

Chapter 3

Approach to the EIA

Introduction

3.1 The principal aim of the Environmental Impact Assessment (EIA) Directive¹ is to ensure that the authority granting consent (the 'competent authority') for a particular project makes its decision in full knowledge of any likely significant effects on the environment. The EIA Directive therefore sets out a procedure that must be followed for certain types of projects before they can be given 'development consent'. This procedure, known as Environmental Impact Assessment or 'EIA', is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the significance of the predicted effects, and the scope for reducing any adverse effects, is properly understood by the public, consultees and the competent authority before a decision is made. Early identification of potentially adverse environmental effects also leads to the identification and incorporation of appropriate mitigation measures into the design of the project.

3.2 This chapter sets out the broad approach that has been used in the EIA for the Glenmuckloch to Glenglass Reinforcement Project (GGRP). It provides an overview of the key stages that have been followed, in line with EIA best practice.

The EIA Process

3.3 The EIA Report has been prepared in accordance with The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, as amended and applicable advice and good practice guidance.

3.4 This EIA Report presents the written output of the EIA process. The information contained in this EIA Report fulfils the requirements of the EIA Regulations and once submitted, will enable Scottish Ministers as the decision-making authority, to make their decisions on the application for Section 37 consent and deemed planning permission.

3.5 Regulation 5(2) of the EIA Regulations states that the following information is required in the EIA Report and as detailed further in Schedule 4:

- A description of the development comprising information on the site, design, size and other relevant features of the development.
- A description of the likely significant effects of the development on the environment.
- A description of the features of the development and any measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.
- A description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.
- A non-technical summary of the information.
- Any other information specified in Schedule 4 of the Regulations relevant to the specific characteristics of the development and to the environmental features likely to be affected².

Preparation of the EIA Report

3.6 This EIA Report has been prepared in accordance with the requirements of Regulation 5(2). Regulation 5(5) states that to ensure completeness and quality of the EIA Report:

“(a) the developer must ensure that the EIA report is prepared by competent experts; and

(b) the EIA report must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts”.

3.7 A statement of competency, setting out the qualifications and experience of chapter authors is provided at **Appendix 1.1: Statement of Expertise**.

3.8 As shown in **Appendix 3.1: Scoping Responses Summary Table**, the scoping responses received indicated that, overall, the scope of the EIA had been defined appropriately. However, a number of consultees did highlight issues where further investigation or clarification was required. This has been highlighted and addressed where appropriate within the EIA Report.

EIA and the Design Process

3.9 EIA should be treated as an iterative process, rather than a one-off, post-design environmental appraisal. In this way, the emerging findings from the EIA can be fed into the design process, to avoid and reduce potential environmental effects. This approach has been used in relation to the design stages of the GGRP. Where the potential for significant adverse environmental effects were identified through the routeing and/or overhead line (OHL) alignment stages for the GGRP or later during the detailed EIA, consideration was given as to how the GGRP design should be modified to design out these adverse environmental effects, or where this was not possible, to determine appropriate mitigation measures. Post-routeing stage modifications to the scheme design are outlined in **Chapter 2: The Routeing Process and Design Strategy** and in the subsequent assessment chapters.

Scope of the Environmental Impact Assessment

3.10 To determine which aspects of the GGRP are likely to give rise to environmental effects and to inform the requirements of the EIA Report, LUC prepared a Scoping Report which was submitted to the Scottish Government Energy Consents Unit (ECU) on 7th January 2020 together with a request for a Scoping Opinion under Regulation 12 of the Regulations (case reference: ECU00001998)³. The Scoping Report set out the components comprising the GGRP, topics to be assessed, proposed assessment methodologies and mitigation as well as topics to be scoped out of the EIA.

3.11 The purpose of scoping is to ensure that the EIA process focuses on the key environmental issues. Therefore, the Scoping Report sought to focus the EIA on the main effects, with each of the topic-based chapters within the Scoping Report setting out a provisional list of significant effects prior to mitigation and a second provisional list of non-significant effects to be 'scoped out' of full assessment. These were drafted on the basis of the findings of the preliminary survey work undertaken, the professional judgement of the EIA team, experience from other projects of a similar nature, and guidance and standards of relevance to the topic area in question.

3.12 On this basis, whilst a range of possible effects have been investigated as part of the EIA process, only effects identified as being of likely significance prior to the implementation of the proposed mitigation measures have been addressed fully in the EIA Report.

3.13 LUC and the ECU agreed a list of consultees to be contacted as part of the formal Scoping process prior to the scoping request being made by LUC of behalf of SPEN. The ECU contacted these consultees requesting their input to the scoping process.

3.14 The Scoping Opinion provided by the ECU (dated 22nd December 2020⁴), and issued on behalf of the Scottish Ministers, included responses from the consultees⁵. **Appendix 3.1** provides a summary of the overarching issues raised by the Scottish Ministers in the Scoping Opinion as well as the individual responses received from the consultees and includes details of how these comments have been addressed in the EIA Report.

¹ Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU.

² This EIA Report also includes the information required by Schedule 4 of the EIA Regulations.

³ The Scottish Government ECU administers the issuing of the Scoping Opinion on behalf of Scottish Ministers.

⁴ Accessible at: <http://www.energyconsents.scot/ApplicationSearch.aspx> using case reference: ECU00000739.

⁵ A number of consultees did not respond to the ECU's invitation to comment at scoping. These are listed in the EIA Scoping Opinion.

3.15 In addition to the consultees contacted by the Scottish Government during the formal scoping process, topic area specialists contacted a number of other parties to obtain background information to further inform the EIA and to allow them the opportunity to raise any concerns that they might have in relation to the GGRP. Details of all relevant consultation are provided in **Chapters 6 to 11**.

Topics Scoped Out of the EIA

3.16 There is currently no published Scottish Government guidance on the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. However, the Guidance on the previous 2000 Electricity Works EIA Regulations provides instructive advice on the general requirements relating to the preparation and content of an EIA Report and states:

“... the emphasis of Schedule 4 is on the ‘significant’ environmental effects to which a development is likely to give rise. Some effects may be of little value or no significance for the particular development in question. They will therefore need only very brief treatment to indicate that their possible relevance has been considered.”

3.17 In line with the guidance outlined above, the work undertaken to date, responses to the consultation exercises, SPEN’s expertise and experience in the construction and operation of developments similar to the GGRP, and LUC and the project team’s expertise in undertaking EIA of similar projects, where no likely significant effects have been identified for a particular topic, these have been ‘scoped out’ as detailed below. In addition to the topics that have been scoped out in their entirety, some elements of topics which are assessed in detail have been scoped out of assessment e.g., operational effects on Traffic and Transport. Where applicable, this is explained in the relevant chapters of the EIA Report.

Forestry

3.18 Felling required for the GGRP is illustrated on **Figure 4.6**. This includes the 80m wayleave corridor (40m either side of the route of the 132kV OHL) required to safely construct and maintain the new 132kV OHL, as well as ‘windthrow’⁶ areas outside of the 80m corridor. Information is provided in **Chapter 4** on the felling required to construct and operate the GGRP and the methods which will be used to fell trees and manage timber. This information has been provided by specialist foresters RTS Forestry and has been used to inform the other assessment within the EIA Report where relevant.

3.19 A fundamental approach that has been followed in relation to the location of the GGRP has been to minimise the amount of permanent felling, in line with the Scottish Government’s Policy on Control of Woodland Removal⁷. The Control of Woodland Removal Policy (CoWRP) provides guidance and process for managing forestry removal on development sites. The principle aims of the CoWRP are to provide a strategic framework for appropriate woodland removal and to support climate change mitigation and adaptation.

3.20 Whilst felling for the GGRP has been minimised as far as possible, in line with the CoWRP, there will still be some permanent removal of woodland for the purposes of conversion to another type of land use. In line with the CoWRP, woodland removal with compensatory planting (CP) is mostly likely to be appropriate where it would contribute meaningfully to:

- Helping Scotland mitigate and adapt to climate change;
- Enhancing sustainable economic growth or rural/community development;
- Supporting Scotland as a tourist destination;
- Encouraging recreational activities and public enjoyment of the outdoor environment;
- Reducing natural threats to forests or other land; or
- Increasing the social, economic or environmental quality of Scotland’s woodland cover.

3.21 GGRP would meet the acceptability criteria for woodland removal as the change of land use with CP would contribute significantly to “*helping Scotland to adapt to climate change*” by providing facilities appropriate for the development of renewable energy projects and significantly reduce net greenhouse gas emissions.

3.22 SPEN anticipates that the requirements of the CoWRP would apply in relation to the Glenmuckloch Substation, the 80m wayleave corridor, as well as areas felled for accesses and working areas (i.e. all areas except wind throw areas outside the

wayleave corridor). The CP would be addressed through a condition attached to any section 37 consent for GGRP. SPEN anticipates that this condition would secure the CP of a total of 27.88 ha of forestry, in line with the felling discussed in **Chapter 4: Project Description**. SPEN would adhere to the requirements of the process for obtaining a permission from SF for all CP including seeking a screening opinion from SF on the proposed planting scheme. As such, there would be no net loss of forestry associated with the Glenmuckloch Substation, the wayleave, accesses and working areas.

3.23 In addition to the abovementioned commitment to CP, SPEN also intends to seek the replanting of the temporary access tracks and working areas felled for construction of the GGRP. However, any replanting would be subject to agreement with the landowners, and these replanting proposals are therefore not taken into account in this EIA Report. Any replanting of these areas would be provided over and above the proposed total CP area.

3.24 With landowner agreement, SPEN will seek to replant certain sections of the wayleave corridor and the wayleave corridor edge with low growing shrub species, sources from local seed provenance, which are not deemed to put at risk the ongoing safe operation of the OHL. As replanting these areas requires landowner agreement, this is subject to confirmation following construction and is not considered to form part of committed measures for the purposes of this EIA Report. Within the prescribed 80m wayleave corridor there is the opportunity to manage certain tree species to deliver biodiversity (ecological/ornithological) and/or landscape measures. This would primarily utilise lower growing or shrub tree species which by nature of their growing habit have a low mature height or grow at such a slow speed that their overall height can be controlled by regular site visits and crown reducing. The retention or planting of suitable shrub tree species within the wayleave would be targeted at specific areas where there is deemed to be either; maximum environmental benefit in terms of creating suitable habitat for wildlife, or the planting would provide useful landscape measure by reducing the linear appearance of the OHL. A plan showing typical wayleave treatment is provided as **Appendix 4.3**. While SPEN cannot commit to implementing these proposed measures, these measures would be implemented as far as possible with the agreement of the landowners. In this context, the proposed measures are not considered committed mitigation, and therefore are not taken into account in this EIA Report.

Windthrow outside the Wayleave

3.25 For areas at risk of windthrow which are located outside the 80m wayleave corridor, SPEN has no mechanism to control felling and/or replanting under either Section 37 consent or deemed planning permission. However, SPEN is committed to liaising with landowner to agree that these areas will be felled to mitigate the risk of forest damage through windthrow. The felling of these areas would require the agreement of the relevant land owners and would be delivered in line with a felling permission to be applied for by the forest landowner/manager to Scottish Forestry (SF) on behalf of the Scottish Ministers. It is anticipated that the felling permission would be granted by SF subject to a condition, to ensure that the felled woodland is replanted. In terms of the Forestry and Land Management (Scotland) Act 2018 (“2018 Act”) and associated regulations⁸, in making a decision on any felling application, the Scottish Ministers acting through SF must have regard to their duty under section 2 to promote sustainable forest management. In addition, SF is entitled to impose conditions in relation to the retention of, or increase in, woodland cover. SF normally expect an area which has been clear felled to be restocked and will normally attach what is referred to as a continuing condition to felling permissions to secure the restocking.

3.26 Should the landowner not agree to pre-emptively fell the woodland required to create a more windfirm edge (to mitigate the windthrow effects) and the trees subsequently suffer from windthrow, it is within the control of SF, on behalf of Scottish Ministers, using powers contained in the 2018 Act and associated Felling (Scotland) Regulations 2019 to issue felling and restocking directions. In terms of section 34 of the 2018 Act, if it appears to SF that felling of trees is required to prevent deterioration or further deterioration in the quality of timber comprised in the trees or to improve the growth of other trees or to prevent or reduce harm caused by the presence of the trees, it may serve a felling direction on the owner of the land requiring the felling of the trees. These powers could be exercised to address the effects of windthrow. Felling directions may also be issued subject to conditions addressing the retention of or increase in woodland cover. SF can therefore secure the replanting or restocking of woodland which has been felled.

3.27 In addition and separately, in terms of section 36 of the 2018 Act, SF may serve a restocking direction where felling is not carried out in accordance with a felling permission, a felling direction, a restocking direction, or a continuing condition on felling permission in relation to land has not been complied with.

⁶ In some areas, the felling of forestry wayleave for the GGRP will expose previously sheltered trees to the wind. These trees have previously been part of a larger forest compartment where there was an element of mutual support being provided. By felling the wayleave this support will be removed and a ‘brown forest edge’ will be created, rendering any unstable forest edges facing the prevailing wind susceptible to ‘windthrow effects’, with these trees either falling or failing to reach their full crop potential.

⁷ Forestry Commission Scotland (now Scottish Forestry) document titled ‘The Scottish Government’s Policy on Control of Woodland Removal’ (2009). Available at <https://forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal>.

⁸ The Felling (Scotland) Regulations 2019

3.28 Having regard to the duty imposed upon Scottish Ministers to promote sustainable forest management, the powers available to issue felling directions and the practice of imposing conditions on felling licenses granted under the 2018 Act, the assessment has been undertaken on the basis that any windthrow resulting from the introduction of the OHL wayleave would require the relevant landowner to replant the same area of forest. This is separate from any commercial imperative the landowner may have. Should the landowner agree to fell these same areas prior to windthrow occurring as part of the GGRP then this would require the appropriate felling permission to be in place. As noted above, these permissions would normally include a similar restocking condition which would result in no net loss of forestry outside of the wayleave corridor. As such, there is deemed to be no loss of forestry from the effect of windthrow.

3.29 A detailed assessment of effects on forestry in the context of the EIA Regulations has not been undertaken on the basis that, as detailed above, there will be no net loss of forestry associated with the GGRP. This is on the assumption that CP will be undertaken to replace the woodland lost within the wayleave and at accesses and working areas, and that felling undertaken for windthrow will be replanted, either voluntarily by the affected landowners or under a felling and restocking direction issued by SF under the 2018 Act. The regulatory framework in which SPEN is required to operate is different from, for example, the requirements binding on commercial onshore renewables developers. This is important in the context of SPEN's approach to CP. It is the regulatory framework which has historically prevented SPEN from committing to deliver CP. However, SPEN has found an approach which would allow it to commit to replacement planting and to a no net loss position. As such, whilst initially proposed for assessment in the EIA Scoping Report, potential effects on forestry have been scoped out of detailed consideration in the EIA due to the lack of likely significant effects on the basis that there will be no net loss of forestry as detailed above, and as informed by professional judgement. The effects associated with felling have, however, been considered in the specialist assessments where relevant. Further details on felling required to facilitate construction and operation of the GGRP are provided in **Chapter 4: Development Description**.

Construction and Operational Noise

3.30 The approach to scoping out construction and operational noise was discussed and agreed with Hoare Lea Acoustics, specialists in the assessment of noise and vibration effects with extensive experience of similar projects.

Construction of the new Glenmuckloch substation and 132kV OHL

3.31 The GGRP is located in a predominantly rural area, comprising agricultural land interspersed with areas of commercial woodland and avoids the main settlements of Kirkconnel, Kelloholm and Sanquhar. There are, however, some smaller clusters of farmsteads and individual residential properties within the study area, all of which are located over 150m from any infrastructure associated with the GGRP. The existing baseline noise environment in the more rural sections of the route is likely to be characterised by 'natural' sources such as wind and disturbed vegetation, with some contribution from anthropogenic sound such as distant road traffic and agricultural or forestry activity. Towards the northern Section, the baseline noise environment is likely to be further characterised by sound from anthropogenic sources; several Sections of the GGRP either passes over or lie in close proximity to the A76, as well as crossing over the railway line.

3.32 In assessing the effects of noise associated with the construction of OHLs, it is accepted that the associated works, which are linear in the geographical extent, are of a short duration at any one location. The noise generated by construction activities associated with the new 132 kilovolt (kV) OHL will quickly diminish as the construction progresses, moving the activity away from each noise-sensitive location as construction continues.

3.33 The new Glenmuckloch substation is located over 200m from the nearest property, Lagrae, however this is currently used as an office by Buccleugh Estates, and SPEN has confirmed that, at the time of writing, it is not proposed that this will come back into residential use within the lifetime of the GGRP. Commercial facilities (including offices) are considered to be of low sensitivity to construction noise as determined based on the guidance set out in BS 5228-1⁹. As such, given the temporary nature of construction activities and the low sensitivity of Lagrae, it is considered that no significant effects are likely and a detailed assessment of construction noise on Lagrae has not been undertaken.

3.34 Due to the short term and localised nature of the construction process, any temporary noise created during construction is likely to be minimal and concentrated in small areas at any one time as the contractors' progress along the course of the route. It is therefore considered appropriate to scope out the assessment of noise resulting from the construction of the GGRP on the basis that there will be no significant effects.

3.35 In addition, SPEN is committed to implementing accepted good practice measures for controlling construction noise, which may include the following, as appropriate:

- Restricted hours of construction work to avoid sensitive periods.
- The use of equipment with appropriate noise control measures (e.g., silencers, mufflers and acoustic hoods).
- The positioning of temporary site compounds as far as practicably possible from neighbouring residential properties.
- Additional good practice measures as set out in BS5228:2009.

Operation of the new substation and 132kV OHL

3.36 The new Glenmuckloch substation will not result in the introduction of any noisy plant or equipment (e.g. shunt or super/grid transformer equipment) and, under ideal weather conditions, transmission lines generally do not produce audible noise. However, in wet weather, the presence of protrusions on the conductor surface (such as water droplets) can cause electric fields to propagate in the air (so-called 'corona discharge') which can be a source of noise, albeit at relatively low level. This may occur in wet conditions (fog, snow or mainly rain) or if debris are present on the line. This noise will often include a low hissing and/or crackling character, with the additional presence of a hum (tonal) in heavy rain. The generation of this noise is minimised as part of modern OHL design.

3.37 On this basis, it is considered that there will be no significant noise effects during the operation of the proposed GGRP associated with the new Glenmuckloch Substation or the OHL, and this has been scoped out of detailed assessment as proposed in the EIA Scoping Report.

Air Quality (including Dust)

3.38 Based on professional judgement SPEN and LUC agreed to scope out air quality from detailed assessment in the EIA.

3.39 During construction, the operation of equipment, staff transport, construction vehicles and machinery will result in atmospheric emissions of waste exhaust gases containing NO_x, NO and PM10 pollutants. The quantities emitted will depend on engine type, vehicle age, service history and fuel composition.

3.40 Based on professional judgement it is considered that the number of vehicle movements anticipated to arise from construction and operation from the GGRP would not result in any exceedance of air quality standards either at the site or within the wider area. Furthermore, dust emitting activities generally respond well to appropriate dust control measures such as those outlined in PAN 50: Controlling the Environmental Effects of Surface Mineral Workings¹⁰, and negative effects can greatly be reduced or eliminated. SPEN will commit to adopting measures for dust management during construction, focussing in particular on areas within 200m of residential properties, thereby controlling and reducing any potential effects on the potential receptors identified. These measures will be set out in the Construction Method Statements forming part of the Construction and Environmental Management Plan (CEMP). On this basis, no significant effects are predicted and effects on air quality (including dust) are scoped out of the EIA.

Socio-economics, Recreation and Tourism

3.41 Based on professional judgement SPEN and LUC agreed to scope out potential effects on socio-economics, recreation and tourism from detailed assessment in the EIA.

3.42 Due to the short term and localised nature of the construction process, any temporary disturbance created during construction is likely to be minimal and concentrated in small areas at any one time as contractors progress along the course of the proposed route of the GGRP. Once the GGRP is in place, there will be no further works required unless maintenance works are needed and use of the land can continue as normal, with the exception of the land take along the route. As the construction process requires only a small labour force and is short in duration, this also means it is unlikely that the employment created will affect local employment levels or generate a significant source of income for the area.

3.43 In relation to tourism, no tourist attractions are noted within 5km of the GGRP. The Southern Upland Way (SUW) is situated to the south and east of the GGRP whereby the OHL would be visible in the context of the surrounding wind turbines. The SUW is included as viewpoint 7 in **Chapter 6: Landscape and Visual Amenity**. Furthermore, it is recognised that there are already existing

⁹ Code of practice for noise and vibration control on construction and open sites – Part 1 Noise.

¹⁰ Design Manual for Roads and Bridges (DMRB), Volume 11 Environmental Assessment Techniques, Part 1, HA207/07 Air Quality

OHLs and wind farms within the area which are not considered to have adversely affected tourism within the area. On this basis, potential effects on tourism are not considered likely to be significant.

3.44 In terms of recreation, the GGRP route crosses one Dumfries and Galloway core path (Core Path 84 – Kirkconnel and Mynwhim Hill) and the Burn Heritage Trail (A76). Whilst temporary diversions may be required during construction, construction works at any one location will be short in duration therefore the impact of a diversion would be limited. As noted, above, the SUW is located to the south and east of the GGRP but is over 2km away at its closest point. All recreational paths would be open during operation of the OHL.

3.45 Dumfries and Galloway Council (D&GC) raised no concerns to the GGRP in relation to effects on core path access other than to highlight the presence of Core Path 84. On this basis, effects on socio-economics, tourism and recreation are scoped out from detailed assessment within the EIA.

Climate Change

3.46 Based on professional judgement SPEN and LUC agreed to scope out potential effects on climate change from detailed assessment in the EIA.

3.47 Schedule 4 Part 5(f) of the Regulations requires a consideration of the impact of GGRP on climate and its vulnerability to climate change.

Relevant Climate Change Projections

3.48 In considering future climate change scenarios, Institute of Environmental Management and Assessment (IEMA) guidance¹¹ recommends the use of the UK Climate Projections (UKCP) Website. 'Probabilistic' projections are provided for a range of variables including temperature, precipitation and sea level rise. The probabilistic projections can aid in the characterisation of future extreme weather events and emission scenario uncertainty. Wind speed and storm frequency/intensity are considered separately as global modelling information is currently more limited.

3.49 The UKCP18 projections¹² for temperature and precipitation are presented for the UK as a whole and also on a regional basis. The UK projections consider three variables:

- **Timeframe:** the projections are presented for four overlapping time periods (2020s, 2040s, 2060s and 2080s).
- **Probability:** The projections are provided as probability distributions rather than single values, with figures provided for 5, 10, 50, 90 and 95% probability.
- **Representative Concentration Pathways (RCP):** Four pathways have been adopted; RCP2.6, RCP4.5, RCP6.0 and RCP8.5. These pathways describe different greenhouse gases (GHG) and air pollutant emissions as well as their atmospheric concentrations and land use with each one resulting in a different range of global mean temperature increases over the 21st century. RCP2.6 represents a scenario which aims to keep global warming likely below 2°C compared to pre-industrial temperatures. RCP4.5 and RCP6.0 represent intermediate scenarios while RCP8.5 describes a very high GHG emission scenario. All scenarios are considered to be equally plausible.

3.50 For the purposes of considering implications for the GGRP, projections for the 2080s and RCP6.0 have been considered for the following reasons. It is assumed that the GGRP will have a lifespan of 60-70 years once installation is complete (assumed to be by the end of 2026) therefore the 2080 scenario is considered to be appropriate for the design life of the project. RCP6.0 is selected as a precautionary approach on the basis that it is an intermediate pathway that can be reached without additional efforts to constrain emissions ('baseline scenarios'). This RCP has been used to indicate the temperature, precipitation, wind speed and storms in the Solway River Basin region of Scotland, which encompasses the administrative boundary of Dumfries and Galloway.

3.51 The UKCP18 climate change projections anticipate the following climate changes in the region:

- Mean temperatures within the Solway River Basin are projected to increase by 3.4°C in summer and 2.4°C in winter.
- Mean summer rainfall is projected to decrease by 19% and winter rainfall is anticipated to increase by 15%¹³.

- Changes in wind speeds are not currently available at the regional level, however, across the UK, near surface wind speeds are expected to increase in the second half of the 21st century with winter months experiencing more significant impacts of winds.
- An increase in frequency of winter storms over the UK is expected.

The Potential Impact of Climate Change on the GGRP (Adaptation)

3.52 The construction phase of the GGRP is planned to be completed in 2026. The climate is unlikely to change notably between the submission of the application for Section 37 consent and deemed planning permission and October 2026. For this reason, climate change adaptation during the construction phase has been scoped out of the EIA.

3.53 The vulnerability of the GGRP to climate change during operation will not be significant as a review of SEPA Flood Maps indicates that that pluvial flooding is contained either within watercourses or directly along their banks. No pooling of surface water beneath or adjacent to the proposed 132kV OHL routeing is indicated on the SEPA flood maps. Further detail is provided in **Chapter 7: Hydrology, Geology, Hydrogeology and Peat**. It is also unlikely that the GGRP would have any adverse effect on the ability of receptors to adapt to climate change.

3.54 The materials and structures for the GGRP will be designed to withstand and operate within both the current and projected climate conditions. As such, it is considered that no significant effects are likely to arise in relation to climate change adaptation during operation.

Human Health

3.55 Based on professional judgement SPEN and LUC agreed to scope out potential effects on climate change from detailed assessment in the EIA.

3.56 The EIA Regulations require that potential effects on human health are considered. However, it is not proposed to undertake a separate assessment of potential effects of the GGRP on human health on the basis that noise, air quality (including dust), Electric Magnetic Fields (EMFs) (see below) and socio-economic impacts are being scoped out of the EIA. Furthermore, it is considered that air quality, noise and dust will be adequately mitigated through implementation of good practice construction methods and the consent conditions.

Major Accidents and Disasters

Coal Mining and Minerals

3.57 The approach to scoping out effects associated with coal mining and minerals was discussed and agreed with David R Murray and Associates, specialists in mineral and geotechnical assessments on a range of project types.

3.58 The study area has been subject to historical mining activities, at depth and at the surface, and encroaches into the Coal Authority's defined 'Development High Risk Area' at the northern end next to the new Glenmuckloch substation. To address this, a Coal Mining Risk Assessment (CMRA) has been prepared which considers the possible risks to the GGRP. The risks assessed are from the presence of recorded mine entries, the risks associated with any past or present underground or shallow mining, the potential for any unrecorded shallow mine workings or entries to be present, and whether there have been any records of mine gas emissions in the area. The CMRA is provided as **Appendix 3.2: Coal Mining Risk Assessment**, however as no likely significant effects are predicted which would result in either sterilisation of minerals, or risks from historical mines, this is not assessed in detail for the purposes of the EIA and has been scoped out.

Flood Risk and Peat Slide

3.59 Flood risk and peat slide are considered in **Chapter 7**. No significant effects associated with either flooding or peat slide risk are anticipated to result in a major accident or disaster, therefore this has been scoped out of detailed assessment as agreed with Kaya Consulting and East Point Geo, specialist advisors on hydrology and peat respectively.

¹¹ IEMA (2015) IEMA Environmental Impact Assessment Guide to Climate Change Resilience and Adaption. Available at: [https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20\(1\).pdf](https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20(1).pdf).

¹² Met Office (2018) UK Climate Change Projections

¹³ With respect to the continued validity of UKCP18 projections for summer rainfall (see above), it should be noted that rainfall patterns across the UK are not consistent and will vary dependent on seasonal and regional scales and will continue to vary in the future (Met Office, 2018).

EMF

3.60 EMFs are produced both naturally and as a result of human activity. The earth has both a magnetic field (produced by currents deep inside the molten core of the planet) and an electric field (produced by electrical activity in the atmosphere, such as thunderstorms). Wherever electricity is used, there will also be electric and magnetic fields. This is inherent in the laws of physics. EMFs can be harmful in high levels, but the fields required to, for example, start interfering with the body's nervous system, are substantially greater than those produced by the UK's electricity system.

3.61 As noted in the EIA Scoping Report, consideration has been given to EMF in the context of the GGRP. Information available on the National Grid EMF website confirms that substations such as that proposed as part of the GGRP are within the class of equipment which are regarded as inherently compliant with public exposure limits without the need for case-by-case specific assessments¹⁴.

3.62 The maximum EMFs produced by the proposed 132kV OHL forming part of the GGRP would be less than the relevant public exposure limits. The effects associated with EMFs for the GGRP are therefore not significant and have been scoped out of detailed assessment as part of the EIA.

Aviation

3.63 As noted in **Appendix 3.1**, consultation was undertaken with the following aviation consultees at the EIA Scoping stage:

- Defence Infrastructure Organisation (DIO);
- NATS;
- The Civil Aviation Authority (CAA);
- Glasgow Airport; and
- Prestwick Airport.

3.64 The CAA and Glasgow Airport did not respond, and no issues were raised by either the DIO or NATS. However, Prestwick Airport noted that the route of the GGRP lies within the vicinity of Glasgow Prestwick Airports published Instrument Flight Procedures (IFP's) and recommended that an IFP check be carried out to establish whether the proposed development with have any potential impact. An IFP check was undertaken by Pager Power in December 2021. This confirmed there was no impact on the IFP, however Prestwick Airport subsequently commissioned their own IFP check, with the findings of this review agreeing with those concluded by Pager Power. As such, potential effects on aviation have been scoped out of detailed assessment as part of the EIA.

Consultation

3.65 Stakeholder engagement, including public involvement, is an important component of the Scottish planning and consenting system. While there are no formal pre-application requirements for consultation in respect of applications for Section 37 consent/deemed planning permission, Scottish Government applications guidance for Section 37 applications¹⁵ encourages pre application consultation and engagement. The aim of this is to ensure that the public, local communities, statutory and other consultees and interested parties have an opportunity to have their views considered at the earliest possible stage of the consenting process.

3.66 Striking the right balance can be challenging, and in seeking to achieve this, SPEN recognises the importance of consulting effectively on proposals and of being transparent about the decisions reached. SPEN has engaged with key stakeholders including local communities and others who have had an interest in the GGRP, particularly during the routeing stage of the GGRP and the feedback received has been considered during the detailed design of the final route alignment.

Routeing and Consultation

3.67 SPEN undertook a routeing exercise in 2019 to identify options for routeing a new double circuit steel tower 132kV OHL from the consented Glenmuckloch PSH to the existing Glenglass substation. The objective was to identify a route for the OHL which meets

the technical requirements of the electricity system, which is economically viable and causes, on balance, the least disturbance to the environment and the people who live, work and enjoy recreation within it. Following established best practice for routeing OHLs¹⁶, a number of route options were identified then appraised against technical, economic and environmental considerations before arriving at a 'preferred' route.

3.68 During the routeing stage, SPEN undertook consultation with stakeholders and the public to invite views on the preferred route for the new 132kV OHL and information of any other issues, suggestions or feedback, particularly views on the local area, for example areas used for recreation, local environmental features, and any plans to build along the route.

3.69 The consultation period ran for four weeks from 26th February 2019 to 26th March 2019 prior to which letters were sent to the following groups:

- Statutory and non-statutory consultees including community councils.
- Local residents, landowners and businesses along the route.
- Known local interest and community groups operating in DGC area.
- Elected members of DGC, the Members of Parliament and Members of the Scottish Parliament whose constituencies are within in the DGC area.

3.70 The letters were accompanied by a consultation leaflet providing details of the GGRP, where and how the Routeing and Consultation Report could be viewed and highlighting how representations could be made within the consultation window (either in person, via email or through the dedicated project website¹⁷).

3.71 SPEN also held two public consultation events to provide members of the public with access to more information on the project and the opportunity to speak with members of the project team. The exhibitions were held on 26th and 27th of February 2019 at the following locations:

- Tuesday 26th February 2019 at the Kirkconnel Miners Memorial Hall, Needle Street, Kirkconnel, DG64 6ND; and
- Wednesday 27th February 2019 at the Sanquhar Town Hall, Church Road, Sanquhar, DG64 6DF.

3.72 Venues were chosen to ensure that people near to the route were only a short distance from their nearest exhibition by car or public transport.

3.73 Newspaper adverts were placed in the Dumfries and Galloway Standard and the Dumfries Courier on the 12th and 19th February 2019 and 15th and 22nd February respectively, advertising the commencement of the consultation period and the public exhibitions.

3.74 Following the feedback received during consultation, SPEN published a response¹⁸ to the key issues raised by stakeholders on its consultation website. The document confirmed that feedback had been taken into consideration in identifying the 'proposed route' for progressing to EIA Scoping and identified the next steps for the GGRP.

Consultation Update 2021

3.75 In November 2021 a consultation event was undertaken to provide an update on the GGRP, detailing the changes that had been made to the project in the intervening period since Scoping was undertaken for the EIA in December 2019, and to provide an update on the environmental surveys and the updated GGRP design. The consultation was held virtually due to uncertainty around the Covid-19 pandemic. It ran from Monday 22nd November 2021 and was available to view until Sunday 19th December 2021. After this point, the information remained online and available to download, with the closing date for consultation responses set for midnight on Sunday 16th January 2022.

3.76 An online feedback form requested views on:

- The proposed route alignment for the new 132kV OHL between the proposed location of the new Glenmuckloch substation and the existing Glenglass substation.

¹⁴ <https://www.emfs.info/compliance/public/>

¹⁵ The consultation has been undertaken in accordance with the "minimum expectation" in terms of pre-application consultation as set out in Table 1 of Good Practice Guidance for Applications under Section 36 and 37 of the Electricity Act 1989 (updated July 2022) (available at <https://www.gov.scot/publications/good-practice-guidance-applications-under-Sections-36-37-electricity-act-1989/>). The exception to this is that a pre-

application report (PAC report) has not been prepared. This is on the basis that the information which would be provided within a PAC report is set out both within the EIA Report, and in the GGRP Summary of Feedback from Consultation Report (November 2022).

¹⁶ Major Infrastructure Projects: Approach to Routeing and Environmental Impact Assessment, SPEN 2015

¹⁷ https://www.spenergynetworks.co.uk/pages/erskine_devol_moor.aspx

¹⁸ The Glenmuckloch 132kV and 33kV Connections Project: Summary of Feedback from First Round of Consultation (November 2019)

- The proposed location of the new Glenmuckloch substation.
- Any other issues, suggestions or feedback for SPEN.

3.77 As part of the virtual public exhibition experience, two live chat sessions were held during the consultation period, on Tuesday 23rd November from 2-4pm and Wednesday 24th November from 5-7pm. Members of the public were also invited to contact SPEN by email, telephone and post. Email announcements were sent to all consultees notifying them of the consultation, and leaflets were distributed to nearby properties. Posters were also put up in several local shops and adverts were placed in the Dumfries and Galloway Standard on the 9th and 16th November 2021 and the Dumfries Courier on the 12th and 19th November 2021.

3.78 Following the feedback received during consultation, SPEN published a response to the key issues raised by stakeholders on its consultation website in the GGRP Summary of Feedback from Consultation Report (August 2022). The document confirmed that feedback had been taken into consideration in finalising the design for the GGRP.

Landowners

3.79 Before formal consultation commenced on the GGRP in February 2019, and when the preferred route had been identified, SPEN identified all landowners who own land within the route. Owners were identified via a title search at the Land Registry.

3.80 SPEN made contact with these landowners (and occupiers) to make them aware of the proposal and of the potential for the proposal to directly affect land owned and occupied by them. SPEN encouraged individual landowners and occupiers to attend one of the public exhibitions to discuss the proposal with SPEN staff and, in addition, offered individual face-to-face meetings with each of them.

3.81 Following the consultation period and during the detailed design stage of the GGRP, SPEN has continued to hold individual meetings with landowners, occupiers and their representatives to gather feedback on the OHL design. For reasons of privacy and commercial confidentiality, the details of these meetings and discussions are not included in this EIA Report. However, SPEN has sought to address the concerns raised and suggestions received where reasonable and where other technical, environmental and economic considerations allow.

Baseline Conditions

3.82 EIA requires that work is carried out within the GGRP area to determine and describe the environmental conditions against which future changes (including those which may take place independently of the development) can be measured or predicted and assessed. These conditions are referred to as the 'baseline' and are usually established through a combination of desk-based research, site survey, and empirical studies and projections. Together, these describe the current and future character of the GGRP area and surroundings, and the value and vulnerability of key environmental resources and receptors.

3.83 Making predictions about how parameters such as land use, landscape, views and other environmental characteristics may change in the future relies on assumptions about future development and environmental trends. For this reason, where other development is not proposed in the vicinity of the GGRP area, the baseline adopted for the EIA is normally taken as the current character and condition of the area and surrounds, and the likely significant environmental effects of the GGRP are then assessed in the context of the current conditions alone.

3.84 Baseline conditions for each topic have been given for, and the means by which these have been established are set out in **Chapters 6 to 11** of this EIA Report.

Future Baseline in the Absence of the Glenmuckloch to Glenglass Reinforcement Project

3.85 As natural processes e.g., climate change and/or human activities can affect the baseline ('status quo'), it is important to establish future baseline scenario in the absence of the GGRP, i.e., the likely environmental conditions that would exist in the absence of the particular development under construction. Establishing the future baseline scenario requires transparent decision making as to what natural process changes and/or changes as a result of human activity should be included or excluded from the future baseline scenario.

3.86 Consideration of the future baseline scenario which acknowledges the absence of the new 132kV OHL, including projected climate change, is described in **Chapters 6 to 11** of this EIA Report

Identification and Assessment of Effects

Significant Effects

3.87 The identification of the significance of effects (whether positive or negative) arising from a development is a key stage in the EIA process. This judgement is vital in informing the decision-making process.

3.88 As the identification of significant effects will differ depending on the context and the receptors affected by the GGRP, there is no general definition of what constitutes significance. In EIA, the term significance reflects both its literal meaning of 'importance' and its statistical meaning where there is an element of quantification. This combination of judgemental/subjective and quantifiable/objective tests has become the standard approach to understanding and applying the test of 'significance'.

3.89 Each topic area chapter contains a Section that identifies the likely significant effects on the environment that may arise as a result of the construction and operation of the GGRP. The significance of environmental effects is typically assessed by considering both the character of the change (i.e., the magnitude and duration of the effect) and the value/sensitivity of the environmental resource that experiences this effect (i.e., the receptor).

3.90 Effects may be direct, indirect, secondary or cumulative. Within these categories, they may also be short, medium or long-term, permanent or temporary, beneficial or adverse. Direct (or primary) effects are changes to the baseline arising directly from activities that form part of the GGRP, for example, effects associated with felling of the wayleave to accommodate the new 132kV OHL. Indirect (or secondary) effects are those that arise as a result of a direct effect, for example effects associated with areas of windthrow following felling of the wayleave.

3.91 Specific significance criteria have been defined for the majority of topic areas, and these are detailed in the topic chapters. As the specialists undertaking each element of the assessment have defined these criteria based on guidance/professional judgement, there is some variation. However, each of the sets of criteria is based on the following aspects:

- Type of effect (adverse/beneficial).
- Extent and magnitude of effect.
- The likelihood of the effect occurring, based on a scale of certain, likely or unlikely.
- Nature of effect: reversible, irreversible, long term, short term.
- Value and/or sensitivity of receptor based on a scale of high, medium and low and in some instances negligible.
- Consideration of legal requirements, policies and standards.
- Consideration of relevant environmental thresholds.

3.92 Using the criteria in each chapter, the significance of the effects arising from the has been categorised, where possible and unless otherwise stated within the chapter, as follows:

- **major**;
- **moderate**;
- **minor**; or
- **none**.

3.93 Unless stated otherwise in methodologies set out in the individual assessment chapters, effects of 'major' or 'moderate' significance are considered to be 'significant' in the context of the EIA Regulations.

3.94 Whilst each topic assessment has assessed the effects of the GGRP as shown in **Figure 4.1**, it has been necessary to also consider the way in which an Infrastructure Location Allowance (ILA) 50m either side of the OHL (including towers and access tracks¹⁹) may change the significance of effects predicted, and this has been considered in the topic assessments within **Chapters 6 to 11**.

¹⁹ The ILA does not apply to the new Glenmuckloch substation.

3.95 Each chapter concludes with a summary of the likely significant effects identified in the assessment. Where no significant effects are likely, a simple statement to this effect is given.

Interrelationships between Effects

3.96 Although the EIA Report is structured in standalone topic specific chapters, many of the considerations are interrelated, such as ecology and hydrology. As such, the interrelationship between potential effects between two topic areas is also considered in accordance with the EIA Regulations and addressed in **Chapters 6 to 11**.

Assessing Cumulative Effects

3.97 Schedule 4 of the EIA Regulations state that types of effect identified “should cover direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects.”

3.98 Both ‘inter-project’ and ‘intra-project’ cumulative effects have been considered, as described in PAN 1/2013: “Cumulative effects arising from different elements of a project on environmental receptors (intra-project effects) and from projects combined with other activities (inter-project) impacts are commonly identified.”

3.99 Likely ‘inter’ cumulative effects have been defined as the effects that the GGRP may have in combination with other developments which are at application stage, consented, under construction or operational (i.e., the incremental effects resulting from the addition of GGRP if all other developments are assumed to be in the baseline

3.100 Likely ‘intra-project’ cumulative effects have been defined as individual effects which may combine to have a total effect on an individual receptor. These effects have been considered under the ‘interrelationship between effects’ heading in each topic chapter.

3.101 The locations of the developments considered as part of the cumulative assessment for the GGRP are shown on **Figure 6.7**. Details of the rationale for the cumulative developments are included in the assessments within each technical chapter.

3.102 The cut-off date for cumulative data collection as agreed in consultation with D&GC and NatureScot was 2nd September 2022. Changes to the cumulative baseline have not been included after this cut-off date to allow time for the assessment to be prepared.

Mitigation and Monitoring

3.103 The EIA Regulations state that an EIA Report should include “a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis)”. These measures have been termed ‘mitigation’ measures for the purposes of the EIA Report.

3.104 The main strategy for minimising adverse environmental effects of the GGRP has been avoidance through careful routeing. While some environmental effects can be avoided through careful routeing, other effects are best mitigated through local deviations of the route, the refining of tower locations and appropriate construction practices. Additionally, in certain cases, specific additional mitigation measures are required.

3.105 While mitigation has been embedded through the design process for a range of assessment topics, specific additional mitigation measures (‘additional mitigation’) are also proposed to prevent, reduce and offset likely adverse effects which could not be avoided through design. These additional mitigation measures have been identified through the EIA process. As an example, the monitoring of private water supplies (PWS) before and during construction, the confirmation of location of PWS pipework and the provision of alternative water supplies if required have been identified as forms of additional mitigation. Each assessment chapter recognises:

- Embedded mitigation: items that are embedded through the design of the GGRP are described in the topic chapters, and these will be delivered during the construction process; and
- Additional mitigation: items that are further required to mitigate the likely adverse effects of the GGRP and which will be implemented to avoid, reduce or offset these effects identified in relation to particular topics.

3.106 The assessments presented in **Chapters 6 to 11** of the EIA Report have been undertaken on the basis that the embedded mitigation forms an integral part of the GGRP. The best practice/industry standard measures which form the embedded mitigation to be implemented during the construction process across all topic areas are, by their nature, ones which are well understood, and for which there is a high degree of confidence as to their effectiveness. In other words, it is highly likely that these measures would be

successful. The specialist topic chapters detail the additional mitigation identified during the assessment process to address localised site/issue specific likely adverse effects.

3.107 By making a distinction between embedded mitigation and additional mitigation and by assuming that embedded mitigation is an integral part of the GGRP and will be effective, and then making a professional judgement on the likely effectiveness of the additional mitigation measures proposed, the remaining likely effects are then documented within this EIA Report as ‘residual effects’. This is considered to be a robust, proportionate and realistic approach to assessment, which allows consultees and the public to understand the likely significant effects arising from the GGRP.

3.108 For reference, all embedded and additional mitigation measures are set out on a topic-by-topic basis in **Appendix 3.3: Schedule of Mitigation**.

3.109 Each assessment chapter also sets out details of any post-consent monitoring which is proposed for the GGRP. These measures are also summarised in **Appendix 3.3**.

Data Gaps and Uncertainty in Assessment

3.110 Paragraph 6 of Schedule 4 of the Regulations requires that EIA Reports provide “details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved”.

3.111 Whilst any assessment limitations are discussed in **Chapters 6 to 11**, it is considered that this EIA Report contains adequate information to enable the Scottish Ministers to form a reasoned conclusion on the significant effects of the GGRP on the environment.