

Appendix 10.1

HEA

Scottish Power Energy Networks

Glenmuckloch to Glenglass Grid Reinforcement Project Historic Environment Assessment

Final report
Prepared by LUC
January 2023





Scottish Power Energy Networks

Glenmuckloch to Glenglass Grid Reinforcement Project
Historic Environment Assessment

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Glenmuckloch to Glenglass 132Kv Grid Reinforcement Project
January 2023

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Chapter 1 Introduction

Project background

1.1 LUC was commissioned by SP Energy Networks (hereafter 'the Applicant') to prepare an historic environment assessment (HEA) to accompany an application for consent under Section 37 of the Electricity Act 1989¹, and deemed planning permission under Section 57 of the Town and Country Planning (Scotland) Act 1997 to construct and operate a new 132 kilovolt (kV) overhead line (OHL), approximately 9.3km in length, between the proposed new substation at Glenmuckloch (centred on National Grid Reference (NGR) 271217, 614184) which forms part of the project, and the existing substation at Glenglass (centred on 272205, 606668). Together the new 132kV OHL and the new Glenmuckloch substation form the Glenmuckloch to Glenglass Reinforcement Project (GGRP). The GGRP is situated within the administrative boundary of Dumfries and Galloway Council (hereafter referred to as DGC). The proposed construction footprint of the GGRP plus its 50m infrastructure location allowance (ILA)² and forestry felling areas are hereafter referred to as 'the Site.'

1.2 The new Glenmuckloch substation would be located approximately 500m east of the former Glenmuckloch opencast coal working site from where the proposed new OHL route would head broadly south-east for approximately 950m before heading south-west across the River Nith valley and the railway line. It would then continue south-west for approximately 1km before crossing the A76 to the west of Rigg Farm. It would then run south-east for approximately 1.5km from Polmeur Hill before passing into the forestry plantation at Libry Moor. On exiting Libry Moor the OHL route would continue in a south easterly direction for approximately 1.6km before crossing over the Kello Water and heading south for approximately 1.8km. It would then head south-west for approximately 1.5km, following the contours across Drumbuie Moorhead and following the line of a recently constructed Whiteside Hill and SWS Project access track to the Glenglass substation. The location of the Glenmuckloch to Glenglass Reinforcement Project is shown on EIA Report (EIAR) **Figure 1.1**.

1.3 As described in Chapter 4, the main components of the GGRP will comprise:

- c. 40 steel towers on average 27m high.
- A new substation at Glenmuckloch.
- Ancillary works including:
 - forestry felling;
 - access tracks;
 - working areas;
 - laydown areas/construction compounds;
 - winching/pulling areas; and
 - watercourse crossings.

Aims and objectives

1.4 This historic environment assessment aims to explain how heritage assets within and surrounding the GGRP may be affected by its construction and operation. It seeks to identify the significance of heritage assets within the Site and its environs, assess the likely impact of the Proposed Development upon assets and provide recommendations for any appropriate mitigation strategies. Impacts are described in terms of the extent to which the Proposed Development will harm or enhance the assets' significance.

1.5 The HEA includes consideration of both buried archaeological and above-ground heritage assets, and, therefore, fulfils the purpose of an archaeological desk-based assessment and a heritage statement. It also supports the Environmental Impact Assessment (EIA) for the GGRP, as a technical appendix.

Legislative and policy context

Legislation

1.6 National legislation relating to the protection and treatment of the historic environment within the development process identifies historic assets as a non-renewable, fragile and finite resource and places a priority on their conservation. The key pieces of legislation are the:

- Ancient Monuments and Archaeological Areas Act 1979; and
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 ("1997 Act").

1.7 Scheduling is applied only to sites of national importance. It makes it illegal for scheduled site to be disturbed in any way without scheduled monument consent.

The 1997 Act places a number of duties on decision makers, key amongst these are:

- Section 59 states that, in considering whether to grant planning permission for development which affects a listed building or its setting, "special regard" will be had to of "preserving the building or its setting or any features of special architectural or historic interest which it possesses."
- Section 64 states that, in considering applications affecting Conservation Areas, "special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area".

1.8 In the operation of this law, the concept of 'preservation' referred to in Sections 59 and 64 has been interpreted as 'to do no harm'.

National policy

1.9 The application of these laws is guided by national policy. Scottish Planning Policy (SPP) and National Planning Framework 3 (NPF3) are the statement of the Scottish Government's policy on nationally important land use planning matters. A new NPF4 is currently in draft.

1.10 Scottish Planning Policy (para.141) requires that "special regard" must be given to listed buildings and their setting and that they should be protected from any works that would "adversely affect" these, in line with the requirements of the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.

1.11 The requirement for scheduled monuments (para. 145) is even greater, as it states: "where there is potential for a proposed development to have **an adverse effect on a scheduled monument or on the integrity of its setting**, permission should only be granted where there are exceptional circumstances" (LUC emphasis). 'Integrity' is not defined as a term but can broadly be understood as reflecting the level to which the key relationships of the asset remain legible and appreciable.

1.12 The sections of national policy most relevant to this application are included in **Chapter 5: Planning Policy**.

1.13 Planning Advice Note 2/2011: Planning and archaeology provides planning advice to local planning authority and developers on dealing with archaeological remains. All relevant aspects of the plan regarding the application are included in **Chapter 5: Planning Policy**.

Local policy

1.14 Current planning policies for the Site are included in The Dumfries and Galloway Council Local Development Plan

¹ References to all legislation relate to legislation as amended and in force at the time of writing of this document.

² All infrastructure bar the Glenmuckloch substation has a 50m ILA.

2 (adopted October 2019). Policies of relevance to the current application are given in **Chapter 5: Planning Policy**.

Chapter 2 Methodology

Introduction

2.1 This assessment has been carried out in accordance with the following guidance:

- Institute of Environmental Management and Assessment (IEMA) (2021) Principles of Cultural Heritage Impact Assessment in the UK (hereafter referred to as PCHIA).
- Historic Environment Scotland (HES) (2020) Managing Change in the Historic Environment Guidance Notes – setting (hereafter referred to as the HES setting guidance).
- HES and Scottish Natural Heritage (SNH) (2018), Environmental Impact Assessment Handbook (particularly the framework for Cultural Heritage Impact Assessment provided in Appendix 1; hereafter this guidance is referred to as the EIA Handbook).
- The Chartered Institute for Archaeologists (CIfA) (2017), Code of Conduct.
- CIfA (2017), Standard and guidance for historic environment desk-based assessment.
- Scottish Government (2011), Planning Advice Note 2/2011: Planning and Archaeology.

Data gathering and study area

2.2 To inform the assessment of physical effects a 200m study area has been defined around the construction footprint of the GGRP, which is based upon the infrastructure locations and their 50m infrastructure location allowance (ILA). This has been used to provide context to the identification and understanding of assets and potential archaeological remains within the GGRP.

2.3 To inform the assessment of potential setting effects a 3km study area has been used. This has been measured from the OHL tower locations, as the tallest and most visible components of the GGRP. This 3km study area has also been used for contextual purposes relating to archaeological potential.

2.4 The extent of the 3km study area has been determined by use of a bare earth Zone of Theoretical Visibility (ZTV) calculated in relation to the OHL towers (see EIAR Figure 10.3). It indicates that that would be greater visibility of the

northern end of the GGRP than the southern end, but that visibility would not extend out to 3km in either direction. East to west there is greater visibility along the valley of the River Nith, but beyond 3km visibility becomes more localised and is often low. As such, significant visual effects on the setting of assets are not considered likely after 3km given the height and mass of the towers, and the lower height of the Glenmuckloch Substation.

Sources

2.5 The following sources of information were used in the preparation of this report:

- HES spatial datasets and database for designated assets:
 - World Heritage Sites.
 - Scheduled Monuments.
 - Listed Buildings.
 - Inventory-listed Garden and Designed Landscapes.
 - Inventory-listed Battlefields.
- HES National Record of the Historic Environment ('Canmore') data.
- Local authority conservation area and mineral extraction information.
- Dumfries and Galloway's Historic Environment Record (DGHHER).
- Ordnance Survey (OS) current and historic mapping available online via the National Library of Scotland and Pastmap.
- High resolution (50cm) Digital Terrain Model (DTM) LiDAR data from the Scottish Remote Sensing Portal
- Aerial imagery held online by the National Collection of Aerial Photography (NCAP) and Cambridge Air Photos.
- Walkover survey: A site visit comprising a walkover survey of the Site and the inspection of selected nearby historic assets with the potential to experience setting change were conducted in March 2021. The weather was fair, but a low mist descended at times throughout the day. The visibility was fair to moderate. Selected photographs from the site visits are included in the report.
- British Geological Survey mapping.
- Secondary published and online sources.
- Scheme plans and sections.
- Visualisations of the GGRP.

Assumptions and limitations

2.6 Much of the information used by this study consists of secondary information compiled from a variety of sources. The assumption is made that this information is reasonably accurate unless otherwise stated.

2.7 There is an inherent uncertainty when assessing effects to buried archaeological remains as it is difficult to ascertain their presence, extent, and significance without physical investigations.

2.8 Assessments are policy neutral and make no assumptions with regard to the application of local or national policy, as it is for the decision-maker to understand the likely level of impact to historic assets and balance this accordingly.

Approach

2.9 The historic environment is defined as the "physical evidence for human activity that connects people with place, linked with the associations we can see, feel and understand." Its constituent parts are known as 'historic assets'. These can be tangible features, buildings or places, or intangible stories, traditions and concepts that provide physical evidence of past human activity and hold of sufficient value (i.e. cultural significance) to this and future generations to merit consideration in the planning system. Therefore, this assessment focuses on if, and how, the Proposed Development will change the cultural significance of heritage assets within and around it. To do this the six steps set out in PCHIA guidance are followed:

- Understanding heritage assets:
 - describe the asset;
 - ascribe cultural significance; and
 - attribute importance.
- Evaluating the consequences of change:
 - understand change;
 - assess impact; and
 - weigh the effect.

Understanding the heritage assets

Description

2.10 A factual description of each asset is provided covering location, form, fabric, condition, etc. As proportionality is key, the information presented is focused on that which is relevant to understanding how cultural significance might be affected by the development.

Cultural significance

2.11 The cultural significance that makes heritage assets important can be articulated in various ways. One approach is to use the various designation criteria³ for different asset types and adjust them to reflect the relative importance of the asset, from local to national. However, a more consistent and understandable approach draws upon the heritage values referenced by the Historic Environment Policy for Scotland (2019), which are drawn from The Burra Charter (Australia ICOMOS 2013). These values are detailed in the Australia ICOMOS (2013) Understanding and Assessing Cultural Significance Practice Note and comprise:

- **Evidential value** – deriving from the potential of a place to yield evidence about past human activity.
- **Historical value** – deriving from the ways in which past people, events and aspects of life can be connected through a place to the present. This is typically either illustrative or associative.
- **Aesthetic value** – deriving from the ways in which people draw sensory and intellectual stimulation from a place. This includes architectural and artistic interest.
- **Communal value** – deriving from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.

Setting

2.12 In line with guidance, the contribution that setting makes to an asset's cultural significance is considered. Setting is defined as "the way the surroundings of a historic asset or place contribute to how it is understood, appreciated and experienced."⁴ In this assessment, the contribution (if any) made by setting to an asset's cultural significance is clearly described.

Importance

2.13 Assets may derive their significance from one or more heritage values, but a lack of interest in one or more of these areas does not indicate a lower level of importance, just that their interest lies elsewhere. Heritage values help in understanding the cultural significance of an asset, but do not determine the level of that significance (i.e. 'importance').

2.14 Importance is normally determined using professional judgment, alongside an understanding of local, regional, and national historic environment research objectives and, where appropriate, the use of the designation criteria for assets of national significance. However, DGHHER has had importance ratings pre-assigned to it by DGC taking into account the state of preservation of the monument, and the relative rarity of that particular form of asset, both at a regional and national level. The broad criteria used for determining the importance of a heritage asset is set out in the table below and draws upon the ratings pre-assigned by the DGHHER. Records assigned as having 'None' or 'N/A' importance in the HER have (following verification) been excluded from the assessment.⁵

Table 2.1: Heritage asset importance

Importance	Criteria
High	Designated cultural heritage assets. Non-designated cultural heritage assets that meet the criteria for statutory designation.
Medium	Non-designated heritage assets of regional or regional/local value.
Low	Non-designated cultural heritage assets of local value.
Very low	Non-designated cultural heritage assets of less than local or other value.

2.15 The DGHHER pre-assigned importance levels were determined from desk-based assessment and DGC acknowledge that further information may result in the re-grading of assets. Where further research has led to the modification of the pre-assigned level or importance, this has been clearly stated.

Evaluating the consequences of change

2.16 As per the PCHIA guidelines, the evaluation of change comprises three steps:

1. The provision of a brief factual statement explaining the change wrought by the GGRP to a heritage asset.
2. An assessment of whether that change effects the heritage assets cultural significance and if so, how.

³ The HES (2019; 2020) Designation Policy and Selection Guidance set out criteria for how Scotland's historic sites and places are assessed to determine whether their cultural significance is of national importance.

⁴ Historic Environment Scotland's (HES) 'Managing Change in the Historic Environment Series', particularly the 'Setting' publication (2020; 2016).

⁵ These records are classed by DGC as having no importance for planning or as referring to an archaeological object or record that is not associated with a recognized site, is very poorly located, is a duplicate or is an over-arching record.

- A conclusion regarding whether an impact matters, reflecting the importance of the affected cultural heritage asset.

Types of effect considered

2.17 This report considers the potential for three types of effects: physical, setting, and cumulative. On the basis of the desk based and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, and feedback received from consultees, the following effects have been 'scoped out' of detailed assessment:

2.18 Indirect physical effects to heritage significance as a consequence of vibration, dewatering or changes in hydrology have not been considered. This is because no potential for such effects has been identified.

Physical effects

2.19 Direct physical effects to assets occur when a Proposed Development negatively affects the fabric of a heritage asset, either known or hitherto undiscovered. This type of effect is permanent and generally occurs during the construction phase.

2.20 For the purposes of this assessment, all heritage assets have been assumed to have a high sensitivity to physical change. To identify assets sensitive to physical change an intersection analysis was run between the recorded assets and the development footprint, including Infrastructure Location Allowance (ILA). Consideration has also been given to the potential to encounter further hitherto unrecorded archaeological remains.

Setting change

2.21 Effects related to setting change are direct and result from how a development proposal alters an asset's setting in a way which affects its significance or how it is perceived. Such changes are often visual but can also relate to changes to an asset's historical, functional, or symbolic relationships (including intervisibility between assets or historic patterns of land use) or sensory factors such as noise, odour, or emissions.

2.22 An asset's sensitivity to setting change depends on the contribution that setting makes to its heritage significance, and how the Proposed Development interacts with that. To identify heritage assets whose significance is potentially sensitive to setting change the assets within the study area that have

visibility of the GGRP were identified and subject to a high-level appraisal of their significance and the GRRP's interaction with it. Heritage assets outside of the ZTV were also reviewed to see if in-combination views that could affect their significance were considered possible. The inclusion of assets (e.g. those hitherto unrecorded but recognised during site surveys) has been kept under review during this baseline study and updated accordingly.

2.23 Direct effects to the cultural significance of heritage assets within the Site or Study Areas as a result of setting change during construction are not assessed. (This is because such effects are temporary and fully reversible.)

Cumulative effects

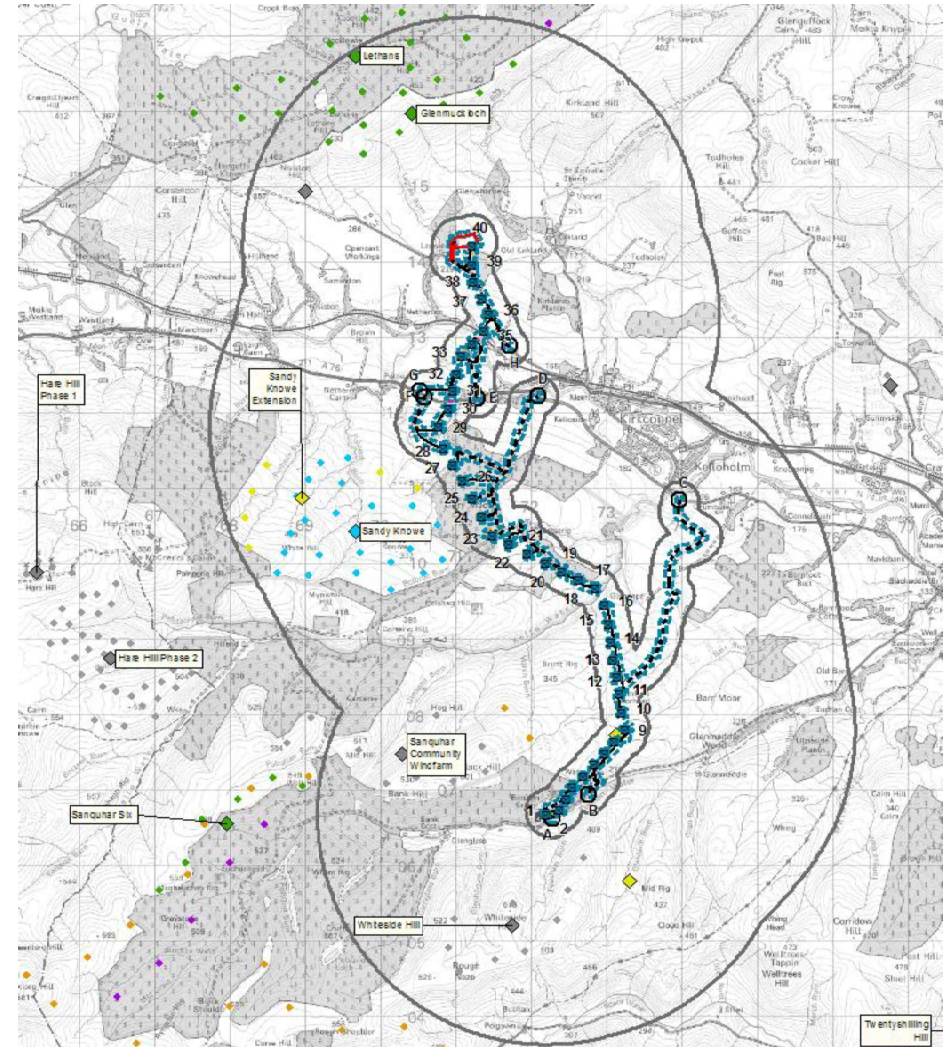
2.24 Cumulative physical effects from the GGRP and other developments will not arise and are therefore not considered. Cumulative setting change from the GGRP in-combination with other forthcoming developments has been assessed. Within the 3km study area, there are four cumulative schemes, and these are listed in the table below. They are also mapped on EIA Report **Figure 6.7**.

Table 2.2: Cumulative schemes

Wind Farm	Status	No of Turbines	Blade Tip Height (m)	Distance to GGRP (km) ⁶
Glenmuckloch	Consented	8	149.9m	1.6km (North)
Lethans	Consented	22	220m	2km (North)
Lethans Extension	Application	10	251m	2.9km (north)
Sandy Knowe Extension	Application	6	150m	1.9km (south / southwest)

⁶ Approximate distance between the nearest component of the Glenmuckloch to Glenglass Reinforcement Project and the nearest component of the development listed.

Figure 2.1: Cumulative and operational schemes within 3km (operational schemes shown in grey; schemes under construction shown in blue; consented schemes shown in green; schemes in design shown in yellow).



Magnitude of change

2.25 Assets identified as potentially sensitive to change have then been assessed. The first step of assessment is to understand and factually describe the change. The next step is to understand the impact or magnitude of that change on the asset's cultural significance. The magnitude of change to an asset's cultural significance as a result of the GGRP has been assessed using professional and objective judgement informed by the evidence gathered in the previous steps of the assessment, using the criteria set out in **Table 2.3** below. For transparency and robustness, the magnitude of change (and whether it is temporary or permanent) has also been described with explicit reference to the heritage value(s) affected, as required by the EIA Handbook (2018) and the PCHIA (2021) guidance.

Table 2.3: Magnitude of change criteria

Magnitude of Change	Description
Large	Total or near total loss of an asset's cultural significance through physical and/or setting change. Significant level of change to how that significance is understood, appreciated or experienced.
Medium	Medium loss or alteration of an asset's cultural significance through physical and/or setting change. Medium level of change to how that significance is understood, appreciated, or experienced.
Small	Small loss or alteration of an asset's cultural significance through physical and/or setting change. Small level of change to how that significance is understood, appreciated or experienced.
No change	No change to the cultural significance of the heritage asset.

Level of effect

2.26 The predicted level or weight of the effect has been determined using professional judgement to reflect the importance of the heritage asset using the scaled criteria in **Table 2.4** below. The justification for the significance of effect has been reported clearly, albeit within a few concise sentences. Again, this approach follows the guidelines for assessment set out in EIA Handbook (2018) and by the PCHIA (2021) guidance.

2.27 All effects assessed and reported herein are adverse. Only in rare circumstances can a new development make a

positive contribution to the significance of a heritage asset, for example by removing harmful elements of its current setting and thereby better revealing its character and significance.

Table 2.4: Level of effect criteria

Level of Effect	Description
Major	A major magnitude of change (e.g. total or near total loss) to the cultural significance of an asset of medium or high importance.
Moderate	A moderate magnitude of change (e.g. substantial loss or alteration) to the cultural significance of an asset of medium or high importance; or a high magnitude of change (total or near total loss) to an asset of low importance.
Minor	A minor magnitude of change (slight loss or alteration) to the cultural significance of an asset of medium or high importance; a medium or low (slight to substantial loss or alteration) to the heritage value of an asset of low importance; or any change to an asset of very low importance.
No effect	No change to the cultural significance of an asset.

2.28 Residual effects are calculated taking the effect of mitigation into account. Residual effects are only stated separately for physical effects arising from construction activity. No mitigation has been proposed for setting effects and so the residual effect is the same as the initial effect calculated and is not presented separately.

Visualisations

2.29 To help understand the potential effects of the GGRP visualisations have been used. The visualisations are primarily wireframes, with photomontages created for assets where the most severe effects are anticipated. Wireframes were not created for all assets, but a selection agreed with consultees during the scoping of the EIA. These are listed in the table below and included as Figure 10.2a-2b in the EIAR.

Table 2.5: Cultural heritage viewpoints agreed at scoping

View point	Name/Asset	Co-ordinates	Visualisation Type
CH1	St Connel's Church and churchyard [HES ref: 13747]	272368, 615035	Wireframe and photomontage

Assessment Limitations

2.30 The assessment has utilised a range of sources on the area's historic environment. Much of this is necessarily secondary information compiled from a variety of sources (e.g. HER data and grey literature reports). It has been assumed that this information is reasonably accurate unless otherwise stated.

2.31 There is an unavoidable inherent uncertainty in the discussion of buried archaeological remains and archaeological potential.

2.32 Whilst some information gaps have been inevitable given the buried nature of archaeological remains, it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant environmental effects on cultural heritage. A precautionary approach has been applied, based on the available information and the professional experience and judgment of the project team, to ensure that all relevant effects have been assessed and reported. No 'uncertain' classification of asset importance, magnitude of change/scale of impact, or level of effect is required for the purposes of this assessment, as the levels could reasonably be established from the available evidence. For the avoidance of doubt, when any asset is identified as being of 'uncertain' importance, a precautionary approach would be applied, and the effect reported as potentially significant.

Chapter 3 Archaeological and Historical Background

Introduction

3.1 This chapter sets out the contextual information for understanding the Site and study areas, beginning with the present land use, topography, and geology. These factors are important because they influence the conditions for habitation and land use, as well as conditions for archaeological survival. The chapter then considers in more detail the evidence for human activity in the Site and study area.

3.2 Archaeological features are typically cut into the surface of the natural geology, with the potential for later features present within the overlying deposits. As such, understanding geology can help indicate at which levels archaeology is likely to be encountered and has implications for archaeological survival, depending on if the ground has been built up or truncated.

3.3 This chapter also includes a summary of the archaeological and historical development of the Site and study area, to help understand the potential for hitherto unknown archaeological remains. Known assets are referenced throughout this section using their HES or HER reference. Assets identified by LUC within the Site have been assigned an LUC reference. These references can be cross-referenced to Figures 10.1a-c in the EIAR which depict the location of these assets.

Site and study area conditions

Land use

3.1 The Site and surrounding area of the GGRP is defined by the River Nith valley and adjacent Southern Uplands. The central part of the GGRP also passes over the Kello Water River valley. There are two settlements in the vicinity, Kirkconnel and Sanquhar, which are located c.1.5km and 5km east of the GGRP respectively. Otherwise, this area is primarily rural and comprises agricultural land and commercial forest, with dispersed individual dwellings, farmsteads, and small clusters of residential properties. The A76 road and the Glasgow South Western Line railway pass through the valley, and there are several core paths connecting Kirkconnel with the uplands to the north and south.

3.2 Above the valley floor and lower valley slopes, is managed moorland mixed with plantation. The former is used

for rough grazing. Several of the hilltops and ridges have been developed for wind energy production, including Hare Hill Wind Farm, Sanquhar Community Wind Farm and Whiteside Hill Wind Farm, all of which on the southern valley side. Sandy Knowe Wind Farm is also currently under construction in this area, and consent has been given to Glenmuckloch and Lethans Windfarms, on the northern valleyside.

Topography

3.3 The Nith Valley is relatively broad. It varies in height from approximately 140m AOD (Above Ordnance Datum) at the valley bottom, to 530m AOD on the highest valley hilltop (Black Hill), at the southern end of the GGRP. The uplands generally comprise rounded hills or undulating ridgelines. There are several watercourses within incised valleys, which feed into the River Nith. Historically, rivers are important resources for food, transport, communications, and power meaning that, beyond the floodplains, they were attractive locations for settlement.

3.4 Ground levels along the GGRP generally slope from the south to the north towards the River Nith. The highest elevation along the centreline of the OHL is around 342m AOD in the south-west part of the study area (between towers 3 and 4) and the lowest elevation is 160m AOD (between towers 34 and 35).

Geology

3.5 The BGS online Geology Viewer indicates that the GGRP is underlain by solid bedrock comprised of greywackes or sedimentary coal measures, with igneous extrusions and intrusions. The superficial geology of most of the GGRP is recorded by the BGS primarily as glacial till, with earlier glacial fluvial deposits apparent along the river valley. The topography of the river valley means that there is also the potential for the colluvial (hill wash) deposits, which can bury old land surfaces and may contain artefacts and ecofacts from topsoil from further up-slope.

3.6 There is also alluvium along the river valleys and some peat to the south of the route. Alluvial deposits can be used for sediment provenancing, pollution histories and various forms of landscape study, and examining the past environments of river valleys.⁷ As river valleys are generally inhabited landscapes the alluvium may contain information about past human settlement and cultural change; it can sometimes bury entire sites and ancient land surfaces and often leads to excellent preservation of organic materials.⁸

3.7 The NatureScot (2016) Carbon and Peatlands Map indicate that carbon-rich soils, deep peat and small areas of priority peatland habitat are likely present in localised areas along the GGRP. Peat surveys for the project have encountered several areas of deep peat on Barr Moor, but it is not widespread across the route. Areas of peat >1.0 m in depth were recorded at the following locations:

- Localised, modified peat in forestry near towers 1 and 2, with depths up to 1.3m;
- Unmodified peat up to 1.7m close to tower 5;
- Large areas of unmodified deep peat up to 3.7m in the area around towers 8 to 11 and their associated construction areas and access tracks;
- Very small area of peat bog at tower 32. With one depth >1m recorded at 1.3m;
- Large, isolated pocket of undisturbed peat up to 3.2m deep between towers 33 and 34;
- An area of peat bog south-west of tower 40 with a number of depths and cores > 1m recorded; and
- An area of peat bog north-west of the proposed substation at the northern limit of the survey, with depths up to 2.9m.

3.8 Peat can bury and preserve unique archaeological and palaeoecological information as the waterlogged conditions result in the exceptional preservation of natural and cultural organic remains.

3.9 Further information on the geology of the Site is available in the EIA that this report supports, specifically **Chapter 7: Hydrology, Geology, Hydrogeology and Water Resources**.

Previous archaeological investigations

3.10 There are no previous physical investigations recorded within the GGRP route or the 200m study area.

Site and study area development

Prehistoric (7000 BC – AD400)

3.11 The earliest human activity in the Nithsdale area dates to the Mesolithic and is typically recovered from coastal and riverine locations. With the exception of a possible Neolithic (3,500 - 2,250 BC) cup-marked stone [Canmore ref. 370772] the earliest evidence for human activity around the GGRP dates to the later prehistoric period. No known prehistoric

⁷ Historic England, 2015, *Geoarchaeology Using Earth Sciences to Understand the Archaeological Record*

⁸ Historic England, 2015, *Geoarchaeology*

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assets lie within the ILA, but within the 200m study area there is a probable Bronze Age (2,250 BC- 700 BC) burial mound [HER ref: MDG26119] on the southern side of the river valley near Rack Wood. There is also a square enclosure of possible late prehistoric or later date [HER ref: MDG25713], recorded on the southern side of the river valley, in Polmeurhill Wood.

3.12 Beyond the 200m study area, a potentially later prehistoric enclosure [HER ref: MDG24843] is located c. 420m north of the proposed substation, on the northern side of the Nith valley. A possible late prehistoric settlement [HER ref: MDG13383], comprising a souterrain, two hut bases and a ditch, has been identified via aerial photography to the north of Kelloholm, c. 2.4km from the GGRP and there are also antiquarian reports of a possible prehistoric enclosure [MDG129] being discovered at Kelloway Farm, further east along the river valley.

3.13 There is also some evidence for Roman (AD 80 - AD 400) activity outwith the 200m study area, during the later Iron Age. A small temporary, possibly Roman camp [HER ref: MDG115] was identified via aerial photography in field on Buttknowe farm c.250m east of the GGRP and a Roman fortlet [HER ref: MDG116] is also recorded, just north of Kelloholm. Both were attested physically in the 1950s. The same investigation discovered a metalled road at the southern entrance of the Roman fortlet. It has been speculated that this road [HER ref: MDG21103] might continue east to another fortlet at Sanquhar, and potentially west to the temporary camp at Buttknowe. There is evidence for an ancient drove road traversing the northern hillslope of the Nith Valley [HER ref: MDG8960], which may have its origins in this period. Finally, a 'Roman' cinerary urn containing a cremation burial [HER ref: MDG125] was reportedly discovered near Kirkconnel Bridge.

Early medieval (AD400 – 1100), medieval (1100 – 1500) and pre-improvement era (1500 – 1800)

3.14 During the 6th to 9th centuries, Dumfries and Galloway was under the influence of the Kingdoms of Rheged and then Northumbria, which were Brittonic and Anglian respectively. From the 9th century on the area was subject to increased Norse influence, as evident from the place-name evidence including 'Kirk' which is derived from the Old Norse for church - kirkja.

3.15 Kirkconnel derives its name from the now scheduled remains of the Church and churchyard of St Connel [NHLE ref: SM13747], which are 1.2km to the northeast of the GGRP, partway up the northern side of the Nith valley next to the ancient drove road. Investigations have revealed that the church dates to the 9th century. Between Glenwharrie, at the edge of the 200m study area and the spur of Little Kirkland Hill, there are a number of earthwork features including

farmsteads and a number of turf-walled houses [HER ref: MDG77, MDG21444 and MDG8961] as well as a series of agricultural features [e.g. HER ref: MDG78, MDG25801, MDG25799, MDG21442, MDG79, MDG8961], which evidence what is likely to be a small broadly contemporary settlement dispersed around the church. Historic maps suggest that a late medieval building may once have stood at the northern end of the GGRP, near the extant Lagrae Cottage [HER ref: MDG26969], with another at Glenmuckloch [HER ref: MDG23940].

3.16 The remains of another medieval or pre-improvement farmstead survive as earthworks at Rack [HER ref: MDG26118], just south of the river. Further south again, as the topography rises, are the remains of linear feature known as Deil's Dyke. This 10km long earthwork is of unknown date or function. However, rig and furrow earthworks reportedly respect it, and it appears to delineate upland pasture from lowland arable, suggesting that it may be an agricultural boundary of medieval or earlier date.

18th century to present

3.17 The new parish church in Kirkconnel was built in the 18th century and the historic linear settlement adjacent developed in the later 19th century following the arrival of the railway. Kelloholm is a wholly modern extension to the settlement.

3.18 The 18th century also saw a push for agricultural improvements that resulted in the widespread restructuring of the agricultural landscape across Scotland. This restructuring is clear in the study area, particularly around Rack, where the ruins of a later post-improvement farmstead stand just a short distance from the earwork remains of an earlier pre-improvement farmstead [HER ref: MDG26118] and probable contemporary features.

3.19 Agriculture was not the only industry in the area. Historic mapping illustrates that quarrying has long been practiced in the area, including along the route of the GGRP [see LUC refs: 5, 7, and 9]. However, it has increased in scale in more recent times, as evidenced by the large opencast site at Glenmuckloch [Canmore ref: 258647]. Further large open cast quarrying sites were also worked to the south of the river, along the route of the GGRP, by Rigg [LUC 11, 12 and 13]. However, these have since been reinstated.

3.20 Forestry is another industry that developed in the area during the 19th century and historic mapping indicates several plantations along and in the vicinity of GGRP. Some of these, such as Kirkland Plantation and Rig Plantation, survive but others, like Polmeurhill Plantation, have been lost leaving little [LUC2] or no trace. Larger-scale modern plantations are also evident over the higher moorlands.

3.21 Recently windfarms have started to be built in the area. From north to south, the existing windfarms in the study area include Glenmuckloch Community Energy Park (two 46.1m high turbines), Sandy Knowe Windfarm (which, at the time of writing, is still being completed but is largely built out and comprises 24 149.9m high turbines), Sanquahr Community Windfarm (nine 130m high turbines), and Whiteside Hill (ten 121.2m high turbines). Two windfarms - Lethans and Glenmuckloch - have also been consented to the north of the GGRP.