential habitats of conservation concern were identified, a National Vegetation Communities (NVC) survey was conducted, this survey method is also used to identify habitats which are groundwater dependant (GWDTE).

4.4.4 The survey was extended to include an assessment of the habitats within the Study Area to support notable and/or protected species. Where direct evidence of protected species was identified, this was recorded and photographed, in line with species-specific survey best practice.

4.4.5 Where potentially suitable habitats for protected species were identified, surveys were undertaken for these species. Methods adopted are provided below.

Preliminary Bat Roost Assessment (PBRA)

4.4.6 A PBRA survey was undertaken on all trees within the Study Area and comprised two components; a desk study and a field study. The survey was designed to identify and assess features which may provide suitable roosting opportunities for bats, and therefore require targeted survey effort.

4.4.7 The desk study for the PBRA involved a search of publicly available records of bats as previously outlined.

4.4.8 The field survey included a Daytime Bat Walkover (DBW) and a Ground Level Tree Assessment (GLTA) of trees within the Study Area. These were completed on 17th August 2023 in accordance with the Bat Conservation Trust standard guidelines (BCT)[36].

4.4.9 This method takes into account the range of roosting conditions required by bats throughout the year and follows assessment criteria. No buildings or structures were present within the survey area. The criteria used to categorise BRP in relation to trees are summarised in **Table 4.2** below. The table also summarises what actions, if any, are required following classification.

[28] NatureScot. SiteLink. Available at: https://sitelink.nature.scot/home [Accessed 29/04/2024]
[29] Scotland's Environment Web. Available at: http://map.environment.gov.scot/sewebmap/ [Accessed 29/04/24]
[30] Department for Environment, Food and Rural Affairs *et al* (n.d.). Multi-Agency Geographic Information for the Countryside [Online]. Available at: http://magic.defra.gov.uk [Accessed 29/04/2024]
[31] South Lanarkshire Council. Biodiversity Strategies and Plans [Online]. Available at: https://www.southlanarkshire.gov.uk/downloads/file/16574/biodiversity_strategy_2024_-_2030 [Accessed 29/04/24]
[32] South Lanarkshire Council. Conservation Sites, available at: https://www.southlanarkshire.gov.uk/info/200191/conservation/1566/conservation_sites [Accessed 29/04/24]
[33] Available at: https://scotland.nbnatlas.org/ [Accessed August 2023]
[34] Ancient Woodland Inventory Scotland. Available at: https://www.data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland [Accessed 25/04/2024]
[35] JNCC (2010). Handbook for Phase 1 Habitat Survey – a technique for environmental audit. JNCC, Peterborough.
[36] Collins, J. (ed.) (2023) Bat Survey Guidelines for Professional Ecologists: Good Practice Guidelines (4th Edition) The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6.

Table 4.2 Bat Roost Suitability Categories - Trees

Suitability	Description	Survey requirement
Potential Roost Feature – Individual (PRF-I) *[Previously Low category]*	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.	No further surveys. Provide appropriate compensation for all PRF-Is.
Potential Roost Feature – Multiple (PRF-M) [*Previously Moderate or High category*]	PRF is suitable for multiple bats and may therefore be use by a maternity colony.	Three visits between May and September, with at least two of the surveys between May and August.

Badger

4.4.10 A badger survey was undertaken on 17th August 2023 within the Study Area in accordance with best practice guidelines [37, 26]. Surveys sought to identify suitable habitat for, and direct evidence of, badger. Suitable habitat was sheltered areas with free-draining soils; normally woodland, scrub or mosaics that incorporate these habitat types. Where suitable habitat was identified, direct evidence was searched for, including:

- Badger setts (as defined in **Table 4.3**);
- Tracks, prints, and paths (including scratched logs and fallen wood);
- Guard hair;
- Latrines and dung pits (categorised as fresh, recent, or old);
- Snuffle holes (i.e., surface foraging); and
- Feeding remains.

Table 4.3 Badger Sett Definitions

Sett Type	Definition
Main	These usually have a large number of entrances with large spoil heaps. The sett generally looks well used. They may have well used paths to and from the sett and between sett entrances.
Annexe	These usually have a large number of entrances with large spoil heaps. The sett generally looks well used and is connected to the main sett by clear tracks and paths.
Subsidiary	These setts often only have a few entrances and are located at least 50m from a main sett. They are not continuously active, and evidence may be limited.
Outlier	These setts may have only one or two entrances with little spoil. Used sporadically, these setts often show little signs of use.

4.4.11 When setts were identified, the total number of entrances was recorded, and the above-ground area occupied by the sett mapped. Each entrance was inspected for signs of current use.

4.4.12 According to current legislative provisions, 'badger setts' are legally defined as active when they show multiple 'signs of current use.' Signs of current use include:

- Well used sett entrances (smooth, well-worn, and lacking vegetation);
- Fresh or maintained spoil heaps (i.e., lacking vegetation growth);
- Fresh or maintained tracks and paths in and around the sett;

[37] Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.

- Accumulations of bedding material in sett entrance or spoil heaps;
- Guard hair in sett entrance or spoil heaps;
- Fresh prints on tracks, paths, spoil heaps and sett entrances; and
- Feeding remains.

4.4.13 Following an investigation of each sett and its entrances, surveyors determined the 'active current use' status of the sett. Based on evidence and professional judgement, setts were either:

- Well used;
- Partially used (i.e., only some entrances show signs of current use); and
- Disused (evidence suggests that the sett has not been used recently and/or has been abandoned.

4.4.14 It should be noted that badgers use a number of setts across their territorial area. It is common that smaller, outlier setts may not be used for prolonged periods of time and, as such, field evidence may be lacking. Applying the precautionary principle, setts are only classified as 'disused' if they showed structural decay that would prevent badgers from entering and sheltering in them without significant excavation.

Red Squirrel and Pine Martin

4.4.15 Due to similarities in the habitat requirements for these species, field surveys for pine marten and red squirrel were conducted simultaneously as follows.

4.4.16 A survey for red squirrel was undertaken on 17th August 2023 in accordance with best practice guidelines[38,39], to assess suitability of habitats within the Study Area for the species. Suitable habitat includes cone-bearing coniferous plantation woodland located on free-draining soils, with good connectivity to other woodland habitats. Where suitable red squirrel habitat was recorded, searches for foraged cones, dreys and tracks/prints were undertaken.

4.4.17 A survey for pine marten was undertaken on all potentially suitable habitats within the Study Area in accordance with best practice guidelines[40,41] to assess habitats for their suitability to support the species, while searching for indicative field signs such as feeding remains, scat, footprints, and dens.

4.4.18 During the survey, competent field ecologists walked the Study Area, noting all habitat with potential to support each species. This extended to the conifer plantation to the south of the Study Area. Within suitable habitat, direct evidence of each species was searched for, and is listed below in **Table 4.4**.

Table 4.4 Red Squirrel and Pine Martin Field Signs

Field Signs	Red Squirrel	Pine Marten
	Foraged cones (diagnostic)	Scat (including age classification)
	Dreys (non-diagnostic)	Dens
	Tracks and prints	Tracks and prints

[38]Gurnell, J., Lurz, P., McDonald, R. and Pepper, H. (2009). Practical Techniques for Surveying and Monitoring Squirrels. Forestry Commission [Online]. Available at: https://cdn.forestresearch.gov.uk/2009/09/fcpn011.pdf [Accessed August 2023].
[39] NatureScot (n.d.). Protected Species Advice for Developers: Red Squirrel [Online]. Available at: https://www.nature.scot/sites/default/files/2018-09/Species%20Planning%20Advice%20-%20red%20squirrel.pdf [Accessed August 2023].
[40] Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. The Mammal Society, Southampton.
[41] NatureScot (n.d.). Protected Species Advice for Developers: Pine Marten [Online]. Available at: https://www.nature.scot/sites/default/files/2018-09/Species%20Planning%20Advice%20-%20pine%20marten.pdf [Accessed August 2023].

Water Vole

4.4.19 Surveys for suitable habitat for, and direct evidence of, water vole undertaken, following good practice survey methods[42]. Surveys were undertaken on 17th August 2023 completed by competent field ecologists and all suitable watercourses and waterbodies within the Study Area were visited.

4.4.20 Watercourses were classified for their suitability to support water vole depending on a variety of characteristics including bankside composition, substrate, water flow rate and bankside vegetation. Descriptions of watercourse suitability categories are detailed in **Table 4.5**.

Table 4.5 Water Course Suitability for Water Vole

Suitability	Description
Optimal	These watercourses will typically have a very slow flow rate and will comprise peaty bankside and substrate. Banksides will also comprise tussocky vegetation, including rushes (a common food source of water vole). The watercourses will generally be deep to enable predatory escape.
Sub-Optimal	Typically, these watercourses will have a relatively slow flow rate. Banksides may be peaty but may not be very steep, therefore not allowing burrows to account for varying water levels. Rushes will be present, providing foraging resource.
Suitable	Banksides may comprise earth allowing for some burrowing. Herbaceous vegetation will generally be lacking, and invertebrates, amphibians and fish will be sparse. Flow rate will be slow to moderate; however, watercourse may comprise rocky substrate.
Unsuitable	Watercourses will comprise rock and stone substrate and banksides. The flow rate will be moderate or fast flowing and rushes will be absent from bankside vegetation

4.4.21 Where watercourses were considered suitable, these were surveyed with the aim of identifying and recording presence of water vole. Ecologists searched for evidence of suitable habitat for, and direct evidence of water voles as follows:

- Burrows and tunnel systems;
- Runs, tracks and slides;
- Latrines (with droppings categorised as fresh, recent, or old);
- Feeding stations and remains; and
- Physical sightings.

4.4.22 All survey evidence was collected and recorded using GIS-enabled field tablets for accuracy. Where appropriate field evidence was photographed for later analysis.

Other Observations

4.4.23 While surveys for other species were not specifically undertaken, incidental observations of other species were made, particularly where legislation protections were relevant.

Consultation

4.4.24 The production of the ecological appraisal has not required any additional direct consultation beyond that undertaken during Screening.

Assumption and Limitations to the Appraisal

4.4.25 All ecological surveys represent a 'snapshot' in time. Habitats and species assemblages are dynamic and change over time in response to a range of variables. Data presented in this report should not be considered a long-term interpretation of ecological data and should not be relied upon as such.

[42] Strachan, R. & Moorhouse, T. (2006). Water Vole Conservation Handbook 2nd Edition. Wildlife Conservation Research Unit, University of Oxford, Oxford.

4.4.26 Evidence of protected species is not always discovered during a survey. This does not mean that a species is not present; hence the surveys also record and assess the ability of habitats to support protected species. The timeframe in which the survey is implemented provides a 'snapshot' of all activity within the Study Area and cannot necessarily detect all evidence of use by a species.

4.4.27 Note that the Bat Survey Guidelines[36] were updated in September 2023. Although the field survey was completed prior to the implementation of the new guidelines, the survey results included within this report have been presented in line with the 4th Edition guidelines.

Appraisal Method

4.4.28 The EIA screening process identified that effects on ecological receptors were unlikely to be significant in EIA terms. As such, the Proposed Development is not subject to the formal EIA process in relation to ecological receptors.

4.4.29 This appraisal therefore uses baseline ecological survey information to consider how the Proposed Development will interact with ecological receptors and subsequently establishes mitigation measures that will ensure ecological integrity is maintained and legal and policy compliance achieved. The habitat and species-specific survey methods and best practice guidelines outlined above, and professional judgement form the basis for the ecological appraisal.

Effect Criteria

4.4.30 Effects on sensitive ecological receptors are appraised in relation to the likelihood of the Proposed Development resulting in changes to the:

- Qualifying features of locally, nationally or internationally designated sites for nature conservation;
- Functionality of habitats of conservation concern; and
- Favourable Conservation Status of regional populations of potentially affected protected species.

Approach to Mitigation

4.4.31 Where appropriate, mitigation measures have been set out as a means of reducing the overall effect, or in order that legislative compliance is achieved.

4.4.32 The standard mitigation hierarchy has been applied, whereby the following sequential measures are considered:

- **Avoidance:** the effect is avoided by removing its pathway, e.g. by changing the route via the design process wherever possible, micro-siting of towers to avoid ecological receptors.
- **Mitigation:** measures are taken to reduce the significance of the effect, e.g. scheduling works to maintain key commuting and foraging corridors.
- **Compensation:** where the effect cannot be reduced, alternative action is taken elsewhere within the Study Area, e.g. new planting proposals to replace lost vegetation, etc.

4.4.33 Mitigation measures included have been designed to be pragmatic and proportionate to the scale of the Proposed Development.

4.4.34 SPEN is committed to delivering 'No Net Less' and has adopted a Biodiversity Net Gain metric to demonstrate this. The metric is reported separately in **Appendix 4.2**.

4.5 Baseline

Desk Study

4.5.1 The desk study identified the following statutory sites designated for nature conservation purposes within 5km and non-statutory designated sites within 1km, which may have functional connectivity to the Proposed Development:

- Un-named Ancient Woodland Inventory Long Established of Plantation Origin (LEPO) woodland located approximately 80m south of the existing ZV109 tower.
- Red Moss Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) located approximately 480m to the south of the existing ZV route at its closest point (on the opposite side of the B7078

road). This is designated for its active raised bog habitat and assessed by NatureScot as being in unfavourable (recovering) condition.

4.5.2 The statutory and non-statutory designated nature conservation sites are provided in **Figure 4.1.**

Field Survey

Habitats

4.5.3 The Phase 1 Habitat Survey was completed by LUC in August 2023. This recorded a small number of common habitats within the Study Area, these are described below. Field surveys did not identify any habitats of potential conservation concern or potential GWDTE habitats, therefore NVC survey was not required. Habitat descriptions should be read in conjunction with **Figure 4.2** and **Appendix 4.1**.

A1.2.2 Coniferous Woodland (plantation).

4.5.4 A small area of coniferous plantation dominated by Norway Spruce was present in the south of the Study Area this was included in the Ancient Woodland Inventory as being Long Established of Plantation Origin (LEPO). The ground layer was covered by pine needles and largely devoid of vegetation (See **Appendix 4.1, photographs 1 and 2**),

B4 Improved Grassland

4.5.5 The centre, east and south of the Study Area was dominated by improved grassland and had been subject to extensive grazing (See **Appendix 4.1, Photo 3**). This habitat was also present as a mosaic with marshy grassland to the south and in the centre of the Study Area. These areas were dominated by the following grass species: Yorkshire fog (*Holcus lanatus*), perennial ryegrass (*Lolium perenne*), with frequent tufted hairgrass (*Deschampsia cespitosa*). There was also localised presence of soft rush (*Juncus effusus*), sedge species (*Carex* spp), and bell heather (*Erica cinerea*) (See **Appendix 4.1, Photo 4 and 5)**. In one small, localised area purple moor grass (*Molinia caerulea*) was also present.

B5 Marshy Grassland

4.5.6 Marshy grassland habitats were present in three locations within the Study Area i.e. one small area to the south, and two areas close to the centre of the Study Area. At the latter two locations, this was present as a mosaic with improved grassland. These habitats were present on the lower lying ground and soft rush was locally dominant. These areas were also heavily grazed (See **Appendix 4.1, Photo 6).**

D1 Dry Dwarf Shrub Heath

4.5.7 A small area of dry dwarf shrub heath/ improved grassland was present within the northwest of the Study Area. This habitat was present on the sloped road verge. Within this habitat, bell heather was locally dominant with a ground cover of grasses including: Yorkshire fog, perennial ryegrass and tufted hairgrass. (See **Appendix 4.1, Photo 7**). This habitat is frequently associated with peatland. NatureScot's Carbon and Peatland Map indicate that this area is comprised of Class 3 peatland. Peat probing undertaken in the vicinity of this habitat has recorded peat between 0-25 centimetres (cm) in depth. Therefore, this small area of dry dwarf shrub heath habitat is not present on peatland. Carbon and peatland classifications and peat probing results are provided within **Figure 6.3.**

G2 Running Water

4.5.8 The southeast of the Study Area also included a narrow field drain that was largely covered by overhanging vegetation dominated by soft rush. In places the vegetation around the channel was more open and exposed small pools of slower moving water (See **Appendix 4.1, Photo 8 and 9**).

4.5.9 The north of the Study Area included a mosaic of marshy grassland and improved grassland, there were several small field drains and a small water course present in this area (See **Appendix 4.1, Photo 6**).

4.5.10 Both of these areas were heavily influenced by grazing.

Hard Standing

4.5.11 A small section of the B7078 road was present as hard standing to the south east of the Study Area.

J1.2 Amenity Grassland

4.5.12 A very small area of amenity grassland was present within the south of the Study Area between the carriageways of the B7078, this included a line of broad-leaved trees (too small to be mapped) (See **Appendix 4.1, Photo 10**).

Protected Species

Bats

4.5.13 The PBRA included an assessment of habitat suitability for bats. The Study Area was dominated by open grassland habitats that lacked linear features. The small coniferous plantation woodland to the southwest of the Study Area was sub-optimal for commuting and foraging bats due to it being isolated from other linear features in the wider landscape.

4.5.14 Due to the nature of commercial conifer plantation (e.g., densely planted trees which are generally felled before roosting features develop), all trees within this area were noted to have either no BRP or PRF-I potential for roosting bats. Therefore, no further survey work was required within the commercial plantation.

Badger

4.5.15 The Study Area was dominated by grassland habitats, these provide suitable foraging habitats for badgers. The small area of conifer plantation of the south of the Study Area potentially provides suitable foraging, commuting and sheltering resources for badgers.

4.5.16 Badgers were not recorded within the Study Area during field surveys. However, while undertaking field surveys LUC's Ecologist recorded one main sett and an outlier sett outside the Study Area but within 1 km of the Site. Further information is provided in **Figure 4.3 (Confidential).**

Red Squirrel and Pine Martin

4.5.17 The phase 1 habitat survey identified a small area of conifer plantation within the south of the Study Area (See **Figure 4.2)**, this is part of a larger woodland block that extends outwith the Study Area. The plantation within the Study Area provided suitable resources for foraging and resting sites for red squirrel and pine marten. However, the plantation block was unsuitable for allowing commuting and dispersal of red squirrel and pine martin away from the plantation as it was isolated from any other potentially suitable habitat within the wider landscape.

4.5.18 No field signs of red squirrel (i.e. dreys or feeding remains) were recorded within the Study Area. However, feeding remains (stripped cones) were noted at several locations within the plantation immediately to the south of the Study Area, these are potential evidence of red squirrel foraging (See **Appendix 4.1, Photo 11**). Red squirrels usually inhabit a large home range, therefore the lack of connectivity between the plantation and other suitable habitats suggests that the Study Area is likely to be part of the territory for a small remnant red squirrel population. See **Figure 4.3 (Confidential).**

4.5.19 Pine marten were not recorded within the Study Area during field surveys.

Water Vole

4.5.20 Suitable habitats for water vole were recorded at two locations where marshy and improved grassland habitats were present within the Study Area (i.e. a small area to the east and a larger area to the west of the Study Area). Several field drains were present within these areas (See **Figure 4.3**).

4.5.21 The field survey did not record field signs of water vole.

4.6 Good Practice Measures/Embedded Mitigation

4.6.1 This section outlines the avoidance and embedded mitigation measures that will be adopted by the Proposed Development:

- The development and application of a Construction Environment Management Plan (CEMP), which will set out (amongst others) guidance on compliance with nature conservation legislation and policy. This will include adherence to Guidelines on Pollution Prevention and construction Method Statements incorporation of relevant measures in relation to lighting, waste management and minimisation of vegetation removal required.

- The appointment of an Advisory Environmental Clerk of Works (ECoW) to advise, monitor and report on compliance with relevant legislation, policy and project specific mitigation during construction.
- Pre-construction surveys to be completed to confirm the status of protected species prior to works commencing. This will include update preliminary bat roost potential, badger, water vole and red squirrel surveys.
- Production of a Species Protection Plan (SPP) to set out the approach to the monitoring of protected species prior to and during construction.
- Where possible, the ILA will allow for the protection of sheltering and resting sites. Where this is not possible, the NatureScot licensing system will be used to ensure works are completed in full compliance with welfare and conservation standards. Any micrositing required to protect sensitive species will again be advised by the ECoW during construction.
- Where appropriate, vegetation will be protected during construction in localised locations via appropriate matting or other appropriate methods as directed by the ECoW. This will be particularly relevant to works either within or in proximity to marshy grassland habitats.

Enhancement

4.6.2 A Biodiversity Enhancement Strategy (BEP) will be developed and implemented post consent to provide meaningful habitat enhancement appropriate to the scale of the Proposed Development. The key objective of the BEP will be to deliver SPEN's 'No Net Less' objective for the Proposed Development which will be measured by the use of the Biodiversity Net Gain metric as set out within the Biodiversity Net Gain Report (See **Appendix 4.2**) to demonstrate this.

4.7 Appraisal of Effects

Construction Effects

Designated Sites

4.7.1 Red Moss SAC is located approximately 480m from the Study Area. However, the B7078 road provides a hydrological and physical barrier between the Proposed Development and Red Moss SAC. There will be no direct habitat loss, disturbance or fragmentation of habitats as a result of the Proposed Development. The implementation of standard pollution prevention controls and best practice during the construction phase of the Proposed Development will also prevent negative effects on water quality within the SAC. Therefore, there will be no Likely Significant Effects (in Habitat Regulations Assessment terms) on the Favourable Conservation Status[43] of Red Moss SAC as a result of the Proposed Development[44].

4.7.2 A small section of the Un-named Ancient Woodland LEPO is located within the south of the Study Area. No works are planned within, or to, this woodland. Therefore, implementation of a 40m exclusion zone around the woodland and implementation of standard pollution prevention controls and best practice during the construction phase will prevent any significant effects on this feature.

Habitats

4.7.3 The existing OHL and Proposed Development are largely located on improved and marshy grassland habitats with several other habitats making up a very small area of the overall Study Area. However, given the ubiquity and low ecological value of the habitats to be affected, it is likely that all legislative and policy requirements will be met.

4.7.4 The plantation woodland present within the Study Area is of higher ecological value due to this being classified as a LEPO woodland. During construction, there will be no loss or fragmentation of this habitat therefore there is unlikely to be any effect on the structural or functional integrity of the resource. A series of precautionary mitigation measures (See the **Good Practice Measures/Embedded Mitigation and Enhancement** section in this chapter and **Appendix 1.1**) will be implemented to avoid the plantation woodland (via the ILA).

[43] As defined by CIEEM https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/ [Accessed August 2023]
[44] This this report does not constitute a Habitat Regulations Appraisal screening report. However, the information provided within this report should be sufficient to inform the assessment to be undertaken by the Local Planning Authority.

4.7.5 Furthermore, once construction is complete, habitats temporarily lost as a result of the Proposed Development will be restored. Therefore, it is unlikely there will be adverse effects on the habitats of conservation concern as a result of the Proposed Development.

Protected Species

Bats

4.7.6 The Study Area lacks the network of linear features and roosting opportunities to provide optimal resources for commuting, foraging and roosting bats.

4.7.7 The planation woodland within the Study Area provides very limited commuting and foraging resources. Potential roosting opportunities within the plantation are also very limited due to the density and age structure of the trees in this area. The plantation will not be removed to facilitate the Proposed Development, therefore it is unlikely that the Proposed Development will lead to adverse effects on the local bat population.

4.7.8 The Proposed Development will include a series of precautionary embedded mitigation measures to safeguard bat species (including pre-construction surveys and licencing if required), therefore it is unlikely there will be adverse effects on the Favourable Conservation Status of the local bat population as a result of the Proposed Development.

Badger

4.7.9 The habitats within the Study Area provide suitable foraging and commuting habitats and sheltering habitats for badgers. Field surveys did not record badger setts within the Study Area, however there was one sett identified in very close proximity.

4.7.10 The Proposed Development will not directly adversely effect the woodland, however there is potential for temporary disturbance of commuting routes and partial loss of a relatively small area of foraging habitat. However, the Proposed Development includes a series of embedded precautionary mitigation measures (including pre-construction surveys and licencing if required) to safeguard the species, therefore it is unlikely there will be adverse effects on the local Badger population as a result of the Proposed Development.

Red Squirrel

4.7.11 The small section of conifer plantation within the Study Area provides limited suitable sheltering, foraging and commuting habitats for red squirrel. Limited evidence of red squirrel was recorded within the Study Area. However, the plantation is not functionally connected to other suitable habitats for the species.

4.7.12 The plantation will not be removed as a result of the Proposed Development. The Proposed Development will include a series of embedded precautionary mitigation measures (including pre-construction surveys and licencing if required) to safeguard the species, therefore it is unlikely there will be adverse effects on the local red squirrel population as a result of the Proposed Development.

Water Vole

4.7.13 Marshy grassland habitats within the Study Area were identified as being potentially suitable for sheltering, foraging and commuting water voles. However, these are relatively isolated within the context of the wider area. The lack of field evidence and habitat suitability suggests that the Study Area does not currently form a core area important for breeding of the local population.

4.7.14 A relatively small area of the marshy grassland potentially suitable for water voles is likely to be temporarily disturbed as a result of the Proposed Development. The Proposed Development will include a series of embedded precautionary mitigation measures (including pre-construction surveys and licencing if required) to safeguard the species, therefore, there will be no adverse effects on the local water vole population as a result of the Proposed Development.

Cumulative Effects

4.7.15 The assessment of cumulative effects has considered proposed developments of a similar nature within 1km of the Site, **Figure 1.5** provides further details.

4.7.16 The appraisal of cumulative effects considers the following:

- Future baseline scenario 1: the Proposed Development and Redshaw substation; and
- Future baseline scenario 2: the Proposed Development, Redshaw substation and the M74 West Renewable Energy Park.

4.7.17 The EIA screening process and this appraisal identified that effects on ecological receptors were unlikely to be significant in EIA terms in relation to the Proposed Development. On this basis, it is considered unlikely that the Proposed Development in combination with other developments within the Study Area will have any significant effect on ecological receptors.

4.7.18 The Proposed Development, in combination with the proposed Redshaw substation immediately to the south, has potential to have adverse effects on badgers and red squirrels at Site level, due to the presence of suitable commuting and foraging habitat for these species. In addition, the Proposed Development in combination with the Proposed Redshaw Substation has potential to have adverse effects on marshy grassland habitats suitable for sheltering, foraging and commuting water voles. It is assumed that the proposed Redshaw substation will have the appropriate measures and licensing in place prior to commencement of works. On this basis local badger, water vole or red squirrel populations are unlikely to experience significant cumulative adverse effects in combination with Redshaw substation.

4.7.19 A scoping opinion has been provided for the M74 West Renewable Energy Park' in April 2024. This proposed development includes plans to install up to 22 wind turbines, solar photo-voltaic (PV) generation and a battery energy storage system (BESS) with associated infrastructure immediately to the south and east of the Study Area. The Ecological Impact Assessment is expected to be submitted to the Energy Consents Unit in August 2024[45]. The Proposed Site of the M74 West Renewable Energy Park is anticipated to include habitats of low conservation value due to the previous land-uses. The scoping report states that precautionary, preventative and mitigation measures will reduce the risk of indirect impacts associated with the development occurring on the Red Moss SSSI/ SAC and on protected species. As such, it is unlikely that there will be any significant cumulative effect.

4.7.20 Therefore, the Proposed Development, in combination with other developments as outlined in **Figure 1.5** is unlikely to have a significant adverse, cumulative effect on ecological receptors.

4.8 Proposed Additional Mitigation

4.8.1 No additional mitigation is required in addition to that already embedded in project design and construction. However, the implementation of the target that the Proposed Development will deliver 'no net loss' of biodiversity, supported by a BNG assessment within the Biodiversity Net Gain Report (see **Appendix 4.2**), will ensure the delivery of meaningful biodiversity enhancement measures.

4.9 Summary and Conclusions

4.9.1 The desk studies and field surveys undertaken to inform this ecological appraisal has confirmed that the proposed construction of the Proposed Development may result in small scale, mitigable effects on ecological features.

4.9.2 Red Moss SSSI and SAC is located 480m to the south of the Study Area, however there was no functional connection between the Proposed Development and the SAC. Therefore, there will be no Likely Significant Effects on the Favourable Conservation Status[46] of Red Moss SAC as a result of the Proposed Development[47].

4.9.3 An un-named ancient woodland inventory site of long established planation origin is present within the Study Area. However there will be no loss of the plantation as a result of the Proposed Development. A series of precautionary mitigation measures will be implemented to avoid and protect the plantation woodland resource.

4.9.4 Habitats within the Study Area are dominated by improved and marshy grassland of low ecological value and woodland present of higher ecological value however this will be avoided as a result of the design process.

4.9.5 Habitats within the Study Area were sub-optimal for bats, badgers and red squirrels. Low levels of these species were present within the Study Area or in close proximity. On the basis of the information collated on non-avian

[45] Renewco. M74 Project website: https://www.renewcopower.com/projects/m74-west-renewable-energy-park/#:~:text=The%20project%20is%20called%20M74,grid%20capacity%20of%20249.9%20MW [Accessed 28/04/2024]
[46] As defined by CIEEM https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/ [Accessed August 2023]
[47] While this doesn't constitute a Habitat Regulations Appraisal screening report, that's the responsibility of the LPA & info in this report should be sufficient to inform that assessment

ecology within the Study Area, and taking account of the small area of habitat that will be permanently lost, and the short term and temporary nature of construction works there will be no significant effects arising from the Proposed Development in isolation or cumulatively with other projects in the Study Area.

4.9.6 A series of mitigation measures will be adopted within the design and construction to safeguard the conifer plantation and the low levels of protected species recorded within the Study Area. Therefore, the integrity and favourable conservation status[48] of designated sites, habitats of conservation concern[25] and protected species within the Study Area will be maintained as a result of the Proposed Development and legislative compliance met.

[48] As defined by CIEEM https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/ [Accessed 28/04/204]

5. Ornithology

5.1 Introduction

5.1.1 This Chapter presents the findings of an appraisal of the potential effects of the Proposed Development on Ornithology. It details the baseline environment, based on both desk-based studies and a comprehensive field survey. A description of potential effects, together with proposed mitigation measures is also provided.

5.1.2 The appraisal has been undertaken by LUC and is accompanied by the following appendices:

- **Appendix 5.1: Ornithology Technical Report**

5.1.3 The appraisal is also supported by the following Figures:

- **Figure 5.1: Breeding Bird Survey Area and Breeding Bird Records.**

5.2 Scope of Appraisal and Study Area

Scope of Appraisal

5.2.1 The following effects were identified for consideration in the appraisal:

- Disturbance and/or displacement to birds of moderate to high Nature Conservation Interest (NCI) during construction; and
- Cumulative effects arising from the above, with other projects potentially affecting ornithology.

5.2.2 The following effects were not considered:

- Effects on statutory designated sites where birds form part of the qualifying interest. The nearest relevant site is the Muirkirk and North Lowther Uplands Special Protection Area (SPA) which is also the North Lowther Uplands Site of Special Scientific Interest (SSSI). This is approximately 5.5km from the Proposed Development. Core foraging ranges of the qualifying species are: 2km for breeding hen harrier, short-eared owl and peregrine; 3km for breeding golden plover; and within 5km for breeding merlin. Hence, there is limited connectivity between the SPA/SSSI and the Proposed Development, and although it lies within the maximum foraging range of some of the qualifying species, the small scale of potential displacement and unexceptional foraging resources mean that effects on qualifying features are not predicted.
- All effects during the operational phase. Maintenance activities during the operational phase will be infrequent and similar in nature to existing activities in this location. Collision risk will be essentially unchanged compared to the existing situation. No disturbance or displacement to bird populations is anticipated due to the presence of the OHLs.
- Effects on bird populations of low NCI (see below).

Study Area

5.2.3 Statutory designated sites within 20km for SPAs and 5km for SSSIs were considered as part of the desk study.

5.2.4 Breeding bird surveys were undertaken within up to 500m of the 400kV OHL ZV Diversion (**Figure 5.1).**

5.3 Policy and Guidance

5.3.1 The appraisal has been undertaken following all relevant current policy, legislation and guidance of relevance to ornithology.

5.4 Methodology

5.4.1 The objectives of the appraisal are to identify and appraise the potential for the Proposed Development to impact on ornithology, such that impacts could impinge on the conservation status of regional[49] populations of birds.

Desk Study and Information Sources

Desk Study

5.4.2 A desk study was undertaken to collate information on the location of designated sites where ornithology forms part of the qualifying interest. SPAs up to 20km distant and SSSIs up to 5km distant were included.

Field Survey

5.4.3 In the 2022 breeding season, walkover breeding bird surveys were undertaken within 500m of the route of the proposed OHL diversion. Three survey visits were undertaken between April and June 2022.

5.4.4 Surveys were based on the Brown and Shepherd (1993)[50] method for upland breeding waders. Surveyors approached to within 100m of all parts of the survey area, aiming to maintain a constant search effort over the area. Surveyors scanned all areas and listened for bird calls to locate target species and classify behaviour to help ascertain their breeding status. The location of individuals was mapped, and a record was made of any behaviour characteristic of breeding.

Consultation

5.4.5 No consultation was undertaken to inform the survey and appraisal of the Proposed Development, in addition to that undertaken during screening.

Assumption and Limitations to the Appraisal

5.4.6 No limitations have been identified and it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and appraisal of the likely environmental effects of the Proposed Development on ornithology.

Appraisal Method

Sensitivity of Receptor

5.4.7 Sensitive ornithological receptors comprise bird populations defined as of 'high' and 'moderate' NCI which are known to be sensitive to the effects associated with OHL developments.

5.4.8 NCI considers the sensitivity of bird populations with reference to their legal status and known recent trends in number, distribution and threat status.

5.4.9 Populations of High NCI comprise the following:

- Species listed on Annex 1 of the EU Birds Directive;
- Breeding species listed on Schedule 1 of the WCA; and
- Species listed on Schedule 1A and A1 of the WCA.

5.4.10 Populations of Moderate NCI comprise the following:

- Species on the Birds of Conservation Concern (BOCC) 'Red' list (Stanbury et al., 2021)[51];

[49] Defined as populations within Natural Heritage Zone 19 – Western Southern Uplands and Inner Solway (SNH (2002). Natural Heritage Zones: A National Assessment of Scotland's Landscapes. SNH, Battleby).
[50] Brown, A.F. and Shepherd, K.B. (1993). A method for censusing upland breeding waders, Bird Study, 40:3, p.189-195.
[51] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

- Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the Proposed Development; and
- Species present in regionally important numbers (>1 % regional population).

5.4.11 For this appraisal, and in line with guidance which seeks to focus attention on species that are rare or potentially vulnerable to impacts arising from OHL developments, only species classified as of high or moderate NCI are considered in detail (CIEEM, 2018[52]; SNH, 2018[9]).

5.4.12 In addition, passerine species and some other red-listed species like cuckoo, are not considered due to their populations being at limited risk of any adverse impact associated with the construction and operation of OHL developments.

Magnitude of Change

5.4.13 The magnitude of potential effects is determined following consideration of the spatial and temporal elements of the resulting changes. There are five levels of spatial magnitude and five levels of temporal magnitude.

5.4.14 Magnitude will consider the likely susceptibility of populations to an effect, taking account of how a species' ecology may influence the response of the population, including their ranging behaviour, seasonality in occurrence or behaviour, reliance on specific habitats, behavioural sensitivity to disturbance effects at different times of the year, and their ability to recover from adverse effects, for example, by birds being recruited from elsewhere.

5.4.15 The predicted magnitude of an effect can be influenced by when it occurs. For example, operations undertaken in daylight hours may have little temporal overlap with the occupancy of birds' night-time roosts; and seasonality in a bird population's sensitivity or occupancy of a site may mean that effects are unlikely during certain periods of the year.

5.4.16 Spatial magnitude of effect arising from displacement or mortality is classified in respect of regional populations as follows:

- Very high – total or near total loss of a bird population or population productivity (>80% of regional population affected);
- High – major reduction in population or population productivity (21 – 80% of regional population affected);
- Moderate – partial reduction in population or productivity (6 – 20% of regional population affected);
- Low – small but discernible reduction in population or productivity (1 – 5% of regional population affected); and
- Negligible – population or productivity reduction barely discernible (<1% of regional population affected).

5.4.17 Temporal magnitude is of effect is classified as follows:

- Permanent – effects continuing indefinitely with little prospect of improvement following decommissioning;
- Long-term – effects lasting 15-30 years;
- Medium-term – effects lasting 5-15 years;
- Short-term – effects lasting 1-5 years; and
- Negligible – effects lasting less than 1 year.

Effect Criteria

5.4.18 Effects on sensitive ornithological receptors are appraised in relation to the likelihood of the Proposed Development resulting in changes to the conservation status of regional populations of potentially affected species of conservation value.

5.4.19 For this appraisal, conservation status is taken to mean the sum of the influences acting on a population which may affect its long-term distribution and abundance. Conservation status is considered to be favourable where:

[52] CIEEM (2018). G*uidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine Version 1.1*. Chartered Institute of Ecology and Environmental Management, Winchester.

- A species appears to be maintaining itself on a long-term basis as a viable component of its habitats;
- The natural range of the species is not being reduced, nor is likely to be reduced for the foreseeable future;
- There is (and will probably continue to be) sufficient habitat to maintain the species population on a long-term basis; and
- Effects that will adversely affect the favourable conservation status of a species, or prevent its recovery to favourable conservation status in Scotland, will be judged as of concern.

5.4.20 Regional populations are defined by the Western Southern Uplands and Inner Solway Natural Heritage Zone (NHZ 19) as defined by NatureScot (SNH, 2002[53]).

5.4.21 The likely overall effects on the conservation status of regional populations will consider the predicted spatial and temporal magnitude of effect, employing professional judgement to make a reasoned appraisal for each species appraised.

5.4.22 The classification of predicted effects has been undertaken using the criteria detailed in **Table 5.1**.

Table 5.1: Effect Classification

Effect	Criteria
Substantial	Changes to regional populations that result in total population loss or severe impacts to conservation status.
Moderate	Changes to regional populations that result in population losses that are likely to impact conservation status.
Minor	Small or barely detectable changes to regional populations that are unlikely to impact their conservation status.
Negligible	No or barely discernible changes to regional populations, with no impact on their conservation status.

5.5 Baseline

Desk Study

5.5.1 The Muirkirk and North Lowther Uplands SPA is the only SPA within 20km of the Proposed Development, sited 5.5km to the south-west at its closet point. This section of the SPA is also designated as the North Lowther SSSI.

Field Survey

5.5.2 Two curlew (moderate NCI) territories were recorded within approximately 500m of the Proposed Development. The estimated territory centres were to the north-east and to the south of the Proposed Development (**Figure 5.1**).

5.5.3 Other species which probably bred within the 500m included the moderate NCI species skylark, dunnock, reed bunting and mistle thrush, and the low NCI species stonechat and wheatear. Kestrel (moderate NCI) plus buzzard, and raven (low NCI) were seen occasionally and possibly bred nearby. Common gull and oystercatcher (both low NCI) were recorded but no breeding evidence was found. Common crossbill (high NCI) was recorded once (**Figure 5.1**).

5.6 Good Practice Measures/Embedded Mitigation

5.6.1 The appraisal of effects on ornithological receptors is made under the assumption that a Bird Protection Plan (BPP) is in place and implemented prior to construction commencing. The BPP will detail protocols for maintaining compliance with relevant species protection legislation and best practice during the construction phase, to ensure

[53] SNH (2002). Natural Heritage Zones: A National Assessment of Scotland's Landscapes. SNH, Battleby.

that bird species and important sites for birds (nests, roosts, key feeding sites) are safeguarded from disturbance during critical periods.

5.6.2 The BPP will be cognisant of relevant legislation, especially the Wildlife and Countryside Act 1981, taking account of the enhanced protections afforded to nest sites and to nesting and roosting birds listed in the Schedules of the Act. Further requirements which should be included in the BPP are:

- Timing of work: Where possible, any tree-felling and ground clearance should be scheduled outside of the breeding bird season, but should also take account of winter roosts.
- Pre-construction surveys: If work is scheduled to take place during the breeding bird season (April to August inclusive), pre-construction bird surveys should be undertaken within a series of distance buffers from construction works, with specific methods dependent on target species, affected habitat and the likely stage of the breeding cycle.
- Nest protection: Protocols should be developed to ensure nests and other sensitive bird sites are protected from destruction, or to ensure that disturbance is prevented or minimised during construction activities. This will include species-specific stand-off distances and work protocols to ensure nesting birds are safeguarded.
- Toolbox talk: The BPP should be overseen by a suitable experienced Environmental Clerk of Works who will oversee the delivery of 'toolbox talks' to contractors to make them aware of bird sensitivities, legislative requirements and relevant working protocols.

5.6.3 Targeted surveys to identify the nesting locations of sensitive species should be undertaken, and if located, disturbance risk assessments should be prepared to ensure breeding activity is unaffected by construction works.

5.6.4 The BPP will be overseen by an Ecological Clerk of Works (ECoW), with further detail on the definition of this role and implementation as part of a CEMP.

Enhancement

5.6.5 Enhancement measures that benefit birds will be developed within the overarching Biodiversity Enhancement Strategy (BEP) that will deliver SPEN's No Net Loss objective for the Proposed Development (see **Appendix 4.2**).

5.7 Appraisal of Effects

5.7.1 This appraisal considers the potential effects on bird populations of High or Moderate NCI, whose regional populations may be susceptible to effects associated with the construction and operation of the Proposed Development.

5.7.2 Baseline studies identified a single species that may be affected, curlew, which is classified as Moderate NCI on account of appearing on the Red list of Birds of Conservation Concern, and potentially at risk of disturbance and displacement during the breeding season. Other red listed species which were present, for example mistle thrush, are not considered to be susceptible to adverse effects arising from the construction and operation of the Proposed Development.

5.7.3 The appraisal considers effects on breeding curlew arising from:

- Construction of the Proposed Development; and
- Cumulative effects with other projects potentially affecting curlew.

Construction Effects

5.7.4 The construction phase of Proposed Development will lead to increased levels of noise and visual disturbance due to the presence of vehicles, site machinery and site personnel. Activities associated with construction are set out in **Chapter 2**, and will include preparation of accesses, vegetation clearance, excavations, tower removal, tower erection, stringing of OHL conductors and reinstatement activities.

5.7.5 This disturbance could lead to indirect habitat loss if birds are displaced from key sites or habitats within their range. Disturbance may also lead to behavioural changes, which could, for example, lead to reduced breeding success or increased mortality. Disturbance effects are difficult to quantify but will be greatest in close proximity to works.

5.7.6 Construction is proposed to last less than 100 days and is scheduled to begin in July 2025. Hence, the latter part of a single bird breeding season may be affected, as well as the early part of a single non-breeding season.

5.7.7 The BPP will ensure that nest sites of Schedule 1 species are safeguarded, with measures put in place to ensure that sites are buffered to avoid or minimise any effects associated with construction activities, or that activities close to potential nest sites are timed to avoid the breeding season.

Curlew

5.7.8 Up to two curlew breeding territories may overlap with elements of the Proposed Development. The BPP will detail measures to ensure that any identified nest sites are safeguarded during the construction phase.

5.7.9 Breeding curlews are classed as being highly sensitive to disturbance, with a recommended buffer zone of 200 - 300m[54]. Curlews in the vicinity of the Proposed Development are likely to be habituated to a certain amount of disturbance due to the proximity of the territories to the M74, the B7078 and traffic associated with the recent construction and operation of wind farms to the west. Hence, they may be sensitive towards the lower end of the recommended distance buffer (200m).

5.7.10 Breeding curlew lay eggs from mid-April to the end of May[55] with incubation lasting up to 30 days. Curlew chicks will leave the nest soon after hatching and thereafter will range widely while being fed and cared for by their parents. Hence, were construction to commence in early July 2025, it is most likely that any curlew nests within potential disturbance distance would already have hatched, and chicks would have dispersed into the wider area. Displacement from feeding areas could occur at this stage, but the habitat encompassing the footprint of the Proposed Development is unexceptional for feeding, where the relatively steep slope is well drained and does not provide damp, marshy areas favoured by foraging curlew.

5.7.11 Overall, construction activities are predicted to have a short-term and spatially negligible effect on breeding curlew, with no breeding territories predicted to be displaced, and the timing and nature of disturbance having limited overlap with key stages of the curlew breeding cycle. The overall effect of construction activities on the conservation status of the regional breeding curlew population, which numbers several thousand pairs[56], is classified as negligible.

Cumulative Effects

5.7.12 The appraisal of cumulative effects considers the following:

- Future baseline scenario 1: the Proposed Development and Redshaw substation; and
- Future baseline scenario 2: the Proposed Development, Redshaw substation and the M74 West Renewable Energy Park.

5.7.13 No substantial effects on ornithology are predicted due to the construction and operation of the Proposed Development. Hence, for both scenarios, there is no potential for the Proposed Development to contribute to cumulative effects on any ornithological receptor and cumulative effects are classified as negligible.

5.8 Proposed Additional Mitigation

5.8.1 No additional mitigation is proposed and good practice/embedded measures detailed previously during the construction phase will be sufficient to ensure that ornithological receptors are safeguarded during all phases of the Proposed Development.

5.9 Summary and Conclusions

5.9.1 Effects on sensitive ornithological receptors were appraised in relation to the construction and operation of the Proposed Development. None of the predicted effects were classified as greater than negligible on the conservation status of the receptors appraised.

[54] NatureScot (2022). Disturbance Distances in selected Scottish BirdSpecies – NatureScot Guidance.
[55] Wilson, M.W., Fletcher, K., Ludwig, S.C. & Leech, D.I. (2021). Nesting dates of Moorland Birds in the English, Welsh and Scottish Uplands. BTO Research Report 741.
[56] Wilson, M. W., Austin, G. E., Gillings S. and Wernham, C. V. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned report number SWBSG_1504

6. Hydrology, Hydrogeology, and Peat

6.1 Introduction

6.1.1 This Chapter presents the findings of an appraisal of the potential effects of the Proposed Development on Hydrology, Hydrogeology, and Peat. It details the baseline environment, based on both desk-based studies and a comprehensive field survey. A description of potential effects, together with proposed mitigation measures is also provided.

6.1.2 The appraisal has been undertaken by Kaya Consulting and is accompanied by the following appendix:

- **Appendix 6.1: Peat Survey Report.**

6.1.3 The appraisal is also supported by the following Figures:

- **Figure 6.1: Hydrology Study Area, Watercourses and Private Water Supplies;**
- **Figure 6.2: Watercourse Crossings and Buffers; and**
- **Figure 6.3: Peat Depth and Peatland Classification.**

6.2 Scope of Appraisal and Study Area

Scope of Appraisal

6.2.1 The following effects were identified for consideration in the appraisal:

- Direct effects during construction on surface water and ground water quality and hydrology (including Private Water Supply (PWS) quality and quantity);
- Direct and indirect effects on peat during construction; and
- Cumulative effects during construction with other schemes which share the same catchment as the Proposed Development and which could result in cumulative effects.

6.2.2 Operational effects on hydrology, hydrogeology and peat have been scoped out. Once installed, the Proposed Development will only require occasional inspection and periodic maintenance and there are unlikely to be any effects.

Study Area

6.2.3 The study area for hydrology, hydrogeology and peat comprises the Proposed Development and a 1km buffer from the Proposed Development (**Figure 6.1**). **Figure 6.2** shows the main watercourses and water features within the study area. A 1km search area from the Proposed Development was used for private water supplies and groundwater abstractions.

6.2.4 Peat surveys were undertaken within the study area in areas where development is proposed, including around the proposed towers, temporary access tracks and working areas, and where existing towers will be removed or upgraded. **Figure 6.3** shows the NatureScot (2016) carbon and peatland classes and results of the peat depth survey. It is noted that no peat probing was carried out under the existing OHL for safety reasons. Existing conditions of the study area are described in Section 6.5.

6.3 Policy and Guidance

6.3.1 The appraisal has been undertaken following all relevant current policy, legislation and guidance of relevance to hydrology, hydrogeology and peat.

6.4 Methodology

Desk Study

6.4.1 The following data sources have informed the assessment:

- 1:10,000 scale Ordnance Survey Maps;

- 1:25,000 scale Ordnance Survey Maps;
- Site data and maps provided by SPEN;
- British Geological Survey (BGS) mapping at 1:50,000 and 1:625,000 scales;
- Scottish National Heritage Interactive Map;
- Carbon and Peatland 2016 mapping at 1:250,000 scale;
- SEPA Water Classification Hub;
- Scotland's Environment Website and Interactive Map;
- Flood Estimation Handbook (FEH) Web-service (fehweb.ceh.ac.uk); and
- SEPA Flood Maps.

Field Survey

6.4.2 Hydrology walkover and peat depth surveys were conducted on 15th of September 2023 and 6th of February 2024. Weather conditions were dry and overcast on both occasions.

6.4.3 The peat survey methodology follows current guidance in Scotland (Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland, on-line version only). The site was sampled using a 10m grid within a 50m buffer of the proposed towers and a 25m systematic grid across in the surrounding area to cover the anticipated construction access to the towers during the works. Further details of survey methods and results are provided in **Appendix 6.1**.

6.4.4 The field survey was undertaken by a hydrologist with the appropriate experience of assessing hydrology, hydrogeology, geology, soil, and peat.

Consultation

6.4.5 A consultation with South Lanarkshire Council and SEPA was undertaken to obtain relevant water supply information, including abstractions and PWS.

Assumption and Limitations to the Appraisal

6.4.6 The appraisal was based on existing, available data, supplemented by hydrology and peat surveys. It is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and appraisal of the likely environmental effects of the Proposed Development.

Appraisal Method

6.4.7 The appraisal method was based on review of the baseline environment and an understanding of the proposals, combined with the professional experience and judgement of the author. The sensitivity of receptors and magnitude of effect were defined based on the criteria described below in order to appraise the likely effects.

Sensitivity of Receptor

6.4.8 Sensitivity has been determined on the basis of the criteria shown in **Table 6.1.**

Table 6.1 Criteria Used to Assess the Sensitivity of Receptor

Sensitivity of Receptor	Typical Indicators
High	Receptor is of national or international value (i.e., Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Special Protection Area (SPA), and RAMSAR). Overall water quality classified by SEPA as high. Abstractions for public water supply. Groundwater classified under the WFD as 'good' or groundwater resource with numerous sensitive users/receptors.

Sensitivity of Receptor	Typical Indicators
	The flooding of property (or land use of great value) that has been susceptible to flooding in the past. Watercourse floodplain/hydrological feature that provides critical flood alleviation benefits. Natural channel and of high morphological diversity. Receptor supports GWDTE confirmed as highly groundwater dependent. Class 1 or 2 priority peatland.
Medium	Receptor is of regional or local value (e.g. Local Nature Reserve). Overall water quality classified by SEPA as good or moderate. Smaller watercourse lying upstream of larger river that is an SSSI, SAC SPA or RAMSAR. May be subject to improvement plans by SEPA. Abstractions for private water supplies. Groundwater resource with sensitive users/receptors. Environmental equilibrium copes well with natural fluctuations but cannot absorb some changes greater than this without altering part of its present character. The flooding of property (or land use of great value) that may be susceptible to flooding. Watercourse/floodplain/hydrological feature that provide some flood alleviation benefits. Semi-natural channel, with morphological diversity. May have some minor morphological constraints. Receptor supports GWDTE confirmed as moderately groundwater dependent. Unmodified active peatland. Deeper peat (>1.0m depth) unless minor area.
Low	Receptor is of low environmental importance (e.g., water quality classified by SEPA as bad or poor). Not subject to water quality improvement plans by SEPA. Environmental equilibrium is stable and is resilient to changes which are considerably greater than natural fluctuations, without detriment to its present character. No abstractions for public or private water supplies. No significant groundwater resource and no identified sensitive users/receptors. No flooding of property or land use of great value. Watercourse/floodplain/hydrological feature that provides minimal flood alleviation benefits. Heavily engineered or artificially modified and may dry up during summer months. No GWDTE confirmed as either moderately or highly groundwater dependent. No or shallow peat (0.5m to <1.0m depth) and/or modified peat

Magnitude of Change

6.4.9 Magnitude of change has been appraised based on the criteria presented in **Table 6.2**.

Table 6.2 Criteria Used for Estimating the Magnitude of Effect

Magnitude	Description/Typical Example
High	Fundamental changes to the hydrology, water quality, geology or hydrogeology (in terms of quantity, quality, and morphology). A >10% change in average or >5% change in flood flows. The extent of flood risk areas (as classified by NPF4 – i.e. land or built form with an annual probability of being flooded of greater than 0.5% including an appropriate allowance for future climate change) will be significantly increased. Change that would render water supply unusable for longer than a month. Change resulting in total loss of feature or integrity of feature or use.
Moderate	Material but non-fundamental changes to the hydrology, water quality, geology or hydrogeology (in terms of quantity, quality, and morphology). A >5% change in average and minimal change in flood flows. Extent of flood risk areas will be moderately increased/or decreased. Change that would render water supply unusable for days or weeks up to a month with no alternative.
Slight	Detectable but non-material changes to the hydrology, water quality, geology or hydrogeology (in terms of quantity, quality, and morphology). A >1% change in average flows and no increase in flood flows. Change that would render water supply unusable for a short period (days) or for longer period if alternative supply put in place.
Negligible	No perceptible changes to the hydrology, water quality, geology or hydrogeology (in terms of quantity, quality, and morphology). A <1% change in average and no change in flood flows. No change in water supply or minor change (days) where alternative is put in place.
None	No change

Effect Criteria

6.4.10 The sensitivity of the receptor and the magnitude of the effect were combined using **Table 6.3** to classify the level of effect.

Table 6.3 Classification of Effect based on Sensitivity of Receptor and Magnitude of Effect

Receptor Sensitivity	Magnitude of Change				
	High	Moderate	Slight	Negligible	None
High	Major	Major/Moderate	Minor	Negligible	None
Medium	Major/Moderate	Moderate	Minor	Negligible	None
Low	Moderate/Major	Minor	Minor	Negligible	None

6.5 Baseline

Desk Study

Hydrology

6.5.1 **Figure 6.2** shows the main watercourses and water features within and close to the Proposed Development. The Proposed Development is wholly within the Black Water catchment. The Site drains towards the Black Burn, which flows in a south-easterly direction south of the Site.

Water Quality

6.5.2 SEPA has characterised surface water quality status under the terms of the Water Framework Directive. Classification by SEPA considers water quality, hydromorphology, biological elements including fish, plant life and invertebrates, and specific pollutants known to be problematic. The classification grades through High, Good, Moderate, Poor, and Bad status. This provides a holistic assessment of ecological health. There are no watercourses within the Site which are large enough to be classified by SEPA. However, the two small tributaries within the Site drain towards the Black Burn which was classified as 'Good' in 2022.

6.5.3 The Lesmahagow groundwater body (ID: 150673), which underlies the Site was classified by SEPA as 'Good' in 2022.

Flood Risk

6.5.4 A review of the SEPA Future Flood Maps indicates that there are no areas identified to be at risk of flooding in a 1 in 200-year event (plus an allowance for climate change) at the Proposed Development or within the study area.

Geology

6.5.5 The geology underling the Proposed Development is comprised of Devonian sandstone of the Auchtitench Sandstone Formation. These are medium- and coarse-grained, poorly sorted, volcaniclastic sandstones with pebble beds and substantial interbeds of andesitic lava pebble conglomerates, and thin fine-grained sandstone, siltstone, mudstone and andesitic and basaltic lava beds.

6.5.6 The drift deposits in the Site are dominated by till, primarily Devensian Diamicton superficial deposits.

Hydrogeology

6.5.7 The BGS hydrogeology map (1:625,000 scale) shows that the site is located on a moderately productive aquifer (Class 2B) with flow being identified virtually all throughout fractures and discontinuities. This regional aquifer of the Lanark Group is composed of sandstones, in places flaggy, with siltstones, mudstones and conglomerates and interbedded lavas. It locally yields up to 12 L/s. The underlying bedrock aquifer is therefore considered to have moderate resource potential in terms of groundwater yield.

Groundwater Dependant Terrestrial Ecosystem (GWDTE)

6.5.8 The Water Framework Directive 2000/60/EC (WFD) requires any terrestrial ecosystems which are dependent on groundwater (i.e., groundwater dependent terrestrial ecosystems, GWDTE) to be identified and the pressures acting on them considered. Based on the results of the ecology surveys (see **Chapter 4**) no GWDTEs within the ecology study area.

Private Water Supplies and Abstractions

6.5.9 Consultation with South Lanarkshire Council and SEPA identified one PWS within 1km of the Proposed Development at the Redshaw property (**Figure 6.1**), approximately 970m to the north-west of tower ZV108. The Redshaw PWS is supplied by a borehole; the source location is unknown at the time of writing but is considered likely to be close to the property.

Designated Sites

6.5.10 Red Moss SSSI (NatureScot Site Code: 1691) is located within the study area and is approximately 480m south of existing ZV route at its closest point (**Figure 4.1**). It is also classed as a Special Area of Conservation (SAC). The SSSI is comprised of three raised bogs, two of which are hydrologically linked, in the Black Burn valley.

Field Survey

Peat

6.5.11 **Figure 6.3** shows the NatureScot (2016) carbon and peatland classes and results of the peat depth survey. The Proposed Development is located within Class 3 peat based on the NatureScot mapping, which is described as:

- Class 3 – Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat.

6.5.12 A peat depth survey was carried out on the 15th of September 2023 and 6th of February 2024, the details are summarised in **Figure 6.3** and the peat survey report is provided at **Appendix 6.1**. A total of 815 probes were collected, at a resolution of 10m around each proposed tower and 25m in the surrounding area which may be used for construction access to the towers during the works.

6.5.13 Probe penetration depths were mainly <0.25m with only 80 probes returning depths of 0.25 – 0.49m and 10 probes were ≥ 0.5m. The survey concluded that the majority of the survey area is not peat (i.e. depths are less than 0.5m), with only two small, isolated pockets of peat identified. The first is close to the watercourse at tower ZV111 and the second consists of an area of peaty soil to the north of the proposed location of tower ZV109R. Coring confirmed that proposed tower locations and surrounding corridor are largely underlain by shallow peaty-gleys, mineral soils.

Hydrology

6.5.14 A small unnamed watercourse was identified and mapped ~10m west of tower ZV111 during the hydrology walkover survey (**Photo 1** and **Figure 6.2**). This feature flows south before culverting under the B7078 road. This watercourse is a tributary to the Black Burn. The catchment to this watercourse is limited and due to the gradient of the surrounding land, any overtopping flows as a results of culvert blockage would follow existing ground levels south towards the B7078.

Photo 1: Unnamed small, watercourse located to the west of existing Tower ZV111.

6.5.15 A second unnamed watercourse was identified ~65m south of tower ZV108 (**Photo 2** and **Figure 6.2**), flowing southwards before joining a third unnamed watercourse and then culverting under the B7078 and continuing to the Black Burn. This feature is fed by artificial drainage of the adjacent moorland and drains a catchment of approximately 0.12km^2. Tower ZV108 sits well above the channel and any flows surcharging from this feature would flow southwards towards the B7078.

Photo 2: Unnamed watercourse, located to the south of existing Tower ZV108

Watercourse Crossings

6.5.16 The proposed OHL conductors will cross two unnamed watercourses approximately 10m north-west of the existing tower ZV111 and 160m south-east of tower ZV108. Cables will be pulled into place, with the cable pulling units situated away from the banks of the watercourses. There are no watercourse crossings required for the proposed access tracks, however a temporary watercourse crossing (either a culvert or temporary channel diversion) will be required during the foundation upgrade works to tower ZV111; this is marked as a proposed watercourse crossing on **Figure 6.2**. with the cable pulling units situated outwith the watercourse buffers.

6.6 Good Practice Measures/Embedded Mitigation

6.6.1 The Proposed Development was located as far as reasonably practical from watercourses and other natural hydrological features. An infrastructure buffer of 50m from watercourses was achieved where possible. Watercourse crossings (of access tracks) have been avoided, and existing tracks were used where possible to avoid new crossings. The Proposed Development crosses two small unnamed watercourses, but construction works (and tower locations) will be set back from the watercourses by an appropriate buffer (of at least 50m where possible). Locations where a 50m buffer could not be achieved are described in the 'Appraisal of Effects' section and additional mitigation provided if required. Stringing the OHL conductors across watercourses will not impact the bed and banks.

6.6.2 As per NPF4, which states no development is sited in flood risk areas. NPF4 Policy 22 states that "*Development proposals at risk of flooding or in a flood risk area will only be supported if they are for essential infrastructure where the location is required for operational reasons…..*" . None of the Proposed Development is within a flood risk area.

6.6.3 Good practice mitigation measures will be implemented during construction to prevent pollution and minimise the impact of construction on the receiving water environment in line with the Construction Environmental Management Plan (CEMP), which will reflect best practice guidance and recognised industry standards, as well as SPEN's recent experience of constructing OHLs. SEPA Guidance for Pollution Prevention (GPP) will be followed, as will SEPA's general binding rules (GBR) under the Water Environment (Controlled Activities) Scotland Regulations 2011, as amended (CAR Regulations).

6.6.4 Many of the measures mitigate several potential effects (e.g., mitigation to minimise sedimentation and pollution such as construction Sustainable Drainage Systems (SUDS) can also serve to attenuate surface water run-off). Mitigation measures that are incorporated into project design during construction will include:

- Measures to reduce effects of increased surface water run-off;
- Measures to reduce sedimentation and erosion;
- Measures to reduce pollution and accidental spillage; and
- Measures to be put in place at watercourse crossings.

6.6.5 The peat survey identified very limited areas of shallow peat in the Proposed Development corridor and these will be avoided during the construction design and upgrade works.

6.7 Appraisal of Effects

6.7.1 Taking account of the findings of the work undertaken to date, and professional experience, whilst adopting a precautionary approach, potential effects associated with the proposed development are as set out below.

6.7.2 The sensitivity of receptors has been appraised in **Table 6.4** using the criteria in **Table 6.3**.

Table 6.4 Sensitivity of Receptors

Receptor	Sensitivity	Comment
Watercourses and waterbodies Three unnamed tributaries of the Black Burn.	Water quality – Medium Flood Risk – Low	The entire Site drains towards the Black Burn, either directly or via the unnamed tributaries. A ~1km section of the Black Burn immediately downstream of the tributary confluence is part of Red Moss SSSI. The Black Burn is classified by SEPA as 'Good.' Based on SEPA Future flood maps, there is no flood risk within the Site boundary. There are no protected areas within the Site boundary. The Black Burn approximately 600m downstream of the Site is part of Red Moss SSSI.
Groundwater	High	The Lesmahagow groundwater underlying the area is classified by SEPA as 'Good'.
Peat	Low	Majority of the Site is not peat (depths <50cm) except two small, isolated pockets.

Construction Effects

Hydrology and Water quality

6.7.3 The construction of the Proposed Development has the potential to impact the water environment. Potential effects during construction include construction phase pollution of surface water and groundwater and subsequent quality deterioration caused by release of sediment/silt-laden run-off, operation of machinery (e.g., fuel spillage, oils etc) to watercourses during site preparation and construction.

6.7.4 Towers, working areas and access tracks were located as far away from watercourses as practicable during the design stage. However, a 50m buffer from watercourses could not be achieved at the following locations:

Existing Tower ZV111

6.7.5 Temporary access roads and working areas around existing Tower ZV111. Tower ZV111 is located ~10m west of an unnamed watercourse which also flows directly through the proposed 50m x 50m working area. The working area is therefore situated within the 50m watercourse buffer stipulated by SEPA. The watercourse is small (~1m wide, **Photo 1**) and any potential impact will likely be temporary and locally constrained. The downstream flow path of this watercourse is unclear after it culverts under the B7078. However, it lies within the drainage basin of the Black Burn (~600m downstream) which is classified by SEPA as having 'Good' water quality and is located within the Red Moss SSSI. Therefore, any disturbance to the tributary further upstream may impact the Black Burn downstream.

6.7.6 The temporary culverting or diversion of the small watercourse near ZV111 to create the temporary working area has the potential to impact the natural hydrological environment and ecosystem directly and indirectly. The addition of culverts to the watercourses can alter natural flow depths, create zones of bank / bed erosion and cause, or exacerbate flooding. Incorrectly designed culverts may also present barriers to fauna that could for example hinder the passage of fish or mammals along the watercourse.

6.7.7 Additional mitigation measures at the working area of ZV111 will be put in place, including additional SuDS and silt fences around the working area and the design of temporary culvert or temporary channel diversion will follow SEPA guidance. For example, a bottomless arched culvert to minimise effects on the bed and banks of the watercourse.

Existing Tower ZV108

6.7.8 The existing track utilised to access tower ZV108 in the north-western corner is located within the 50m buffer around the unnamed watercourse and the proposed new section of access track is within the buffer for a short distance (See **Figure 6.2**). A small corner of the working area around the tower also crosses over the 50m buffer of this watercourse. This watercourse is a small, unnamed tributary of the Black Burn and is ~1m wide (**Photo 2**). The Black Burn downstream is classified by SEPA as having 'Good' water quality and the section of the Black Burn immediately downstream of the confluence with the tributary is located within the Red Moss SSSI (~600m downstream of the Site). Therefore, any disturbance to the tributary further upstream may impact the Black Burn downstream.

6.7.9 Additional mitigation measures at the working area of tower ZV108 and along the section of proposed access that is within the watercourse buffer will be put in place, including additional SuDS and silt fences.

6.7.10 The sensitivity of the receptors in terms of water quality is Medium. Given the watercourse buffers achieved, the magnitude of effect on surface water quality (with embedded SuDS, good practice construction measures and additional mitigation measures at towers ZV111 and ZV108 as described above) is considered to be Negligible, resulting in a Negligible effect on water quality.

Peat

6.7.11 Almost all the existing and proposed towers are located on mineral soils (no peat present). Any topsoil that is excavated during construction of the three new towers and access tracks will be sorted, stored and re-instated in situ for backfilling purposes.

6.7.12 The working area of tower ZV111 encroaches onto a small pocket of peat (~0.8m deep). The effects on peat could include direct loss and/or indirect disturbance of peat during construction. Direct losses of peat occur where peat is excavated and cannot be appropriately re-used. Indirect peat loss occurs where temporary infrastructure (during construction) covers the vegetative peat surface or activities near the peat, such as excavation and drainage, can dry the peat out. However, it is noted that potential excavations of peat are likely to be minimal and can be reused on Site. Therefore, the effect on peat across the Site is considered to be Negligible.

Private Water Supplies

6.7.13 Deep excavations can impact the quality and quantity of ground water and can impact private water supplies, if the excavation is upslope of the PWS and within the same source catchment area of the PWS. This can have a detrimental effect on PWS during construction.

6.7.14 The nearest PWS is Redshaw which is approximately 970m away from the closest tower (ZV108) and upgradient of the infrastructure. The PWS supply is a borehole and it is considered that local excavations (4.5m deep) at the towers will have no impact on the PWS and the effect is None.

Cumulative Effects

6.7.15 The appraisal of cumulative effects considers the following:

- Future baseline scenario 1: the Proposed Development and Redshaw substation; and
- Future baseline scenario 2: the Proposed Development, Redshaw substation and the M74 West Renewable Energy Park.

6.7.16 For both scenarios, assuming that the Redshaw substation and M74 West Renewable Energy Park are designed and constructed in line with NPF4 and national guidelines with respect to SuDS and GPPs, there will be no cumulative effects on hydrology, hydrogeology or peat.

6.8 Proposed Additional Mitigation

6.8.1 The Proposed Development is located as far as reasonably practical from watercourses and other natural hydrological features. An infrastructure buffer of 50m from watercourses has been achieved for the three new towers and one of

the existing towers to be upgraded. The existing tower ZV111 is located within 10m of an unnamed tributary of the Black Burn. Additional mitigation and pollution control (e.g. silt fences) will be put in place during the upgrade works at this tower to minimise impacts to the water environment.

6.8.2 During construction, additional pollution protection measures will be put in place round construction working areas that are within 50m of watercourses to prevent silt or other pollutants from leaving the construction area and entering watercourses (e.g. swales, silt fences). These locations are detailed above. The CEMP will contain details of location specific additional mitigation (see Section 2.1).

6.8.3 Watercourse crossing management and mitigation plans will be outlined in the CEMP and design of temporary crossings will follow SEPA guidance and minimise effects on the bed and banks of watercourses.

6.8.4 Peat management measures will be outlined in the CEMP, following best practice guidance. If it is necessary to remove any peat around the ZV111 tower working area, a Peat Management Plan (PMP) will be produced. Excavated peat will be managed following SEPA requirements and guidelines (SEPA, WST-G-052, 2017) and will be reused on site wherever possible.

6.9 Summary and Conclusions

6.9.1 There are no PWS sources or groundwater abstractions within 250m of the Proposed Development; the nearest PWS is over 950m away from the Proposed Development (at the Redshaw property on the other side of the B7078 road) and is not within the same catchment as the Proposed Development. There are therefore no likely impacts on PWS or groundwater abstractions.

6.9.2 The Proposed Development is situated in the Black Burn catchment and requires crossing (or diverting) one small, unnamed watercourse, which lies in the catchment of the Black Burn. This cannot be avoided, as the watercourse is located close to an existing tower to be upgraded (Tower ZV111) where foundation strengthening may be required. The peat survey confirmed that most of the site is not peat (i.e. probe depths of <0.5m) and the two, small, isolated areas of peat will be avoided if possible. However if the small area of ~0.8m deep peat close to the working area at Tower ZV111 cannot be avoided, a Peat Management Plan (PMP) will be prepared. Excavated peat will be managed following SEPA requirements and guidelines (SEPA, WST-G-052, 2017) and will be reused on site.

6.9.3 With pollution control measures, the avoidance of peat and watercourses (where possible) and peat management measures if peat cannot be fully avoided it is considered that the effects on hydrology, hydrogeology and peat will be negligible during the construction phase of the Proposed Development and there will be no effects during the operational phase.

7. Cultural Heritage

7.1 Introduction

7.1.1 This Chapter presents the findings of an appraisal of the potential effects of the Proposed Development on cultural heritage. It details the baseline environment, based on both desk-based studies and a comprehensive field survey. A description of potential effects, together with proposed mitigation measures is also provided.

7.1.2 The appraisal has been undertaken by CFA Archaeology and is accompanied by the following appendices:

- **Appendix 7.1: Heritage Assets within the Inner Study Area;** and
- **Appendix 7.2: Heritage Assets within the Outer Study Area.**

7.1.3 The appraisal is also supported by the following Figures:

- **Figure 7.1: Cultural Heritage: Inner Study Area;**
- **Figure 7.2: Cultural Heritage: Outer Study Area;** and
- **Figure 7.3 to 7.6: Cultural Heritage Visualisations.**

7.2 Scope of Appraisal and Study Area

Scope of Appraisal

7.2.1 The following effects were identified for consideration in the appraisal:

- Direct and indirect effects on non-designated cultural heritage sites or features within the Proposed Development Site;
- Effects on the settings of cultural heritage assets with statutory and non-statutory designations within 5km of the Site. Scheduled Monuments and non-designated assets identified in Historic Environment Records (HER) as 'potentially of schedulable quality' (Non-Statutory Register (NSR) sites) where long distance views and intervisibility are an important aspect of their settings, where present within the ZTV and within 5km of the Proposed Development, are included in the assessment.
- Cumulative operational effects on the setting of cultural heritage assets resulting from the Proposed Development in combination with other developments that are either operational, consented, under construction or at the application or pre-application (in scoping) stage. Those developments considered are detailed in **Chapter 1**, **Table 1.1**.

7.2.2 The following effects were not considered in the appraisal:

- Effects on the settings of Inventory Gardens and Designed Landscapes and Historic Battlefields. There are no heritage assets with those designations within 5km of the Site.
- Effects on the settings of Listed Buildings and Conservation Areas within 5km of the Site. None have been identified as having settings that could be adversely affected by the Proposed Development.
- Effects of the Proposed Development on designated heritage assets (or NSR sites) beyond 5km of the Proposed Development. None beyond that distance have been identified as having settings that could be adversely affected by the Proposed Development.

Study Area

7.2.3 Two study areas were used for the appraisal:

- The Inner Study Area (**Figure 7.1**): The Proposed Development Site, defined by a 200m wide corridor along the proposed alignment of the overhead line (OHL) diversion and along the existing ZV OHL to be dismantled, in addition to a 100m wide corridor along proposed access routes, formed the study area for the identification of heritage assets that could receive direct effects arising from the construction of the Proposed Development.

Figure 7.1 shows the Site boundary, the Proposed Development layout and the locations of heritage assets within the Site (described in **Appendix 7.1**).

- The Outer Study Area (**Figure 7.2**): A study area extending 5km from the Proposed Development Site (aligning with the LVIA study area), was used for the identification of heritage assets whose settings may be affected by the operation of the Proposed Development (external receptors). **Figure 7.2** shows the Proposed Development ZTV and the location of heritage assets within 5km of the Proposed Development from which theoretical visibility is predicted, and which are included in the assessment. A list of these heritage assets is provided in **Appendix 7.2**, which also provides a tabulated summary assessment of the predicted effects on their settings on a case-by-case basis.

7.2.4 **Figure 7.2** identifies the locations of other operational, under construction, consented and application stage developments within 5km of the Site. The visualisations provided along with the assessment (**Figures 7.3** to **7.5**) show those cumulative schemes that will be at least theoretically visible from the represented viewpoint locations. The cumulative schemes included in the assessment reflect those listed in **Table 1.1**.

7.3 Policy and Guidance

7.3.1 The appraisal has been undertaken following all relevant current policy, legislation and guidance of relevance to cultural heritage.

7.4 Methodology

Desk Study

7.4.1 The following data sources have informed the assessment:

- West of Scotland Archaeology Service Historic Environment Record (HER): a digital database extract was obtained in March 2024 for an area encompassing the Site and extending to 5km from the Site boundary, in order to inform the assessment;
- The National Record of the Historic Environment (NRHE) database (Canmore) (HES 2024a[57]): checked for any information additional to that contained in the HER;
- Historic Environment Scotland Spatial Data Warehouse (HES 2024b[58]): for up-to-date data on the locations and extents of Scheduled Monuments, Listed Buildings, Conservation Areas, Inventory Gardens and Designed Landscapes, and Inventory Historic Battlefields.
- Map Library of the National Library of Scotland: for Ordnance Survey maps (principally 1st and 2nd edition) and other historic maps;
- Aerial photography and satellite imagery (Google Earth, Bing maps, ESRI World Imagery);
- Historic Land-Use Assessment Data for Scotland (HLAMap) (HES 2024c[59]): for information on the historic land use character of the Inner Study Area; and
- Scottish Remote Sensing Portal (Scottish Government 2022[60]): for 0.5m Digital Terrain Model (DTM) Lidar data covering the Inner Study Area.

Field Survey

7.4.2 Field surveys were carried out covering the Inner Study Area on 21st September 2023 and 2nd February 2024, with the following aims:

- to locate and record the baseline character and condition of heritage assets identified through the desk-based assessment;

[57] HES (2024a) Historic Environment Scotland's National Record of Historic Environment (NRHE) database (Canmore), available at: http://pastmap.org.uk (Accessed March 2024).
[58] HES (2024b) Historic Environment Scotland (HES) GIS downloader, available at http://portal.historicenvironment.scot/spatialdownloads (Accessed January 2024).
[59] HES (2024c) Historic Land-Use Assessment Data for Scotland (HLAmap), available at: http://hlamap.org.uk (Accessed March 2024).
[60] Scottish Government (2022). Scottish Remote Sensing Portal, available at: https://remotesensingdata.gov.scot (Accessed June 2022).

- to identify any further heritage assets not revealed through the desk-based study that could be affected by the Proposed Development;
- to identify any areas of archaeological potential within the Inner Study Area; and
- to assess and record the heritage value of the heritage assets identified through the desk-based assessment and field survey.

7.4.3 No intrusive archaeological investigations have been carried out as part of this appraisal.

7.4.4 The field survey was undertaken by a professional archaeologist who holds current CIfA membership and has sufficient competency in surveying. All data were captured electronically using a Trimble TDC600 Handheld GNSS with sub-metre accuracy. The baseline condition of identified assets was recorded on pro-forma monument recording sheets and by digital photography.

7.4.5 Conditions during the field surveys were overcast with good visibility. The ground cover comprises grass moorland with patches of long rushes, limiting detection of potential low cairns within dense overgrowth but generally adequate for the identification of features when combined with observations on lidar imagery.

7.4.6 The field survey included a site visit to assess the character and sensitivity of the settings of heritage assets in the Outer Study Area. The visit focused on those heritage assets most likely to receive significant effects on their setting (i.e those closest to the Proposed Development and those considered, on preliminary analysis, to potentially be the most sensitive to change within their setting).

Consultation

7.4.7 A Screening Opinion was received from the Energy Consents Unit on 5th June 2024 (Reference: ECU00005071) relating to the Proposed Development and determining that an Environmental Impact Assessment would not be required. In this Screening Opinion, it was noted that the Proposed Development would be of a similar proportion to the existing infrastructure and is considered unlikely to have an adverse impact on any of the designated cultural heritage assets in the surrounding landscape.

7.4.8 The Screening Opinion concluded that the Proposed Development is not anticipated to have any significant effect on cultural heritage. It required that a Written Scheme of Investigation should be provided to mitigate the potential impact to subsurface archaeological remains, to be agreed by the Council.

Assumption and Limitations to the Appraisal

7.4.9 The desk-based assessment draws on the records in the HER, provided in a digital geographic information system (GIS) dataset acquired in March 2024. It is assumed that those records were up to date at the time of acquisition.

7.4.10 Designated heritage assets within the Outer Study Area (**Figure 7.2**) have been identified from the HES database downloaded from the HES website in January 2024. Those data are assumed to have been current and up to date at the time of acquisition.

Appraisal Method

7.4.11 The effects of the Proposed Development on heritage assets have been appraised on the basis of their type (direct effects, indirect impacts, setting impacts, and cumulative impacts) and nature (adverse or beneficial). The appraisal has taken into account the value/sensitivity of the heritage asset, and its setting, and the magnitude of the predicted impact.

- Direct impacts: occur where the physical fabric of the asset is removed or damaged, or where it is preserved or conserved, as a direct result of the proposal. Such impacts are most likely to occur during the construction phase and are most likely to be permanent.
- Indirect impacts: occur where the fabric of an asset, or buried archaeological remains, is removed or damaged, or where it is preserved or conserved, as an indirect result of the proposal even though the asset may lie some distance from the proposal. Such impacts are most likely to occur during the construction phase and are most likely to be permanent.
- Setting impacts: these are generally direct and result from the proposal causing change within the setting of a heritage asset that affects its cultural significance or the way in which it is understood, appreciated, and

experienced. Such impacts are generally, but not exclusively, visual, occurring directly as a result of the appearance of the proposal in the surroundings of the asset. However, they may relate to other senses or factors, such as noise, odour or emissions, or historical relationships that do not relate entirely to intervisibility, such as historic patterns of land-use and related historic features. Such impacts may occur at any stage of a proposal's lifespan and may be permanent, reversible, or temporary.

- Cumulative impacts: can relate to impacts on the physical fabric or on the setting of assets. They may arise as a result of impact interactions, either of different impacts of the proposal itself, or additive impacts resulting from incremental changes caused by the proposal together with other projects already in the planning system or allocated in a Local Development Plan.
- Adverse effects are those that detract from or reduce cultural significance or special interest of heritage assets.
- Beneficial effects are those that preserve, enhance or better reveal the cultural significance or special interest of heritage assets.

Understanding Heritage Assets

7.4.12 Cultural heritage assets are assigned value/importance through the designation process. Designation ensures that sites and places are recognised and protected by law through the planning system and other regulatory processes. The level of protection and how a site or place is managed varies depending on the type of designation and the laws and policies that apply to it (HES 2019[61]). **Table 7.1** summarises the relative sensitivity of key heritage assets (including their settings) relevant to the Proposed Development, based on the guidance set out in the SNH/HES EIA Handbook (version 5; 2018).

Table 7.1 Sensitivity of Heritage Assets

Sensitivity of Asset	Definition/Criteria
High	Assets valued at an international or national level, including: ■ Scheduled Monuments; ■ Category A Listed Buildings; ■ Inventory Gardens and Designed Landscapes; and ■ Non-designated archaeological sites that meet the relevant criteria for designation (including sites recorded in HERs as non-statutory register (NSR) sites of presumed national importance).
Medium	Assets valued at a regional level, including: ■ Archaeological sites and areas that have regional value (contributing to the aims of regional research frameworks); ■ Category B Listed Buildings; and ■ Conservation Areas.
Low	Assets valued at a local level, including: ■ Archaeological sites that have local heritage value; ■ Category C Listed Buildings; and ■ Unlisted historic buildings and townscapes with local (vernacular) characteristics.
Negligible	Assets of little or no intrinsic heritage value, including: ■ Artefact find-spots (where the artefacts are no longer in situ and where their provenance is uncertain); and

[61] HES (2019) 'Designation Policy and Selection Guidance', Edinburgh.

Sensitivity of Asset	Definition/Criteria
	■ Poorly preserved examples of particular types of minor historic landscape features (e.g. quarries and gravel pits, dilapidated sheepfolds, etc).

Magnitude of Change

7.4.13 The magnitude of impact (adverse or beneficial) has been appraised in the categories, high, medium, low and negligible as described in **Table 7.2**.

Table 7.2 Magnitude of Change

Magnitude of Change	Definition/Criteria	
	Adverse	**Beneficial**
High	Changes to the fabric or setting of a heritage asset resulting in the complete or near complete loss of the asset's cultural significance. Changes that substantially detract from how a heritage asset is understood, appreciated, and experienced.	Preservation of a heritage asset in situ where it would otherwise be completely or almost completely lost. Changes that appreciably enhance the cultural significance of a heritage asset and how it is understood, appreciated, and experienced.
Medium	Changes to those elements of the fabric or setting of a heritage asset that contributes to its cultural significance such that this quality is appreciably altered. Changes that appreciably detract from how a heritage asset is understood, appreciated, and experienced.	Changes to important elements of a heritage asset's fabric or setting, resulting in its cultural significance being preserved (where this would otherwise be lost) or restored. Changes that improve the way in which the heritage asset is understood, appreciated, and experienced.
Low	Changes to those elements of the fabric or setting of a heritage asset that contribute to its cultural significance such that this quality is slightly altered. Changes that slightly detract from how a heritage asset is understood, appreciated, and experienced.	Changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed. Changes that result in a slight improvement in the way a heritage asset is understood, appreciated, and experienced.
Negligible	Changes to fabric or setting of a heritage asset that leave its cultural significance unchanged and do not affect how it is understood, appreciated, and experienced.	

Assessing Effects on Setting

7.4.14 The SNH/HES EIA Handbook (2018) Appendix 1, paragraph 42 advises that:

"In the context of cultural heritage impact assessment, the receptors are the heritage assets and impacts will be considered in terms of the change in their cultural significance".

7.4.15 Historic Environment Scotland's guidance document, 'Managing Change in the Historic Environment: Setting' (HES 2016), notes that:

"Setting can be important to the way in which historic structures or places are understood, appreciated and experienced. It can often be integral to a historic asset's cultural significance."

"Setting often extends beyond the property boundary or 'curtilage' of an individual historic asset into a broader landscape context".

7.4.16 The guidance also advises that:

"If proposed development is likely to affect the setting of a key historic asset, an objective written assessment should be prepared by the applicant to inform the decision-making process. The conclusions should take into account the significance of the asset and its setting and attempt to quantify the extent of any impact. The methodology and level of information should be tailored to the circumstances of each case".

7.4.17 The guidance recommends that there are three stages in assessing the impact of a development on the setting of a historic asset or place:

- Stage 1: identify the historic assets that might be affected by the Proposed Development;
- Stage 2: define and analyse the setting by establishing how the surroundings contribute to the ways in which the historic asset or place is understood, appreciated, and experienced; and
- Stage 3: evaluate the potential impact of the proposed changes on the setting, and the extent to which any adverse impacts can be mitigated.

7.4.18 The SNH/HES EIA Handbook (2018) Appendix 1, paragraph 43 advises that:

"When considering setting impacts, visual change should not be equated directly with adverse impact. Rather the impact should be assessed with reference to the degree that the proposal affects those aspects of setting that contribute to the asset's cultural significance".

7.4.19 Following these recommendations, the ZTV has been used to identify those heritage assets from which there would be theoretical visibility of the Proposed Development and to assess the degree of potential visibility. Consideration has also been given to designated heritage assets where there is no predicted visibility of the Proposed Development from the asset but where views of or across the asset are important factors contributing to its cultural significance. In such cases, consideration was given to whether the Proposed Development could appear in the background of those views.

7.4.20 Scheduled Monuments and Non-Statutory Register sites of presumed national importance, where present within the ZTV, are included in the assessment. These assets are included in the tabulated assessments in **Appendix 7.2**, using the parameters set out in **Table 7.2**, and they are shown on **Figure 7.2**.

Cumulative Effects

7.4.21 The appraisal of cumulative effects on heritage assets is based upon consideration of the effects of the Proposed Development on the settings of assets with statutory and non-statutory designations within the Outer Study Area (which includes the Inner Study Area), in addition to the likely effects of cumulative developments. **Figure 1.4: Cumulative Developments** shows the Proposed Development along with other cumulative developments identified in **Table 1.1**. For assessment of the potential cumulative effects on heritage assets, cumulative developments with footprints situated within the 5km Outer Study Area of the Proposed Development are considered. No designated heritage assets within the Outer Study Area have been identified as having settings sensitive to adverse effects from the Proposed Development, in combination with any cumulative developments more than 5km from the Site.

7.4.22 The cultural heritage appraisal considers the potential effects resulting from the introduction of the Proposed Development to the following:

- Current baseline conditions which include infrastructure projects (within 5km of the Proposed Development) which are operational and under construction (as shown on **Figure 7.2**);
- Future baseline scenario 1: in which Redshaw substation is consented and constructed (cumulative assessment scenario) (as shown on **Figure 7.2**); and
- Future baseline scenario 2: which includes all other proposed and consented developments within 5km of the Proposed Development listed in **Table 1.1**: Other Developments considered in Cumulative Appraisal in **Chapter 1** of this EAR (cumulative assessment scenario) (as shown on **Figure 7.2**).

7.4.23 The appraisal takes into account the nature and relative scales of the various developments, their distance from the affected assets, and the potential degree of visibility from the assets of the various developments.

7.4.24 The cumulative schemes identified as requiring consideration for the cultural heritage appraisal, and shown on **Figure 7.2** are:

- Middle Muir Wind Farm: Operational (part of the current baseline);
- Andershaw Wind Farm: Operational (part of the current baseline);
- MET Mast Centre: Consented (part of the future baseline, Scenario 2);
- Bodinglee Wind Farm: In Planning (Application Stage) (part of the future baseline, Scenario 2);
- Little Gala Wind Farm: In Planning (Application Stage) (part of the future baseline, Scenario 2);
- West Andershaw Wind Farm: In Scoping (Pre-application Stage) (part of the future baseline, Scenario 2);
- M74 Renewable Energy Park Wind Farm: In Scoping (Pre-Application Stage) (part of the future baseline, Scenario 2); and
- Redshaw 400kV Substation: Scoping/Pending submission (Pre-Application Stage) (part of the future baseline, Scenario 1).

7.5 Baseline

Heritage Assets within the Inner Study Area (Figure 7.1; Appendix 7.1)

7.5.1 Numbers in brackets in the following text refer to heritage asset numbers as shown on **Figure 7.1** and listed in **Appendix 7.1**.

7.5.2 There are no Scheduled Monuments and no Listed Buildings within the Inner Study Area, and no part of the Proposed Development lies within a Conservation Area, Inventory Garden and Designed Landscape or Historic Battlefield.

7.5.3 There is one non-designated heritage asset (**12658**) recorded in the HER within the Inner Study Area, comprising a random scatter of 13 small cairns across the south-west slope of an unnamed hill south of Wildshaw Hill. Field survey identified ten of the cairns (**12658a-j**) within the Inner Study Area, to the north and north-east of a small woodland plantation, overgrown and in poor to very poor condition with little stone evident. They measure between 1m and 3m in diameter and up to 0.6m in height. A further six possible cairns (**HA202-HA207**) were recorded during field survey within the vicinity of the existing Tower ZV108. As a grouping of a relatively common type of feature, likely related to ground clearance, of uncertain but possibly prehistoric date, they are considered to have heritage value at the local level and to be of low sensitivity.

7.5.4 Field survey recorded a quarry scoop (**HA201**) adjacent to an existing trackway along the southern flank of Wildshaw Hill, measuring 7m in diameter and 2m deep. A probable enclosure (**HA208**) or shieling structure was recorded during field survey to the southeast of the quarry scoop, measuring 8m north-east to south-west by 8m, and comprising turf footings 1m wide and 0.4m high. As surviving elements of the post-medieval farming landscape, they are considered to be of heritage value at the local level and to be of low sensitivity.

7.5.5 A number of possible old tracks (**HA02a-m**) are detectable in lidar imagery crossing the Proposed Development Site, on east to west and south-west to north-east alignments. Field survey recorded the majority (**HA02b-m**) of these as vestigial sheep tracks or ruts, generally not evident to any consistency on the ground. A narrow linear track (**HA02a**) orientated north-east to south-west was recorded as an overgrown hollow-way in poor condition. It measures 3m wide and no more than 0.3m deep, running for 600m, and is truncated to the south-west by the public road. Beyond the Inner Study Area, the track continues to the east towards an area of probable quarry scoops detectable in lidar imagery by the Wildshaw Burn.

7.5.6 As a relict feature associated with historic land use, the track (**HA02a**) is appraised as having heritage value at the local level and to be of low sensitivity. The remaining linear features (**HA02b-m**) have no heritage value.

Heritage Assets within the Outer Study Area (Figure 7.2; Appendix 7.2)

7.5.7 There are nine Scheduled Monuments, of high sensitivity, within 5km of the Proposed Development Site boundary. Four of these (**SM 4234**; **SM 4485**; **SM 4513**; and **SM 5094**) have at least some degree of predicted theoretical visibility of the Proposed Development, based on the ZTV. In addition, there are 11 NSR sites (**10054**; **10454**; **10535**;

and **13295**), of high sensitivity, within 5km of the Proposed Development Site, seven of which have predicted theoretical visibility of the Proposed Development.

7.5.8 The Scheduled Monuments and NSR sites include prehistoric ritual monuments, such as cairns at Auchensaugh Hill (**SM 4234**), Wildshaw Hill (**SM 4511**), Black Hill (**SM 4513**; **10535**) and Knock Leaven (**10454**), which occupy the summits of hills and have wide ranging views and may have been intended to be seen as prominent features in the landscape. The prominence of Auchensaugh Hill is evident from the low-lying stone circle (**SM 5094**) at Thirstone, which has open views across the broad valley of the Black Burn. Later prehistoric funerary monuments (**SM 4517**) on the south-east saddle of Black Hill are situated on the periphery of a platform settlement (**SM 4485**) to the west and a fort (**SM 2606**), which occupies the south-east spur overlooking the Clyde Valley to the east.

7.5.9 There are 25 Listed Buildings within 5km of the Proposed Development Site. Two are of Category A, nine are of Category B and 14 are of Category C. None of the Listed Buildings have any predicted visibility of the Proposed Development. Twenty-three of the Listed Buildings are situated within the town of Douglas and have settings that are localised within the immediate built environment.

7.5.10 There is one Conservation Area, of medium sensitivity, within 5km of the Proposed Development Site. It encompasses the historic core of the medieval burgh of Douglas and has a setting characterised by the localised built environment, adjacent to the Douglas Water. There is no predicted visibility of the Proposed Development from any part of the Douglas Conservation Area or its vicinity.

Historic Landscape Character

7.5.11 The Proposed Development crosses an area of gently sloping, unimproved moorland and rough pasture grazing, situated on the north-east side of the B7078 public road. It runs south-east from the south-west shoulder of Wildshaw Hill, passing to the north-east of a small woodland plantation and terminating to the east of an unnamed burn at the existing Tower 111. The rising topography of an unnamed hill borders the Site to the north. The Site has a south-facing aspect with open views in an arc from east to west, overlooking the valley of the Black Burn.

7.5.12 Roy's 'A Military Survey of Scotland' map (1747-55) depicts the Proposed Development Site as uncultivated land to the south-east of Redshaw. Cultivated fields depicted in the 18th century are confined to the west of the road at Redshaw, surrounding two established farmsteads by that time. The 1st edition Ordnance Survey map (1863) depicts the Site as rough grassland to the east of an enclosed woodland plantation, north-east of the road from Abington to Glasgow (the later A74). By the time of the 2nd edition Ordnance Survey map (1898), the Proposed Development Site remains unaltered and is also shown as such on the 1959 Ordnance Survey map, with the exception of a pipeline depicted adjacent to and parallel with the B7078 to the south-west. Modern aerial photography indicates that the modern B7078 has since been constructed over the line of the earlier A74 where it passes the Site.

7.5.13 HLAMap describes the current land use as rough grazing, consistent with the historic land use across most of the Proposed Development Site and as indicated on historic maps. The Site encroaches on an early prehistoric ritual and funerary site, encompassing the south-west slope of the unnamed hill and corresponding to the scattered cairns recorded in the HER (**12658**).

Archaeological Potential Summary

7.5.14 Within the Outer Study Area, the archaeological record pertaining to the prehistoric period is limited to relatively isolated monuments, such as Thirstone stone circle (**SM 5094**), 0.7km to the east of the Proposed Development Site, and cairns atop Auchensaugh Hill (**SM 4234**) and Knock Leaven (**10454**). This contrasts with the wider district of Upper Clydesdale, which demonstrates widespread evidence of sustained settlement and funerary practices from a range of prehistoric dates.

7.5.15 Lithic artefacts and chert scatters provide the earliest evidence of Mesolithic sites along the Clyde river valley. With the onset of sedentism, the intensity of prehistoric activity within the local landscape becomes more pronounced in the archaeological record. This is evinced in the south-east of the Outer Study Area by a late prehistoric platform settlement, two cairns and a fort on the shoulder of Black Hill, that overlook the Duneaton Water. The distribution of similar platform settlements, cairnfields and forts is seen to extend along the tributaries to the Clyde in an established pattern of land use in the Neolithic to the Bronze Age.

7.5.16 Ward (2012[62]) suggests that the relative scarcity of archaeological evidence for prehistoric settlement in the vicinity of the Proposed Development Site may result from the expanse of peat present across the broad valley of the Black Burn at Red Moss. Several of the stones at Thirstone stone circle (**SM 5094**) were buried beneath 0.3m of peat, demonstrating the potential for significant archaeological remains to survive below ground with little surface traces. Conversely, the baseline of known assets may suggest that the local landscape was comparatively unsuitable for settlement during the prehistoric period. It may instead have been characterised principally as a ritual and funerary landscape, ancillary to the major routeway to the east and north-east, as evinced by a possible sepulchral monument (**10054**) and a ditched mound (**13295**) on the slopes of Auchensaugh Hill. This is later indicated by the route of the Wiston-Patna Roman road to the north at Birkshaw Rig, bypassing the valley of the Black Burn.

7.5.17 By the medieval and post-medieval period, settlement and activity within the Outer Study Area are centred on established farmsteads, such as at Redshaw and the 16th century Thorill Castle (**SM 5425**). The local landscape remains isolated from expanding settlement surrounding the medieval burgh at Douglas to the north-west. As an upland pasture near to medieval farms, the land use would have consisted primarily of grazing during this period. Historic maps demonstrate that the Proposed Development Site has remained undeveloped to the present day, with the exception of the construction of the existing 400kV overhead line.

7.5.18 The Proposed Development Site lies within a local landscape marked by several prominent prehistoric monuments, situated within a rich wider district of prehistoric activity from the Neolithic to the Iron Age. Taking account of the undisturbed nature of the Site and the presence of a cairn scatter of possible prehistoric date, there is considered to be a moderate potential for archaeological features or deposits to survive beneath the ground surface.

7.6 Good Practice Measures/Embedded Mitigation

7.6.1 The results of the desk-based study and previous field surveys were digitised as GIS data showing the locations (and, where relevant, the extents) of identified heritage assets. The layout of the Proposed Development, including associated access routes, was subsequently designed to avoid or minimise direct effects and minimise the effects on setting on cultural heritage assets as far as possible. The layout shown on **Figure 7.1** therefore embeds design-based mitigation into the siting of the Proposed Development.

7.7 Appraisal of Effects

7.7.1 The appraisal of effects identified above is based on the project description as outlined in **Chapter 3: Development Description**. Unless otherwise stated, potential effects identified are considered to be negative.

Construction Effects

7.7.2 An old track (**HA02a**), of low sensitivity, is crossed by the proposed access track and would receive a direct impact from construction of the Proposed Development. Construction of the access track would disturb a small section of the track. It is assessed that, without mitigation, the predicted impact, on an asset of low sensitivity, would be of low magnitude. Mitigation measures to offset the predicted effect are set out below.

7.7.3 The remainder of assets identified by the baseline assessment within the Inner Study Area are sufficiently distanced from the Site (**12658a-j** and **HA201-HA208**) and would not be affected by construction works, or are of no cultural significance (**HA02b-m**).

7.7.4 As outlined above there is a moderate potential for the discovery of unrecorded archaeological remains within the Site, which mainly consists of undeveloped rough grazing where buried archaeological remains are unlikely to have been disturbed. Any ground-breaking activities associated with the construction of the Proposed Development (such as for working areas around towers, access tracks, pull-through positions, laydown areas, etc.) have the potential to disturb or destroy unrecorded features of cultural heritage interest. Other construction activities, such as vehicle movements, materials storage, soil and overburden storage and landscaping also have the potential to cause permanent and irreversible effects on the cultural heritage. Without additional mitigation, the predicted direct impact on assets potentially of medium sensitivity, could be of high magnitude.

[62] Ward, T. (2012) The Wildshaw Burn Stone Circle. Available online at: https://biggararchaeology.org.uk/wp-content/uploads/2017/09/WILDSHAW_BURN.pdf [Accessed March 2024].

Operational Effects

7.7.5 **Appendix 7.2** contains tabulated appraisal of the predicted effects on the settings of designated heritage assets from which there is some degree of predicted theoretical visibility of the Proposed Development based on analysis of the ZTV (**Figure 7.2**).

7.7.6 There are no heritage assets beyond 5km from the Proposed Development that have been identified through appraisal of the wider ZTV or notified through consultation with HES and WoSAS that require consideration of potential impacts on their settings.

7.7.7 The appraisal of operational effects on the settings of heritage assets has been carried out with reference to the layout of the Proposed Development and the locations of the cultural heritage assets shown on **Figure 7.2**. For the methodology used for assessment of potential effect magnitude refer to **Section 7.4.11**.

7.7.8 Effects from the Proposed Development on the settings of three scheduled monuments (Auchensaugh Hill, cairn; Thirstone, stone circle; and Netherton, cairn) consistent with those agreed with SLC as requiring detailed appraisal for the proposed Redshaw substation, and two NSR sites (Auchensaugh Hill enclosure and Knock Leaven cairn), are discussed below.

Thirstone stone circle (SM 5094) (Figure 7.3)

7.7.9 The monument comprises the remains of an oval stone circle, situated on a low-lying terrace to the east of the Wildshaw Burn and consisting of 23 stones, ten of which lie beneath the ground surface due to peat accumulation. The site has a gently sloping south-west facing aspect, with far-reaching views extending to the surrounding hills in an arc from south-east to west. The existing 400kV OHL lies in the foreground of these views, passing within 300m to the south-west beyond which lies the operational Middle Muir and Andershaw Wind Farms.

7.7.10 Views from the stone circle afford intervisibility with prehistoric cairns at Netherton (**SM 4513**) to the south-east, and atop Auchensaugh Hill (**SM 4234**) to the west, while similar cairns at Cairn Table form part of the distant skyline to the west. The prominence of these landmarks forms a key component of the setting for the stone circle and may correspond to potential solar alignments, intrinsic to the monument (Ward 2012[13]). Rising topography limits views in other directions, precluding intervisibility with Knock Leaven cairn (**10454**) and Wildshaw Hill cairn (**SM 4511**). Thirstone stone circle is a Scheduled Monument of value at the national level and of high sensitivity.

7.7.11 The Bare-Earth ZTV (**Figure 7.2**) demonstrates that Proposed Development would be visible to the west, at a distance of 0.7km from the stone circle. **Figure 7.3** (CH VP1) shows that, from the monument, the Proposed Development would add one tower to the view to the west north-west, visible in context with the existing towers that would be retained in the foreground. It would not obstruct intervisibility between the monument and Auchensaugh Hill cairn (**SM 4234**) and would not alter the prominence of Auchensaugh Hill in views of the surrounding landscape. In views towards the stone circle, such as those attainable from Netherton cairn (**SM 4513**) (**Figure 7.6d**) to the south-east, the Proposed Development would be seen beyond and offset from the monument, in context with existing infrastructure and partially backdropped by moorland.

7.7.12 The Proposed Development would constitute a minor addition to infrastructure in the immediate surroundings of the stone circle. However, it would be visible only in views to the west north-west from the monument and would not affect views in other directions. Furthermore, the Proposed Development would not obstruct or appear dominant in key views of and between other prehistoric monuments in the wider landscape. It would remain possible for any visitor to understand and appreciate both the asset itself and the setting, including the visual links to landmarks in the surrounding skyline.

7.7.13 Overall, it is appraised that the Proposed Development would have a negligible magnitude impact on the setting of Thirstone stone circle.

Auchensaugh Hill, cairn (SM 4324) (Figure 3.5)

7.7.14 The damaged remains of a prehistoric burial cairn stand on the summit of Auchensaugh Hill in an area of open moorland. There are distant panoramic views in all directions from the cairn, taking in the surrounding hills, the M74 motorway in views to the south-east, and the Glentaggart Surface Mine to the west. The operational Middle Muir and Andershaw Wind Farms lie in the foreground view to the south-west from the cairn. Views from the cairn to the east-south-east afford intervisibility with similar cairns within the Black Burn valley, at Knock Leaven (**10454**) and Netherton (**SM 4513**), forming a key aspect of its setting. Far-reaching views are attained beyond the immediate

valley where hilltop cairns at Tinto Hill and Cairn Kinney form part of the skyline, to the north-east and south-west respectively.

7.7.15 The Bare-Earth ZTV (**Figure 7.2**) demonstrates that the Proposed Development would be visible to the east at a distance of 1.6km from the cairn. **Figure 3.5a** (CH VP 2) shows how the existing 400kV OHL is present in views arcing from the north to the south-east. The Proposed Development would add one tower to the view to the east, partially screened by intervening woodland and backdropped by moorland (**Figure 3.5d**). It would be offset from the line of sight towards Thirstone stone circle (**SM 5094**) to the east, and towards Knock Leaven cairn (**10454**) to the east-south-east. The Proposed Development would not directly obstruct intervisibility between the cairn and the two monuments, and would not alter views in other directions.

7.7.16 Auchensaugh Hill cairn is a Scheduled Monument of value at the national level and of high sensitivity. The cairn's location, in a prominent topographical location with visual relationships with potential contemporary monuments in the surrounding rural landscape, is an important aspect of its setting.

7.7.17 The Proposed Development would be a marginal alteration to the existing infrastructure in the surrounding landscape of the cairn, visible below the skyline and partially screened by a woodland plantation. It would be visible solely in views to the east from the monument and would not affect views in other directions. Furthermore, it would not directly affect intervisibility between other similar monuments in the wider landscape. The cairn would also remain the most prominent feature in its immediate surroundings. The Proposed Development would not be dominant in relation to the scale of the monument in views towards the cairn from Thirstone stone circle (**SM 5094**). It would remain possible for any visitor to understand and appreciate both the asset itself and the setting, including the widely appreciated all-round visibility of the surrounding landscape achievable from the monument.

7.7.18 Overall, the Proposed Development would have an effect on the setting of Auchensaugh Hill, cairn appraised as being of negligible magnitude.

Auchensaugh Hill, enclosure (10054) (Figure 7.4)

7.7.19 The remains of a circular turf enclosure, comprising two concentric annular banks, are situated on the east-facing flank of Auchensaugh Hill. Distant views of the surrounding hills are attainable from the monument, in an arc from north to south-east. Auchensaugh Hill cairn (**SM 4234**) is visible atop the slope to the south, beyond which lies the operational Middle Muir Wind Farm, largely screened by the topography of Auchensaugh Hill. Intervisibility with Thirstone stone circle (**SM 5094**) in the view to the east (**Figure 7.4a**) from the enclosure, is interrupted by an intervening woodland plantation and Tower ZV111 of the existing 400kV OHL. The monument is recorded in the HER as a possible ritual or sepulchral monument, of presumed national importance and of high sensitivity.

7.7.20 The Bare-Earth ZTV (**Figure 7.2**) demonstrates that the Proposed Development would be visible to the east at a distance of 1.7 km from the monument. **Figure 7.4a** (CH VP 3) shows how the existing 400kV OHL is present in views arcing from the north to the south-east. The Proposed Development would add one tower to the view to the east (**Figure 7.4b-d**), visible in context with the existing infrastructure and backclothed by the terrain. Views of the surrounding landscape, including visibility of and between prehistoric cairns to the south-east, such as Knock Leaven cairn (**10454**) and Netherton cairn (**SM 4513**) would not be obstructed.

7.7.21 The Proposed Development would constitute a marginal alteration to the view to the east from the monument. Where visible, the proposed towers would be seen in context with existing infrastructure. Furthermore, the Proposed Development would not directly affect views of the wider landscape, such as are attainable to the north-east and south-east, nor would it appear dominant in views towards the monument from the surroundings. It would remain possible for any visitor to understand and appreciate both the asset itself and the setting, including the visibility of the surrounding landscape achievable from the monument. The integrity of the open setting and the extent to which it contributes to the significance of the enclosure would be unchanged.

7.7.22 Overall, it is appraised that the Proposed Development would have a negligible magnitude impact on the setting of Auchensaugh Hill, enclosure.

Knock Leaven cairn (10454) (Figure 7.5)

7.7.23 The remains of a cairn stand near the summit of Knock Leaven, a low rise above open moorland. The elevated position affords distant panoramic views of the surrounding hills and overlooks the M74 to the north and north-west. The operational Middle Muir and Andershaw Wind Farms are visible above and below the skyline to the west, while numerous turbines of operational developments to the north-west of Douglas are visible along the skyline from the

west to north-west. Reciprocal views are attainable with similar cairns atop Auchensaugh Hill (**SM 4234**) to the west-north-west, at Netherton (**SM 4513**) to the south, and at Wildshaw Hill (**SM 4511**) to the north-west. Far-reaching views beyond the immediate valley include visibility of prehistoric cairns atop Tinto Hill and Cairn Table. While Knock Leaven does not form part of the skyline in views from the surrounding hills, it is visible as a prominent rise from the lowland to the south-west. The cairn is a Scheduled Monument of value at the national level and of high sensitivity.

7.7.24 The Bare-Earth ZTV (**Figure 7.2**) demonstrates that the Proposed Development would be visible to the north-west at a distance of 3.8km from the monument. **Figure 7.5a** (CH VP 4) shows how the existing 400kV OHL is present in views arcing from south-west to north-west from the monument, visible below the skyline. The Proposed Development would add one tower to the distant view to the north-west (**Figure 7.5b**), in line with the existing towers to the retained and backclothed by the topography. Intervisibility between the monument and Auchensaugh Hill cairn (**SM 4234**) would not be obstructed and they would each remain prominent in such reciprocal views. The Proposed Development would not alter views in other directions to or from Knock Leaven cairn.

7.7.25 The Proposed Development would constitute a barely noticeable alteration to the view to the north-west from the monument. It would not directly affect views of the wider landscape nor would it interrupt views towards the monument from the surroundings. It would remain possible for any visitor to understand and appreciate both the asset itself and the setting, including the visibility of the surrounding landscape achievable from the monument. The integrity of the open setting and the extent to which it contributes to the significance of the cairn would be unchanged.

7.7.26 Overall, it is appraised that the Proposed Development would have a negligible magnitude impact on the setting of Knock Leaven cairn.

Netherton, cairn (SM 4513) (Figure 7.6)

7.7.27 The remains of a prehistoric cairn stand on the north-west shoulder of Black Hill in an area of open moorland overlooking the Black Burn. There are distant views in nearly all directions from the cairn, taking in the surrounding hills, the M74 motorway in views to the north, and the operational Middle Muir and Andershaw Wind Farms to the west. The summit of Black Hill obstructs views to the south-east. Distant visibility of prehistoric cairns atop Cairn Table to the west from the monument is interrupted by the intervening wind turbines. Views from the cairn to the north and north-west afford intervisibility with similar cairns within the Black Burn valley, at Knock Leaven (**10454**), Wildshaw Hill (**SM 4511**), and Auchensaugh Hill (**SM 4234**), forming a key aspect of its setting. Far-reaching views are attained beyond the immediate valley where the prehistoric cairn atop Tinto Hill forms part of the skyline to the north.

7.7.28 The Bare-Earth ZTV (**Figure 7.2**) demonstrates that the Proposed Development would be visible to the north-west at a distance of 3.8km from the cairn, backclothed by moorland and a woodland plantation. **Figure 7.6a** (CH VP 5) shows how the existing 400kV OHL is present in the view to the north-west from the cairn. The Proposed Development would add one tower to this view (**Figure 7.6b-d**), visible above the skyline but in context with the existing towers to be retained. The proposed OHL diversion would be offset from the line of sight to Auchensaugh Hill cairn (**SM 4234**) and Thirstone stone circle (**SM 5094**) and would not directly obstruct intervisibility between the cairn and the two monuments. The Proposed Development would not affect views in other directions.

7.7.29 Netherton cairn is a Scheduled Monument of value at the national level and of high sensitivity. The cairn's location, in a prominent topographical location with visual relationships with potential contemporary monuments in the surrounding rural landscape, is an important aspect of its setting.

7.7.30 The Proposed Development would be visible as a distant, marginal alteration to existing infrastructure within the valley overlooked by the cairn. It would be solely visible in views to the north-east from the monument and would not affect views in other directions. Furthermore, it would not directly affect intervisibility between other similar monuments in the wider landscape. The Proposed Development would not detract from the long-distance reciprocal views afforded between the prehistoric monuments across the landscape. It would remain possible for any visitor to understand and appreciate both the asset itself and its open setting.

7.7.31 Overall, it is appraised that the Proposed Development would have a negligible magnitude impact on the setting of Netherton, cairn.

Cumulative Effects

Cumulative Construction Effects

7.7.32 Cumulative construction effects arise from the Proposed Development in combination with developments that have the potential to impact the same heritage assets.

7.7.33 The footprint of the proposed Redshaw substation lies within the Proposed Development Site and would have a direct impact on two small cairns (**12658e-f**) and an additional section of a relict track (**HA02a**), as a result of landscaping and construction works for the substation.

7.7.34 The combined effects of the Proposed Development with the proposed Redshaw Substation would comprise an impact of high magnitude on the cairns (**12658e-f**), as a result of the removal of two cairns, and an impact of low magnitude on the old track (**HA02a**). In both instances, the cumulative impact would result entirely from the proposed Redshaw substation alone.

7.7.35 No other cumulative construction effects from the Proposed Development in combination with other developments are predicted.

Cumulative Operational Effects

7.7.36 **Figure 7.2** shows the Proposed Development, along with the locations of other operational/under construction wind farms and those that are consented or at the application (in planning) and pre-application (in scoping) stage, together with those cultural heritage assets that are within the Outer Study Area.

7.7.37 Developments that are operational or under construction are considered to form part of the baseline setting and are considered in the context of the assessment above.

7.7.38 Where visible from the designated heritage assets described in the main appraisal above, the cumulative developments are shown on the wirelines provided to support the assessment (**Figures 3.5 and 7.3-7.6**). Those further afield, but which would have little or no adverse effect on the settings of cultural heritage assets affected by the Proposed Development, are also shown on the wirelines for context.

Future Baseline Scenario 1

Thirstone stone circle (SM 5094) (Figure 7.3)

7.7.39 **Figure 7.3a** shows that from Thirstone stone circle, the Proposed Development would be seen together with the proposed Redshaw substation in the view to the west. The proposed Redshaw substation would be low-lying, seen in context with the Proposed Development and largely screened by topography, backdropped by moorland and a woodland plantation. The prominence of Auchensaugh Hill cairn (**SM 4234**) would be retained in the view to the west from the monument and the character of views to and from the wider landscape, taking in other prehistoric monuments, would not be noticeably altered.

7.7.40 The combined effect of the Proposed Development with the Redshaw substation would be no greater than that appraised for the Proposed Development alone, as a result of topographical screening. Overall, the cultural significance of the stone circle and its relationship within the immediate landscape would not be substantially diminished. The cumulative impact on the setting of Thirstone stone circle from adding the Proposed Development to a baseline including the proposed Redshaw substation is appraised as being of negligible magnitude.

Auchensaugh Hill, cairn (SM 4324) (Figure 3.5)

7.7.41 **Figure 3.5a** shows that from Auchensaugh Hill cairn, the Proposed Development would be seen together with the proposed Redshaw substation in the view to the east. The proposed Redshaw substation would be seen in context with the Proposed Development, backdropped by moorland and screened by a woodland plantation. Reciprocal views towards Thirstone stone circle (**SM 5094**) to the east would not be appreciably altered, while intervisibility between Auchensaugh Hill cairn and other prehistoric monuments in the surrounding landscape and on the skyline, including at Knock Leaven and Tinto Hill, would be retained. The combined effect of the Proposed Development with the Redshaw substation would be only marginally greater than that appraised for the Proposed Development alone, as a result of topographical screening and the low-lying nature of the substation.

7.7.42 Overall, the cultural significance of the cairn and its relationship within the immediate landscape would not be appreciably diminished. The cumulative impact on the setting of Auchensaugh Hill cairn from adding the Proposed Development to a baseline including the proposed Redshaw substation is appraised as being of low magnitude.

Auchensaugh Hill, enclosure (10054) (Figure 7.4)

7.7.43 **Figure 7.4a** shows that from Auchensaugh Hill enclosure, the Proposed Development would be seen together with the proposed Redshaw Substation in the view to the east. The proposed Redshaw substation would be placed in context with the Proposed Development, backdropped by moorland and entirely screened by a woodland plantation (**Figure 7.4e**). The introduction of additional infrastructure would not detract from intervisibility between Auchensaugh Hill enclosure and other prehistoric monuments in the surrounding landscape, including Knock Leaven cairn (**10454**) and Netherton cairn (**SM 4513**). Reciprocal views towards Thirstone stone circle (**SM 5094**) to the east would not be appreciably altered. The combined effect of the Proposed Development with the Redshaw substation would be no greater than that appraised for the Proposed Development alone, as a result of topographical screening.

7.7.44 Overall, the cultural significance of the enclosure and its relationship within the immediate landscape would not be noticeably diminished. It would remain possible to understand the positioning of the monument overlooking the wider landscape. The cumulative impact on the setting of Auchensaugh Hill enclosure from adding the Proposed Development to a baseline including the proposed Redshaw substation is appraised as being of negligible magnitude.

Knock Leaven cairn (10454) (Figure 7.5)

7.7.45 **Figure 7.5a** shows that from Knock Leaven cairn, the Proposed Development would be seen together with the proposed Redshaw Substation to the north-west. The proposed Redshaw substation would be low-lying, backdropped by moorland and a woodland plantation. The introduction of distant additional infrastructure would not detract from intervisibility between Knock Leaven cairn and other prehistoric monuments in the surrounding landscape and on the skyline, including at Auchensaugh Hill and Cairn Table to the west. Reciprocal views towards Wildshaw Hill cairn (**SM 4511**) to the north-north-west would also be obstructed. The combined effect of the Proposed Development with the Redshaw substation would be no greater than that appraised for the Proposed Development alone, as a result of topographical screening and the low-lying nature of the substation.

7.7.46 Overall, the cultural significance of the cairn and its relationship within the immediate landscape would not be noticeably diminished. The cumulative impact on the setting of Knock Leaven cairn from adding the Proposed Development to a baseline including the proposed Redshaw Substation is appraised as being of negligible magnitude.

Netherton, cairn (SM 4513) (Figure 7.6)

7.7.47 **Figure 7.6a** shows that from Netherton cairn, the Proposed Development would be seen together with the proposed Redshaw substation to the north-west. The proposed Redshaw substation would be low-lying, backdropped by moorland and seen in context with existing infrastructure. An increase in the visible infrastructure, in views to and from the monument, would not detract from intervisibility between Netherton cairn and other prehistoric monuments in the surrounding landscape and on the skyline, at Auchensaugh Hill and Wildshaw Hill. The combined effect of the Proposed Development with the Redshaw Substation would be only slightly greater than that appraised for the Proposed Development alone, as a result of a marginal increase in the amount of infrastructure visible from the monument.

7.7.48 Overall, the cultural significance of the cairn and its relationship within the immediate landscape would not be appreciably diminished. The cumulative impact on the setting of Knock Leaven cairn from adding the Proposed Development to a baseline including the proposed Redshaw Substation is appraised as being of low magnitude.

Future Baseline Scenario 2

Thirstone stone circle (SM 5094) (Figure 7.3)

7.7.49 **Figure 7.3a** shows that from Thirstone stone circle, the Proposed Development would be seen together with the in-scoping M74 Project and the proposed Bodinglee Wind Farm in the view to the west. The proposed Redshaw Substation would be low-lying, seen in context with the Proposed Development and largely screened by topography,

backdropped by moorland and a woodland plantation. Turbines of the in-scoping M74 Project would occupy the foreground of views from the monument, at close proximity to the north-west, east and south-west, surrounding the MET Mast Centre which would be partially screened by topography to the east. The proposed Bodinglee Wind Farm would add to the number of turbines visible to the west, seen above the skyline beyond Auchensaugh Hill, and to the north. Distant visibility of the proposed Little Gala Wind Farm to the north and the in-scoping West Andershaw Wind Farm to the south-west would be largely screened by topography and seen in context with operational developments.

7.7.50 Although an increased number of turbines would be visible in the surroundings of the monument (**Figure 7.3a**), they would not obstruct direct intervisibility between Thirstone stone circle and other prehistoric monuments in the surrounding landscape. The prominence of Auchensaugh Hill cairn (**SM 4234**) would be largely retained in the view to the west from the monument. The proposed Bodinglee Wind Farm and in-scoping M74 Project would contribute more to the cumulative impact than the other cumulative developments, by interrupting the skyline in views towards Auchensaugh Hill and obstructing open views of the surrounding hills.

7.7.51 Overall, the cultural significance of the stone circle and its relationship within the immediate landscape would not be substantially diminished. The cumulative impact on the setting of Thirstone stone circle from adding the Proposed Development to a baseline in combination with the consented MET Mast Centre, the in-scoping M74 Project and West Andershaw Wind Farm and the proposed Bodinglee and Little Gala Wind Farms is appraised as being of medium magnitude. The close proximity of the in-scoping M74 Project would exercise the greater part of the cumulative impact, in contrast to the marginal contribution of the Proposed Development to the combined effect with any other cumulative developments.

Auchensaugh Hill, cairn (SM 4324) (Figure 3.5)

7.7.52 **Figure 3.5a** shows that from Auchensaugh Hill cairn, the Proposed Development would be seen together with the consented MET Mast Centre, the in-scoping M74 Project and the proposed Bodinglee and Little Gala Wind Farms in the view to the east. The proposed Bodinglee Wind Farm would also be dominant in the view to the west. Turbines for the in-scoping M74 Project would occupy the lowland to the east, interrupting views of the hills beyond. The in-scoping West Andershaw Wind Farm would add to the number of turbines visible to the south-west.

7.7.53 An increase in the number and scale of turbines visible in the surroundings of the monument, resulting from operation of the proposed Bodinglee Wind Farm and the in-scoping M74 Project, would detract from intervisibility between Auchensaugh Hill cairn and other prehistoric monuments in the surrounding landscape and on the skyline, including at Knock Leaven and Tinto Hill. Reciprocal views towards Thirstone stone circle (**SM 5094**) to the east would not be appreciably altered. The proposed Bodinglee Wind Farm and in-scoping M74 Project would contribute more to the cumulative impact than the other cumulative developments, while the proposed Little Gala Wind Farm and the in-scoping West Andershaw Wind Farm would constitute marginal alterations to the existing baseline of wind developments in distant views to the north-east and south-west from the monument. The consented MET Mast Centre would introduce a marginally noticeable element in the view to the east, visible below the skyline and beyond the M74 Project turbines.

7.7.54 Overall, the cultural significance of the cairn and its relationship within the immediate landscape would not be substantially diminished. The cumulative impact on the setting of Auchensaugh Hill cairn from adding the Proposed Development to a baseline in combination with the consented MET Mast Centre, the in-scoping M74 Project and West Andershaw Wind Farm and the proposed Bodinglee and Little Gala Wind Farms is appraised as being of medium magnitude. The visual dominance of the in-scoping M74 Project and the proposed Bodinglee Wind Farm would exercise the greater part of the cumulative impact, in contrast to the marginal contribution of the Proposed Development to the combined effect with any other cumulative developments.

Auchensaugh Hill, enclosure (10054) (Figure 7.4)

7.7.55 **Figure 7.4a** shows that from Auchensaugh Hill enclosure, the Proposed Development would be seen together with the consented MET Mast Centre, the in-scoping M74 Project and the proposed Bodinglee and Little Gala Wind Farms in the view to the east. The proposed Bodinglee Wind Farm would also be seen in the view to the west. Turbines for the in-scoping M74 Project would occupy the lowland to the east, interrupting views of the hills beyond. The in-scoping West Andershaw Wind Farm would add to the number of turbines visible to the south-west.

7.7.56 An increase in the number and scale of turbines visible in the surroundings of the monument, resulting from operation of the proposed Bodinglee Wind Farm and the in-scoping M74 Project, would slightly detract from

appreciation of the open views to the east and south-east, and would interrupt intervisibility between Auchensaugh Hill enclosure and other prehistoric monuments in the surrounding landscape, including Knock Leaven cairn (**10454**) and Netherton cairn (**SM 4513**). Reciprocal views towards Thirstone stone circle (**SM 5094**) to the east would not be appreciably altered. The proposed Bodinglee Wind Farm and in-scoping M74 Project would contribute more to the cumulative impact than the other cumulative developments, while the proposed Little Gala Wind Farm and the in-scoping West Andershaw Wind Farm would constitute marginal alterations to the existing baseline of wind developments in distant views to the north-east and south-west from the monument. The consented MET Mast Centre would introduce a marginally noticeable element in the view to the east, visible below the skyline and beyond the M74 Project turbines.

7.7.57 Overall, the cultural significance of the enclosure and its relationship within the immediate landscape would not be appreciably diminished. It would remain possible to understand the positioning of the monument overlooking the wider landscape. The cumulative impact on the setting of Auchensaugh Hill enclosure from adding the Proposed Development to a baseline including the consented MET Mast Centre, the in-scoping M74 Project and West Andershaw Wind Farm and the proposed Bodinglee and Little Gala Wind Farms is appraised as being of low magnitude. The Proposed Development would contribute less to the cumulative impact than the in-scoping M74 Project and the proposed Bodinglee Wind Farm.

Knock Leaven cairn (10454) (Figure 7.5)

7.7.58 **Figure 7.5a** shows that from Knock Leaven cairn, the Proposed Development would be seen to the north-west, beyond the turbines of the in-scoping M74 Project which would be dominant in the foreground. The consented MET Mast Centre would be seen obliquely in this view, though would not be dominant against the skyline. The proposed Bodinglee and Little Gala Wind Farms would be seen beyond the Proposed Development to the north-west and along the skyline to the north from the monument. The in-scoping West Andershaw Wind Farm would add to the number of turbines visible in the distant view to the south-west.

7.7.59 An increase in the number and scale of turbines visible in the surroundings of the monument, resulting principally from operation of the in-scoping M74 Project, would detract from intervisibility between Knock Leaven cairn and other prehistoric monuments in the surrounding landscape and on the skyline, including at Auchensaugh Hill and Cairn Table to the west. Reciprocal views towards Wildshaw Hill cairn (**SM 4511**) to the north-north-west would also be obstructed. The proposed Bodinglee and Little Gala Wind Farms and in-scoping M74 Project and West Andershaw Wind Farms would contribute more to the cumulative impact than the consented MET Mast Centre and the Proposed Development, resulting in appreciable alteration of the skyline and views to the west and north from the monument.

7.7.60 Overall, the cultural significance of the cairn and its relationship within the immediate landscape would be appreciably diminished. The cumulative impact on the setting of Knock Leaven cairn from adding the Proposed Development to a baseline including the consented MET Mast Centre, the in-scoping M74 Project and West Andershaw Wind Farm and the proposed Bodinglee and Little Gala Wind Farms is appraised as being of medium magnitude. The greater contribution to the cumulative impact would result from the introduction of turbines of the in-scoping M74 Project at a closer proximity to the monument, which would appear more visually dominant within its setting.

Netherton, cairn (SM 4513) (Figure 7.6)

7.7.61 **Figure 7.6a** shows that from Netherton cairn, the Proposed Development would be seen to the north-west, beyond the turbines of the in-scoping M74 Project which would be dominant in the foreground. The proposed Bodinglee and Little Gala Wind Farms would be seen beyond the Proposed Development to the north-west and along the skyline to the north from the monument. The in-scoping West Andershaw Wind Farm would add to the number of turbines visible in the distant view to the west beyond the consented MET Mast Centre, which would be a marginal, isolated addition to this view.

7.7.62 An increase in the number and scale of turbines visible in the surroundings of the monument, resulting principally from operation of the in-scoping M74 Project, would detract from intervisibility between Netherton cairn and other prehistoric monuments in the surrounding landscape and on the skyline, at Auchensaugh Hill and Wildshaw Hill. Distant invisibility with Cairn Table to the west is obstructed by operational turbines and would not be significantly altered by operation of the in-scoping West Andershaw Wind Farm. The proposed Bodinglee and Little Gala Wind Farms and in-scoping M74 Project and West Andershaw Wind Farms would contribute more to the cumulative

impact than the consented MET Mast Centre and the Proposed Development, resulting in appreciable alteration of the skyline and views to the west and north from the monument.

7.7.63 Overall, the cultural significance of the cairn and its relationship within the immediate landscape would be appreciably diminished. The cumulative impact on the setting of Netherton cairn from adding the Proposed Development to a baseline including the consented MET Mast Centre, the in-scoping M74 Project and West Andershaw Wind Farm and the proposed Bodinglee and Little Gala Wind Farms is appraised as being of medium magnitude. The greater contribution to the cumulative impact would result from the introduction of turbines of the in-scoping M74 Project at a closer proximity to the monument, which would appear more visually dominant within its setting.

7.8 Proposed Additional Mitigation

7.8.1 Historic Environmental Policy for Scotland (HEPS) requires the recognition, care and sustainable management of the historic environment and the emphasis in Planning Advice Note (PAN) 2/2011: Planning and Archaeology (PAN2) is for the preservation of important remains in situ where practicable and by record where preservation is not possible. The mitigation measures presented below take this policy advice and planning guidance into account and provide various options for protection or recording and ensuring that, where practical, surviving assets are preserved intact to retain the present historic elements of the landscape.

7.8.2 All mitigation works presented in the following paragraphs would take place prior to, or where appropriate during, the construction of the Proposed Development. The scope of works would be detailed in one or more Written Scheme(s) of Investigations (WSI) developed in consultation with (and subject to the agreement of) WoSAS, acting on behalf of South Lanarkshire Council. The works would be carried out by a professional archaeological organisation, in accordance with the relevant Chartered Institute for Archaeologist (CIfA) guidelines, under the terms of any condition attached to planning consent. Dependent upon the results of that work, further mitigation may be necessary to deal with any archaeological remains that may be found.

During Construction

Preservation In Situ

7.8.3 The remains of two small cairns (**12658c** and **12658e**), that lie within 15m of proposed working areas or access routes, will be marked off and avoided during construction works. This will be achieved through marking out their locations using high visibility markers placed a minimum of 2m from the outermost edge of the identified features.

7.8.4 The locations of the remaining features recorded within the Site have been avoided by design. Based on the Proposed Development layout (**Figure 7.1**), they are sufficiently distanced from proposed working areas and access routes, such that any remains would be preserved in situ. No marking out is required in regard to these features.

Evaluation / Watching Brief / Excavation

7.8.5 Taking account of the moderate potential for buried archaeological remains to survive within the Proposed Development Site, a programme of archaeological mitigation works may be required, either in advance of construction works (archaeological trial trenching excavation), or during construction works (archaeological monitoring and recording). The scope of any works will be confirmed in a Written Scheme of Investigation (WSI) developed in consultation with (and subject to the agreement of) WoSAS, to be signed-off prior to commencement of work on site, including any required enabling works. The WSI(s) would make provision for appropriate post-excavation analysis and dissemination of the results of the mitigation works, as well as for archiving of the project materials and records.

7.8.6 If significant discoveries were made during trial trenching or archaeological monitoring and preservation in situ were not possible, provision would be made for an appropriate amount of investigation and recording to a programme to be agreed in writing with WoSAS.

Post-excavation Assessment and Reporting

7.8.7 If any significant discoveries are made during archaeological mitigation works, and it is not possible to preserve those discoveries in situ, provision will be made for the excavation where necessary, of any archaeological remains

encountered. The provision will include the consequent production of written reports on the findings, with post-excavation analysis, conservation of finds, and publication of the results of the works where appropriate.

Construction Guidelines

7.8.8 Written guidelines, in the form of Construction Method Statements (CMS), will be issued for use by all construction contractors, outlining the need to avoid causing unnecessary damage to known heritage assets. The guidelines will set out arrangements for calling upon retained professional support in the event that buried archaeological remains of potential archaeological interest (such as building remains, human remains, artefacts, etc.) should be discovered in areas not subject to archaeological monitoring.

7.8.9 The guidelines will make clear the legal responsibilities placed upon those who disturb artefacts or human remains.

During Operation

7.8.10 Construction of any new temporary access tracks required for maintenance during the operation of the Proposed Development will take into account cultural heritage assets based on the constraints mapping provided (**Figure 7.1**).

7.9 Summary and Conclusions

7.9.1 A desk-based assessment and walkover field survey have been carried out for the Proposed Development. The assessment has been informed by comments from, and information supplied by, HES and WoSAS (historic environment advisors to South Lanarkshire Council).

7.9.2 A total of 20 heritage assets (sites and features) have been identified within the Inner Study Area. The majority of these are small clearance cairns of undetermined, possibly prehistoric date, in addition to a quarry scoop, a relict track and a probable sheiling of post-medieval date.

7.9.3 There is potential for construction works within the Inner Study Area to result in direct effects on a small section of the old trackway and two small cairns. In addition, there is a moderate potential for buried archaeological remains to survive within the Inner Study Area, that could potentially be impacted by construction of the Proposed Development.

7.9.4 Mitigation measures have been set out that would avoid or reduce the predicted effects. The proposed mitigation includes the demarcation of two cairns for preservation in-situ. Any requirement for a programme of archaeological mitigation, either in advance of construction works (archaeological trial trenching excavation), or during construction works (archaeological monitoring and recording) would be agreed through consultation with the South Lanarkshire Council archaeological advisors (WoSAS) and carried out under the terms of any condition attached to planning consent. If significant discoveries were made during trial trenching or archaeological monitoring and preservation in situ were not possible, provision would be made for an appropriate amount of investigation and recording to a programme to be agreed in writing with WoSAS.

7.9.5 The detailed assessment has resulted in the identification of negligible magnitude effects on the settings of three Scheduled Monuments (Auchensaugh Hill, cairn (**SM 4234**); Thirstone, stone circle (**SM 5094**), Netherton, cairn (**SM 4513**)) and two NSR sites (**10054**; **10454**) of presumed national significance. The Proposed Development would result a marginal increase in the number of towers in views from and to the assets, seen in the context of existing overhead transmission infrastructure.

7.9.6 The Proposed Development would not obstruct views across or between identified heritage assets and the towers would not be appreciably imposing compared to the existing infrastructure. It would remain possible for any visitor to these monuments to understand and appreciate the monuments and their settings. As such the integrity of the setting of the monuments and their capacity to inform and convey their cultural significance, would not be compromised. The effects, which would not adversely affect the cultural significance of the assets, would last for the duration of the operational phase of the Proposed Development.

7.9.7 The assessment of cumulative effects has considered two future baseline scenarios. The residual cumulative construction effects of the Proposed Development, in combination with the proposed Redshaw substation (Future Baseline Scenario 1), would result entirely from the proposed Redshaw substation alone. No additional cumulative construction effects would result from the Proposed Development in combination with other developments.

7.9.8 The detailed assessment has resulted in the identification of low magnitude cumulative impacts on the settings of two Scheduled Monuments (Auchensaugh Hill, cairn (**SM 4234**) and Netherton, cairn (**SM 4513**)), as a result of the

operation of the Proposed Development in combination with the proposed Redshaw substation. In all other cases, the combined effect would be no greater than that predicted for the Proposed Development alone.

7.9.9 Assessment of Future Baseline Scenario 2 has considered the operational effects arising from the addition of the Proposed Development to a baseline including other consented, proposed or in-scoping schemes within 5km. The detailed assessment resulted in the identification of low to medium magnitude cumulative impacts on the settings of three Scheduled Monuments (Auchensaugh Hill, cairn (**SM 4234**); Thirstone, stone circle (**SM 5094**), Netherton, cairn (**SM 4513**)) and two NSR sites (**10054**; **10454**) of presumed national significance. In each case, the Proposed Development would contribute significantly less to the cumulative impact than other cumulative schemes.

8. Summary and Conclusion

8.1.1 SPEN is applying to the Scottish Ministers for consent under Section 37 of the Electricity Act 1989 and deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended) to install, and keep installed, the Proposed Development comprising the removal of two existing towers (and associated overhead line (OHL) conductors) from the existing 400kV Scotland to England interconnector (known as the ZV route) and replacement with three new installed towers and associated overhead line conductors.

8.1.2 Section 38 and Schedule 9 of the Electricity Act 1989 imposes a further statutory duty on SPEN to take account of the following factors in formulating proposals for the installation of overhead transmission lines:

- *"(a) to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and*
- *(b) to do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or any such flora, fauna, features, sites, buildings or objects."*

8.1.3 This EAR presents the findings of an appraisal of the likely environmental effects associated with the construction and operation (including cumulatively) of the Proposed Development.

8.1.4 The following conclusions have been drawn from the preceding chapters:

- Minor residual landscape and visual effects resulting from the Proposed Development including cumulative effects;
- Small scale mitigatable effects resulting from the Proposed Development on ecological features;
- Negligible effects on the conservation status of ornithological receptors appraised;
- With pollution control measures, the avoidance of peat and watercourses (where possible) and peat management measures (if peat cannot be fully avoided) it is considered that the effects on hydrology, hydrogeology and peat will be negligible during the construction phase of the Proposed Development and there will be no effects during the operational phase.
- Negligible effects on the setting of 3 Scheduled Monuments; the new towers would not compromise the integrity of the setting of the Scheduled Monuments. The cumulative effects considered two future baseline scenarios which identified low magnitude cumulative impacts on the setting of 2-3 Scheduled Monuments.

8.1.5 There have been no significant effects identified which would result from the Proposed Development.

8.1.6 In accordance with National Planning Framework (NPF) 4 (Policy 3), SPEN is committed to achieving No Net Loss (NNL) and Biodiversity Net Gain (BNG) across all of its projects. To ensure that the Proposed Development achieves SPEN's internal NNL policy, and therefore NPF4's requirements for biodiversity enhancement, a BEP will be prepared and secured via a planning condition to the Section 37 consent. The BEP will be prescribed to ensure that newly created, retained and enhanced habitats continue to benefit habitats and species and provide connectivity to the wider landscape long into the future.

8.1.7 This EAR has demonstrated SPEN's consideration of its obligations under Section 38 and Schedule 9 to the Electricity Act 1989; and highlights that it has complied with its duty to do what it can to mitigate the effects of the Proposed Development on the environment.