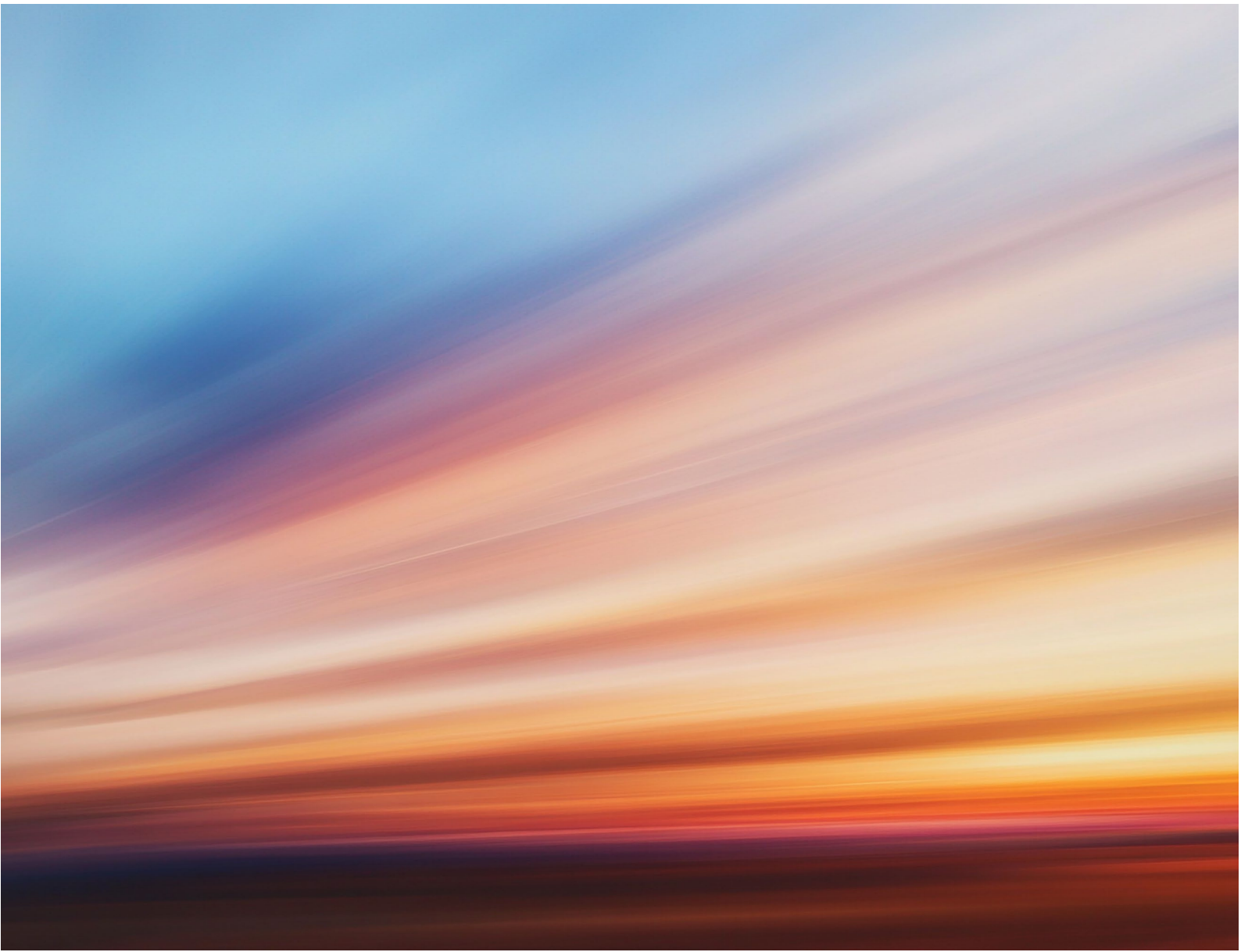
Statkraft

Appin Wind Farm

Grid Connection Appraisal

July 2026



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1. Introduction

1.1 Appin Wind Farm Project Background

1.1.1 The proposed Appin Wind Farm (hereafter referred to as 'the Proposed Development') comprises up to nine turbines and associated infrastructure, located approximately 6.2 km north of Moniaive and 14.8 km east of Carsphairn, and lies within the Dumfries and Galloway Council (DGC) administrative area. The wind farm will consist of turbines with maximum blade tip heights of up to 200 m.

1.1.2 The application for consent for the Proposed Development was submitted by Appin Wind Farm Limited (hereafter referred to as 'the Applicant') to the Scottish Government's Energy Consents Unit (ECU) in May 2025 and was accompanied by an Environmental Impact Assessment Report (the 'EIA Report').

1.1.3 As detailed in the EIA Report, the Proposed Development is expected to connect to the national electricity network (the 'grid') at the existing Glenglass Substation via the proposed Rowancraig Collector, both located south-west of Sanquhar, approximately 8 km and 10.3 km respectively to the north-east of the closest turbine of the Proposed Development. ScottishPower Transmission (SPT) will be responsible for seeking the necessary planning or other consents required for the grid connection.

1.1.4 In April 2026, the ECU requested further information from the Applicant in respect of the Wull Muir Wind Farm judicial review judgment[1] as it related to the Proposed Development, including in relation to the potential for significant effects associated with the grid connection. This document seeks to address this request and consider the potential for likely significant environmental effects to arise as a result of the grid connection alone and in combination with the Proposed Development (hereafter the 'combined projects'), as far as possible given the information currently available.

1.2 Grid Reform

Introduction

1.2.1 The National Energy Systems Operator (NESO) is in the process of overhauling the way new energy projects connect to the electricity grid to identify a refined queue of viable projects that would facilitate in achieving the UK Government's Clean Power 2030 ambitions and eliminate all stalled projects (i.e. projects that are currently taking up grid capacity that will not progress and are blocking viable projects from progressing). This is an important change, replacing the 'first-come first-served' grid connection processes with a 'first ready, first needed and connected' approach. This will facilitate the ability of the Transmission Operators (TOs) and NESO to plan and develop the transmission network that is vital for Clean Power and Net Zero targets amid growing demands.

1.2.2 Through the grid reform process, the TOs and NESO are restudying and optimising how the projects that remain in the refined queue will connect to the transmission network. As a result, the points of connection, and the grid route, for many projects are subject to change until such time as formal grid offers are issued. At this stage, it is anticipated that the Proposed Development will connect into the existing Glenglass Substation via the Rowancraig Collector as noted above and as detailed in the EIA Report. However, there remains a degree of uncertainty in how the Proposed Development would connect to the electricity grid as a result of the grid reform process.

1.2.3 As part of the reformed connections process, projects are assessed and assigned a status (Gate 1 or Gate 2) based on their readiness and strategic alignment with the UK's energy goals as defined in the Clean Power 2030 Action Plan.

- Gate 2 applies to projects that meet the new requirements for readiness and strategic alignment. These projects can secure a confirmed connection date, connection point, and queue position.
- Gate 1 applies to projects that do not meet the Gate 2 criteria. Gate 1 projects will not be assigned a confirmed connection date but may progress through future windows if readiness is demonstrated.

Appin Wind Farm Grid Reform Gate Status

1.2.4 As of April 2026 the Proposed Development has a signed Gate 1 Offer with Protection 3b status. Therefore, if consented, it will be required to re-apply during the next gated application window. However, due to its 3b status it is guaranteed to receive a grid connection if there is still capacity available. At the time of writing the dates of the gated windows have not been made public.

[1] *Raeshaw Farms Limited v Scottish Ministers* [2026] CSIH 10 (2026csih10-raeshaw-farms-limited-against-scottish-ministers-and-another.pdf). The planning permission for the proposed Wull Muir Wind Farm was overturned as it was found that the EIA failed to carry out the required fact-specific evaluation of whether the wind farm and grid connection formed a single project.

1.3 Document Purpose

1.3.1 This document provides a proportionate Environmental Appraisal of an indicative grid connection route between the Proposed Development and the existing Glenglass Substation via the proposed Rowancraig Collector based on the information currently known, informed by available desk-based data. It should be noted that the Applicant is not seeking consent for this indicative grid route, as it will be subject to a separate application for the necessary planning or other consent, environmental survey and assessment as appropriate, by SPT.

1.3.2 The grid connection route has been identified on the basis of professional judgement, having regard to the locations of connection points within a reasonable distance of the wind farm and with appropriate capacity, and considering SPEN's Approach to Routeing and Environmental Impact Assessment (2020)[2]. It is also based on knowledge of the industry-standard approach to routing, and construction methodologies. At this stage, given the known constraints between the Proposed Development and the potential grid connection point at Glenglass, via Rowancraig, it is expected that this would be comprised entirely of underground cable (UGC) as detailed further below. However, the route and method of connection is subject to separate review, survey and assessment by SPT, as noted above.

1.3.3 For the avoidance of doubt, the Applicant is not seeking consent for this indicative grid connection route as part of the Proposed Development application; rather, this will be subject to its own separate routeing process, application for necessary planning or other consent, and environmental survey and assessment as appropriate, by SPT in due course.

1.4 Document Structure

1.4.1 Following this introduction, the document is structured as follows:

- **Chapter 2** provides an overview of the current status of the grid connection, of the indicative grid connection route and an indicative development description.
- **Chapter 3** provides the environmental appraisal methodology.
- **Chapters 4 to 9** outline the findings of the environmental appraisal in relation to: landscape and visual amenity; ecology and ornithology; cultural heritage; hydrology, hydrogeology and peat; traffic and transport; and noise and vibration.
- **Chapter 10** provides a brief overview of likely cumulative effects of the grid connection with other projects.
- **Chapter 11** provides a report summary.

1.5 Reading Guide

1.5.1 This Environmental Appraisal should be read in conjunction with the following document:

- Appin Wind Farm EIA Report (May 2025).

1.5.2 In Addition to the Environmental Appraisal, an addendum to the Planning Statement submitted with the application (dated May 2025) has also been prepared alongside this report.

1.5.3 The Addendum Planning Statement has been prepared to take into account of this new environmental assessment information and the implications of the grid connection being subject to a separate application process. Its purpose is to review whether the likely environmental effects associated with the indicative grid connection alter the overall planning balance for the Proposed Development and to demonstrate that the planning balance has been updated in response to the issues raised by the *Raeshaw Farms Limited v Scottish Ministers and Energiekontor UK Ltd* [2026] CSIH 10 judgment.

1.6 Terminology

1.6.1 Throughout this appraisal, the following terminology is used:

- Indicative grid connection route: potential grid connection that has been identified, and which is assessed within this document.
- Proposed Development: Appin Wind Farm as detailed and assessed in the Appin Wind Farm EIA Report (May 2025).

[2] https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Approach_to_Routeing_Document_2nd_version.pdf

- Transmission Operator (TO): ScottishPower Transmission (SPT) (SPT, part of ScottishPower Energy Networks [SPEN] is responsible for the delivery of the high-voltage electricity transmission network in central and southern Scotland).
- Combined Projects: the Proposed Development (i.e. Appin Wind Farm as assessed in the Appin Wind Farm EIA) together with the indicative grid connection route.
- UGC: Underground Cable.
- HDD: Horizontal Directional Drilling.

2. Indicative Grid Connection Route

2.1 Overview of Indicative Grid Connection

2.1.1 As discussed in **Chapter 1**, the Applicant is not responsible for designing, consenting, building or operating the grid connection. For the purposes of this report a grid connection which connects to the proposed Glenglass Substation via the Rowancraig Collector has been assumed as detailed in the Appin Wind Farm EIA Report.

2.1.2 The indicative grid connection route was identified by utilising a Geographical Information Systems (GIS) analytical tool, which incorporated publicly available datasets to identify areas of lesser constraint through which a potential grid route could be located. Due to the proximity of a number of operational and consented wind farms in the area, it is anticipated that the entire length of the grid connection (approximately 25 km) would be undergrounded due to the requirement to maintain a separation distance between OHLs and operational wind turbines for health and safety reasons. The existing and consented wind farm developments located to the north of the Proposed Development include:

- Whiteside Hill wind farm (operational; approximate 5.5 km to the north of the Proposed Development);
- Cloud Hill Wind Farm (consented; located to the east of Whiteside Hill Wind Farm, approximately 5.9 km to the north of the Proposed Development);
- Sanquhar II Wind Farm (under construction; approximately 0.9 km to the north of the Proposed Development);
- Euchanhead Wind Farm (application; located directly adjacent to the north of the Proposed Development).
- Lorg Wind Farm (application; located approximately 0.5 km west of the Proposed Development).

2.1.3 With respect to the installation of UGCs, SPEN's Approach to Routeing and Environmental Impact Assessment (2020)[2] sets out SPT's established methodology for route selection, including the appraisal of alternatives, consideration of undergrounding, and the approach to EIA (if required). The document acknowledges that, whilst there is no established guidance for the routeing of underground cables, this process is based on the premise that the most significant effects associated with underground cables are likely to result from the level of ground disturbance required for the construction of cable trenches and associated works. Where possible, cables will be routed to follow existing linear features that have already created disturbance such as roads or existing overhead line corridors. Cable construction may lead to vegetation changes which are visible when viewed from above, with this likely to be least visible in flat arable land, more visible in improved or semi- improved grassland used for grazing and most visible in upland semi-natural or natural ground cover. The best way to reduce or mitigate these effects is through careful route selection and successful habitat reinstatement. In addition, well routed cables take into account other environmental and technical considerations and seek to avoid, where possible, areas of irreplaceable habitats which are difficult to reinstate.

2.1.4 The SPEN document outlines a number of factors for consideration in routeing a UGC:

- safety and reliability;
- ease of access for construction and long-term maintenance;
- the likely impact on the local environment during construction and ability to mitigate this;
- disruption to third parties during construction and ability to mitigate this;
- ground conditions, including risk of contamination and also ground stability;
- the need to cross wet areas that are difficult to reinstate; and
- ground suitability and elevational alignment.

2.1.5 Informed by the above principles, the indicative grid route took account of the following constraints:

- Landscape and Visual Amenity: identification of the indicative grid connection route avoids the Thornhill Uplands Regional Scenic Area (RSA), sensitive visual receptors at Colt Hill Striding Arch and steeper slopes, and follows existing forestry tracks and wind farm tracks as far as practicable to reduce the extent of local landscape change, including minimising forestry loss.
- Hydrology, Hydrogeology, Geology and Peat: reducing the number of watercourse crossings wherever possible and avoidance of Class 1 and Class 2 peat was a key consideration.
- Cultural Heritage: although there are no designated heritage assets within the vicinity of the indicative grid connection route, there are known non-designated heritage assets within the landscape which have been avoided.

2.1.6 As noted above, where possible, the route of the indicative grid connection has sought to follow existing linear features, such as tracks. The route of the indicative grid connection is shown on **Figure 1a** and **Figure 1b**. The route identified initially follows the proposed access tracks within the Proposed Development in a north-western direction. To the west of Colt Hill, the indicative grid connection route leaves the Proposed Development continuing along existing forestry tracks in a general northerly direction. The grid connection then travels north-west along the edge of an area of coniferous forestry before connecting to the proposed tracks associated with the consented Sanquhar II Wind Farm which is under construction. The indicative grid connection route follows the Sanquhar II Wind Farm tracks, continuing across the Scaur Water and Southern Upland Way (SUW). To the west of Polgown, the indicative grid route exits the consented Sanquar II Wind Farm tracks and traverses steep ground before connecting with the existing tracks associated with the operational Whiteside Hill Wind Farm. The route continues along the existing access tracks of Whiteside Hill Wind Farm in a north-easterly direction, crossing the Euchan Water, before travelling in a north-eastern direction along the existing road to connect into the proposed Rowancraig Collector. The route then traverses back in a south-western direction to connect into the existing Glenglass Substation.

2.2 Typical Underground Cable Infrastructure

2.2.1 Typically, a UGC would be accommodated in a trench approximately 1.25 m deep and 1 m wide, although the trench may be wider where stability and safety concerns would arise. As is typical with an underground cable installation, it can be assumed that cable ducts would be installed progressively. Sections of cable will be joined together at cable jointing pits, with the location of these dictated by a number of factors including cable size/length and ongoing access requirements. Manhole covers above jointing pits will enable access just below the surface for routine maintenance. The cable will be marked on services maps provided to utility companies and will be installed with marker tape to warn of its presence below the ground.

2.2.2 Typically, construction of UCG progresses at a rate of approximately 160 m to 320 m per week, but this can vary depending on ground and weather conditions.

2.2.3 The indicative grid connection route may require the use of HDD where the route intersects with the Euchan Water which is 10 m wide at the proposed point of crossing.

2.3 Operation and Maintenance of the Grid Connection

2.3.1 It is expected that the UGC would be in-place for the operational life of the Proposed Development i.e. 35 years. Annual maintenance checks on foot are commonly required for underground cables, once operational. At the end of its operational life, the UGC could either be left in situ or removed carefully by opening up the ground.

3. Environmental Appraisal Methodology

3.1.1 As identified above, the identified connection point and grid corridor may be subject to change following both the outcome of grid reform and SPT's design, survey and assessment processes, however, an appraisal has been undertaken of the indicative grid connection route as shown on Figure 1b as described in Chapter 2. As noted above, the indicative grid route will be subject to a separate application for consent by SPT.

3.1.2 The potential environmental impacts assessed in the EIA Report which are considered may also arise from the grid connection include:

- Landscape and visual amenity;
- Ecology and ornithology;
- Cultural heritage;
- Geology, hydrology and peat;

- Traffic and transport; and
- Noise.

3.1.3 Impacts from shadow flicker, and upon aviation and telecommunications infrastructure, will not be caused by the grid connection and therefore these issues are scoped out of further consideration within this document.

3.1.4 The effects of felling and replanting were assessed within the relevant topic chapters of the EIA Report, with details on felling required to facilitate construction set out in a supporting Technical Appendix[3]. Given the route of the indicative grid connection follows existing tracks where it is located in forestry, any felling / replanting required is likely to be very limited. However, in the event that felling may be necessary, commentary on this is provided where this may be relevant for the topics considered below. This is likely to require further consideration by SPT, noting that the indicative grid connection route identified intersects forested areas within the Proposed Development site boundary for 4.5 km immediately after exiting the site. The indicative grid connection route also intersects with a further small area of forestry at the end of the route as it connects into the proposed Glenglass Substation.

3.1.5 The most effective way to avoid or reduce environmental effects of any grid connection is through careful routeing and design. The indicative grid connection route has undergone a preliminary routing and design process using desktop data ,and no field surveys have been undertaken, therefore all judgements set out below are necessarily preliminary. However, it is considered likely that any potential likely significant environmental effects will be avoided where possible through a careful routeing and design process to be undertaken by SPT, on the basis that the principles outlined in the Approach to Routeing and Environmental Impact Assessment are followed.

3.1.6 This Environmental Appraisal has been prepared by the team that undertook the original EIA for the Proposed Development and is therefore familiar with the site and wider area. It has been informed by professional judgement and experience of undertaking EIA for grid connection projects across Scotland. The appraisal has been designed to be proportionate, is based on the information available and seeks to assess the potential for likely significant effects for identified environmental receptors. It identifies the key constraints and receptors for each topic, and a judgement is made on whether significant effects are likely to arise from the introduction of the grid connection in isolation or in-combination with the Proposed Development. This appraisal identifies whether an effect is likely to be significant or not, however, it does not identify the level of significance (i.e. major, moderate, minor or negligible).

3.1.7 The appraisal is based on the following assumptions/limitations:

- As noted above, no detailed environmental surveys (including habitats, protected species, birds, peat, hydrology or cultural heritage) have been undertaken to inform the appraisal. These will be undertaken to inform the detailed routeing and assessment of the grid connection for which the relevant permission will be sought by SPT, and which will evolve from the indicative grid connection route identified in this report as design development progresses.
- The appraisal has only drawn upon the publicly available constraints information shown in Figures 1a and 1b, the findings of relevant assessments within the Appin Wind Farm EIA Report and professional judgement and experience of likely significant effects of similar grid connection projects.
- The grid connection will be constructed in full compliance with regulatory requirements and in consultation with SEPA, DGC and other consultees as appropriate. Well-established good practice will also be adhered to, including (but not limited to):
  - Forestry Commission (2017) Forests and Water. UK Forestry Standard Guidelines[4];
  - Environmental Authorisations (Scotland) Regulations[5]; and
  - A range of Pollution Prevention Guidelines (PPGs) in place at the time and their replacement series, Guidance for Pollution Prevention (GPPs) published by the Scottish Environment Protection Agency (SEPA)[6].

[3] EIA Report Appendix 4.2: Forestry
[4] Forest Research (2017) UK Forestry Standard (UKFS). Available [online] at: https://www.forestry.gov.scot/sites/default/files/pub-documents/PDF_UKFS_UK_Forestry_Standard_4th_Edition_2017.pdf
[5] Including permits, registrations, notifications and General Binding Rules for activities authorised under the Environmental Authorisations (Scotland) Regulations. Information available [online] at: https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/
[6] SEPA (various dates) GPPs and PPGs. Available [online] at: https://www.netregs.org.uk/environmental-topics/guidance-forpollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/

4. Landscape and Visual Amenity

4.1 Baseline

4.1.1 As shown in Figure 1a, the indicative grid connection (from south to north) passes through the following Landscape Character Types (LCT):

- Southern Uplands with Forest – Dumfries and Galloway LCT (178) – which is characterised by a predominantly simple landform of large smooth dome-shaped hills and forested areas with Sitka Spruce.
- Southern Uplands – Dumfries and Galloway LCT (177) – which is characterised by open and exposed smooth grass-covered dome/conical shaped hills, and distinctive dark brown/purple coloured heather on higher areas.

4.1.2 The indicative grid connection does not pass through any national or local landscape designations. The Thornhill Uplands RSA, a local level landscape designation in Dumfries and Galloway, is located approximately 750 m to the east of the start of the route.

4.1.3 Visual receptors in the vicinity include users of the SUW (which is also a Core Path) which is crossed by the indicative grid connection at three locations, and visitors to the Colt Hill Striding Arch. The indicative grid connection also runs parallel to the Benbuie to Troston Hill core path between Colt Hill and Allan's Cairn.

4.1.4 At its northern end between Glenglass Substation and Rowancraig Collector the indicative grid connection passes adjacent to three properties located in the vicinity of the Euchan Water, east of Glenglass Substation and within 500m of Glenmaddie and Euchan Cottage to the east.

4.1.5 As noted above, existing energy infrastructure in the vicinity of the indicative grid connection includes the operational wind farms of Whiteside Hill Wind Farm and Sanquhar Community Wind Farm either side of the Euchan Water valley, and the under construction Sanquhar II Wind Farm located to the east and west of the indicative gird connection. The route passes through the proposed Euchanhead Wind Farm and to the east of the consented Lorg Wind Farm to the north of Colt Hill. The consented Cloud Hill Wind Farm is located immediately to the east of Whiteside Hill Wind Farm. Glenglass Substation is located in the Euchan Water valley at the northern end of the route, as well as existing overhead lines which connect into the substation.

4.2 Appraisal of Potential Significant Effects from the Grid Routes

Landscape Effects

4.2.1 The indicative grid connection would comprise entirely of UGC, largely following existing forestry tracks, wind farm tracks, and an access track to Glenglass Substation.

4.2.2 There would be temporary disturbance to the landscape during construction of the indicative grid connection. Given the limited footprint of construction works associated with an UGC and the temporary nature of construction effects, the scale of landscape change and the geographical extent of landscape change within the host LCTs would be small, experienced for a short duration of time (short-term). Overall, the construction of the indicative grid connection would result in a low magnitude of landscape change. Therefore, significant landscape effects during construction are considered unlikely to arise.

4.2.3 Once the indicative grid connection is operational, the affected land would be restored and would not be a discernible feature in the landscape. Therefore, significant effects on landscape character during operation are not anticipated.

4.2.4 There would be no direct effects on the Thornhills Uplands RSA during construction of the indicative grid connection. Outward views of construction activities from within the western edge of the RSA would be limited to long distance views from intermittent areas of elevated terrain, generally seen beyond or in the context of operational wind turbines, including Sanquhar II Wind Farm and Whiteside Hill Wind Farm. Once the indicative grid connection is operational, the affected would be restored and would not be a discernible feature in outward views from the RSA. Therefore, significant effects on the special qualities or integrity of the Thornhill Uplands RSA during construction and operation are not anticipated.

Visual Effects

4.2.5 In terms of visual amenity, there would be temporary visual effects during construction of the UGC including the preparation and use of temporary working areas; the delivery and installation of underground cabling, and the movement of associated construction vehicles. Temporary visual effects during construction would generally be limited to visual receptors in closer proximity where construction activities would be more clearly perceptible, including users of the Benbuie to Troston Hill core path and SUW between Colt Hill and Allan's Cairn, the SUW east of Dalgonar (where the indicative grid connection

crosses the Scaur Water valley), and three properties located in the vicinity of the Euchan Water, east of Glenglass Substation. Given the limited footprint of construction works associated with UGC and the temporary nature of construction effects, the scale of visual change and geographical extent of visual change would be small and experienced for a short duration of time (short-term). Overall, construction of the indicative grid connection would result in a low magnitude of visual change. Therefore, significant visual effects during construction are considered unlikely to arise.

4.2.6 Once operational, the indicative grid connection route would be restored and would not be a discernible feature in views. Therefore, significant effects on visual amenity during operation are not anticipated.

4.2.7 The likely landscape and visual effects associated with construction and operation of the indicative grid connection would be confirmed through field survey, consultation, mapping and visualisations to inform an anticipated future planning or relevant consent application to be undertaken by SPT.

4.3 Appraisal of Potential Significant In-Combination Effects

4.3.1 Given the undergrounding of the grid connection, and the proposed restoration works, it is considered unlikely that the indicative grid connection would give rise to significant landscape and visual effects during either construction or operation.

4.3.2 The Appin Wind Farm EIA Report concluded that there would be significant residual operational effects on the Site, the landscape character of the Southern Uplands with Forest – Dumfries and Galloway LCT (178), and on views and visual amenity from several representative viewpoints and recreational routes within the immediate vicinity of the Proposed Development.

4.3.3 Whilst there is potential for construction activities associated with both the Proposed Development and the indicative grid connection route to overlap, it is not considered that any related in-combination landscape and visual effects of the Proposed Development and the indicative grid connection route would have a greater level of significance than those identified in the Appin Wind Farm EIA Report for the Proposed Development in isolation.

4.4 Appraisals of Differences from Conclusions of the EIA Report

4.4.1 As noted above, assessment of the combined projects would not change the conclusions reported in the Appin Wind Farm EIA Report with respect to landscape and visual amenity.

4.4.2 At this stage, and based on the indicative grid connection shown in Figure 1a, it will be important for the detailed routeing and design of the grid connection to take into account the following design principles to minimise landscape and visual effects:

- use the terrain and landscape features such as woodland and forestry, as far as possible, to provide screening of construction activities, including in views from the SUW and Colt Hill Striding Arch;
- routeing on lower ground, avoiding the highest summits and ridges, and areas of steepest sloping ground as far as possible; and
- utilise existing forestry tracks, wind farm tracks and other access tracks to reduce extent of local landscape change, including minimising forestry loss.

5. Ecology and Ornithology

5.1 Baseline

Designated Sites

5.1.1 The indicative grid connection route does not intersect with any statutory designated sites, qualifying for ecology or ornithology features. The nearest designated site is the Upper Nithsdale Woods Special Areas of Conservation (SAC), located approximately 5.2 km east of the end of the indicative grid connection where it connects to the proposed Rowancraig Collector.

5.1.2 The indicative grid connection does not intersect with any areas of Ancient Woodland as listed on the Ancient Woodland Inventory (AWI). There are small areas of Ancient Woodland located approximately 30 m south of the indicative grid connection route where it connects into the proposed Rowancraig Collector.

Habitats and Vegetation

5.1.3 Extents of woodland identified on the Native Woodland Survey of Scotland (NWSS) are present along the Euchan Water located to the south of the indicative grid connection. There is also an area of woodland identified on the NWSS within the Proposed Development , which the proposed access track and indicative grid connection route intersects.

5.1.4 The NatureScot Carbon and Peatland map 2016 indicates that the indicative grid connection route does not intersect with areas of Class 1 or Class 2 peat.

5.1.5 Chapter 6: Geology, Hydrogeology and Peat of Appin Wind Farm EIA Report, identified a Groundwater Dependent Terrestrial Ecosystems (GWDTE) within the Proposed Development. The indicative grid connection route has not been subject to detailed environmental surveys which are required to identify the presence of GWDTEs.

5.1.6 The indicative grid connection route crosses primarily grassland and forestry habitats, with the potential for some peatland habitats to be present.

Protected Species

5.1.7 Chapter 7: Ecology of Appin Wind Farm EIA report identified signs of otter and pine marten within the Proposed Development and bat activity was recorded within the Proposed Development as well as the Ecology search area (within 10 km of the Site boundary). Additionally, there were signs of roe deer, fox, field vole, hedgehog and brown hare.

5.1.8 Based on the information within the Appin Wind Farm EIA Report and desk based review of the indicative grid connection route, similar habitats corridor and protected species assemblages are likely to be present, albeit that other protected species may also be present.

5.1.9 There are no designated sites for protected species within 10 km of the indicative grid connection.

Ornithology

5.1.10 Chapter 8: Ornithology of the Appin Wind Farm EIA Report identified the presence of a range of bird species, including Schedule 1 species as well as those considered to be of high and moderate Nature Conservation Importance. Due to the similar habitats present across the indicative grid connection it is likely that similar species may be present.

5.1.11 The closest designated site for birds is Muirkirk and North Lowther Uplands, Special Protection Area (SPA) located approximately 4.7 km north of where the indicative grid connection connects to the proposed Rowancraig Collector. This SPA has been identified to contain habitats that support species such as golden plover, merlin and hen harrier.

5.2 Appraisal of Potential Significant Effects from the Grid Route

5.2.1 The indicative grid connection route does not intersect directly with any statutory designated sites for ecological or ornithological interests. Effect pathways between the indicative grid connection and statutory designated sites would therefore be avoided and no significant effects are likely to be experienced by these features during construction or operation of the indicative grid connection.

5.2.2 Construction of the indicative grid connection would result in the direct loss of some habitats. Where possible, it is assumed that the final route of the grid connection would seek to avoid the most sensitive areas of habitat, as informed by surveys. Throughout the application of sensitive design, and in recognition that the landscape would be restored once the UGC is in situ, it is considered unlikely that there would be any significant effects on habitats during construction.

5.2.3 During construction, there is potential for temporary effects on protected species and breeding, roosting and foraging birds as a result of disturbance, mortality, and habitat loss / fragmentation. However, embedded design mitigation and best practice including a Construction Environmental Management Plan (CEMP) and species/bird protection plans would likely avoid or mitigate any significant effects on habitats, protected species and birds during construction. It is also likely that an Environmental Clerk of Works (EnvCoW) would be appointed to monitor compliance with any planning/consent conditions required including mitigation measures. Where the indicative grid connection will intersect forested areas, an additional embedded mitigation measure is likely to include restricting the amount of felling required to the minimum safe clearances to keep the cable trench free from encroaching vegetation. The area to be kept clear will be determined by SPT.

5.2.4 Operational effects on habitats and protected species are unlikely to be experienced, given the static and underground nature of the development and the limited need for maintenance and management. Given that the indicative grid connection corridor has not yet been subjected to any detailed environmental surveys, effects on ecology and ornithology cannot be confirmed at this stage. However, as there is flexibility in routeing and detailed design to address any key constraints, any required species–related mitigation would be applied, and given the nature of the underground cable, at this preliminary stage it is not considered that significant effects on ecology or ornithology are likely.

5.2.5 Any required ecological and ornithological surveys would be undertaken along the length of the grid connection (and appropriate buffers/viewpoints) to identify the presence of protected species and/or habitats that could be affected. Adjustments to the routeing of the grid connection to avoid and/or minimise effects to the identified constraints would be informed by surveys.

5.3 Appraisal of Potential Significant In-Combination Effects

5.3.1 It is unlikely that the indicative grid connection would give rise to significant construction or operational effects on ecology or ornithology.

5.3.2 The Appin Wind Farm EIA Report concluded that there would be no significant effects on ecology or ornithology receptors.

5.3.3 The in-combination effects of the Proposed Development and the indicative grid connection route would not give rise to any new significant effects, or increase the level of effects associated with the Proposed Development such that they would be deemed significant for ecology or ornithology.

5.4 Appraisal of Differences from Conclusions of the EIA Report

5.4.1 As noted above, assessment of the combined projects would not change the conclusions reported in the Appin Wind Farm EIA Report in respect to ecology and ornithology.

5.4.2 At this stage, based on the indicative grid connection shown in Figure 1b, it will be important for the detailed routing and design of the grid connection to take into account the following design principles to effectively design out or minimise significant ecological and ornithological effects:

- avoid areas of sensitive or high conservation habitat as far as possible;
- minimise habitat loss wherever possible;
- maximise distance between non-designated sites as far as possible; and
- avoid areas of sensitive habitat as far as possible, including areas of potential GWDTE.

6. Cultural Heritage

6.1 Baseline

6.1.1 The indicative grid connection route does not traverse any designated heritage assets, including world heritage sites, scheduled monuments, listed buildings, conservation areas, inventory gardens and designed landscapes, or historic battlefields.

6.1.2 The indicative grid connection route does not intersect with any non-designated heritage assets recorded in the National Record of the Historic Environment (NRHE) database There are eight NHRE entries located within 500 m of the indicative grid connection route[7]. These relate to:

- The possibly prehistoric to medieval Euchan Cottage boundary bank (NRHE ID: 45429);
- The possibly medieval Shiel Burn road (NRHE ID: 83840);
- The post-medieval Wether Hill drove roads (NRHE ID: 164900);
- The post-medieval Black Rig, sheepfold (NRHE ID: 45458);
- The post-medieval Glenmaddie Burn farmstead (NRHE ID: 179297);
- The post-medieval Glenmaddie Burn farmstead and rig and furrow (NRHE ID: 179293);
- The post-medieval memorial, or boundary marker, of Allan's Cairn (NRHE ID: 44674) – See the Appin Wind Farm Historic Environment Assessment (HEA)**Error! Bookmark not defined.**; and
- A watching brief undertaken by GUARD Archaeology Ltd in 2020 – 2021 during ground works for the Twentyshilling Hill Alternative Grid Connection Corridor which encountered evidence of prehistoric settlement and funerary activity.

6.1.3 The Appin Wind Farm HEA identified numerous field boundaries and agricultural features on historic Ordnance Survey mapping within the Site. However, given the degree of previous ground disturbance associated with forestry works, and the indicative grid connection route following existing tracks for much of its length within the site, there is limited potential for the physical fabric of any known remains to survive in such areas.

6.1.4 Given the fertile valleys through which the route traverses, as well as the known prehistoric settlement of the wider landscape, there is a moderate potential for previously unrecorded archaeological remains to be present. As such, groundbreaking activities associated with the construction of the UGC may

[7] The mapped site of Croglin (NRHE ID 64803) is incorrectly mapped on the NRHE database and is not within 500 m of the indicative grid connection route. Details of this asset are available in EIA Report Appendix 9.1: Historic Environment Assessment.

encounter previously unrecorded archaeological remains, including evidence of prehistoric activity. Where land has been subject to previous ground disturbance, such as, afforestation, this potential is low.

6.1.5 Field surveys will be required to better inform the assessment of the potential for, as well as the severity of, direct physical effects. Such field surveys will determine the precise location, and interpretation of heritage assets along the length of the grid connection route and include the recording of previously unknown, but above ground, heritage assets.

6.2 Appraisal of Potential Significant Effects from the Grid Route

6.2.1 Although, at present, there are no known designated or non-designated heritage assets within the indicative grid connection route, the potential for physical effects to known heritage assets will require to be reviewed by SPT as the design involves, including a review of the wider ancillary infrastructure required for its construction. This will need to be informed by acquiring DGC Historic Environment Record (HER) data for the Study Area and, later, by the findings of a walk over survey of the route.

6.2.2 During construction, there is the potential for direct impacts upon unrecorded archaeological remains where groundworks occur. The indicative grid connection route will largely follow existing forestry rides, wind farm tracks associated with the consented Sanquhar II Wind Farm and the operational Whiteside Hill Wind Farm, as well as public roads. In line with good practice, a professionally qualified Archaeological Contractor would be appointed to act as an Archaeological Clerk of Works (ACoW) for the duration of the construction phase of the indicative grid connection. The role of the ACoW, would be to identify the level of archaeological monitoring and recording required for ground-breaking operations. This should include the provision of a suitably qualified specialist to assess and respond to the presence or potential loss of paleoenvironmental information. Archaeological monitoring and recording (including paleoenvironmental) will be undertaken in accordance with a Written Scheme of Investigation (WSI) submitted by the ACoW, to the local planning authority for agreement. This will ensure the preservation of assets in-situ where there is a possibility of intersecting with identified heritage assets, or else overseeing the advance archaeological excavation and recording ('preservation by record') of heritage assets that may be identified during construction. Taking these mitigation measures into consideration, significant direct effects are unlikely to arise on unrecorded archaeological remains during construction.

6.2.3 The potential for setting change has not been assessed given the underground nature of the grid connection. It is considered unlikely that significant operational effects will arise as a result of setting change to heritage assets as a result of the UGC. Should the nature of the grid connection change and include an above ground element, setting change will need to be assessed.

6.2.4 At present, it is considered unlikely that the indicative grid connection would give rise to significant effects on cultural heritage during construction or operation. However, this may change as the design evolves and DGC HER data is made available.

6.3 Appraisal of Potential Significant In-Combination Effects

6.3.1 The Appin Wind Farm EIA Report concluded that there would be no significant effects on cultural heritage receptors.

6.3.2 The in-combination effects of the Proposed Development with the indicative grid connection route would not give rise to any new significant effects, or increase the level of effects associated with the Proposed Development such that they would be deemed significant for cultural heritage.

6.4 Appraisal of Differences from Conclusions of the EIA Report

6.4.1 As noted above, assessment of the combined projects would not change the conclusions reported in the Appin Wind Farm EIA Report for cultural heritage.

6.4.2 At this stage, and based on the indicative grid connection show in Figure 1b, it will be important for the detailed routeing and design of the grid connection to take into account the following design principles to effectively design out or minimise cultural heritage effects:

- routeing away from any designated heritage assets to avoid direct physical effects during construction; and
- routeing away from known upstanding or buried archaeological remains to avoid/minimise direct physical effects during construction.

7. Geology, Hydrology and Peat

7.1 Baseline

7.1.1 The indicative grid connection route crosses three main watercourses and multiple tributaries: the Polskeoch Burn and Scaur Burn in the central section of the route, and Euchan Water in the northern section of the route, all of which drain into the River Nith.

7.1.2 There is the potential for private water supplies (PWS) sources to be present within the vicinity of the indicative grid connection route.

7.1.3 The indicative grid connection route largely avoids areas at risk of surface water flooding identified on SEPA Future Flood Risk maps, associated with tributaries of the Euchan Water, Scaur Water and the Shinnel Water. The indicative grid connection route crosses fluvial floodplains associated with the Scaur Water and Euchan Water of approximately 70 m and 90 m respectively. As the indicative grid connection route travels south-west along the existing road, to the north of and adjacent to the Euchan Water, it is located within a fluvial flood risk zone.

7.1.4 The indicative grid connection route is not located within a Surface Water Drinking Water Protection Area (DWPA), but it is located within the Upper Nithsdale and Moniaive Groundwater DWPA (note, all of Scotland is classified as a groundwater DWPA).

7.1.5 As noted in Chapter 6: Geology, Hydrology and Peat of the Appin Wind Farm EIA Report, a GWDTE was identified in the north-western area of the Proposed Development. Therefore, there is the potential for GWDTEs to be present within proximity to the indicative grid connection. The indicative grid connection has not been subject to detailed environmental surveys which are required to identify the presence of GWDTEs.

7.1.6 The majority of the indicative grid connection is shown to not be located within a NatureScot (formerly SNH) Peatland and Carbon Map 2016 classification. Within the Proposed Development, the route crosses areas of Class 4 (unlikely to include carbon-rich soils) and Class 5 (Peat soil, carbon-rich and deep peat, no peatland habitat recorded). Once the route has left the Proposed Development, it is shown to be located on Class 5 and mineral soils with some smaller areas of Class 4. As the route continues through the operational Whiteside Hill Wind Farm, it intersects with areas denoted as Class 3 (peaty soil with some peat soil, some areas of deep peat and vegetation unlikely to be priority peatland habitat but wet and acidic type). Once the route crosses the Euchan Water in the north, it passes through Class 5 peat and mineral soil.

7.2 Appraisal of Potential Significant Effects from the Grid Route

7.2.1 The construction of the indicative grid connection route has the potential to result in a number of potential effects, including:

- potential effects on peat;
- disruption to the hydrogeological and groundwater system, including GWDTEs;
- the risk of ground and surface water contamination, including of PWS;
- increased sediment loading to streams; including from forestry felling if required;
- increased flood risk; and
- potential effects on ground stability.

7.2.2 As the indicative grid connection does not intersect priority peatland (Class 1 or Class 2), it is unlikely for peat to be a key constraint. Peat depth surveys would require to be undertaken to identify areas of peat and deeper peat to be avoided through routeing and design as far as practicable to minimise potential effects. As per good practice, if peat cannot be avoided, it is expected that a Peat Management Plan (PMP) would be produced which will provide information and guidance on the appropriate re-use and management of excavated peat and it is also likely that a peat landslide hazard risk assessment (PLHRA), habitat management and/or restoration plan would be prepared and as a result no significant effects on peat during construction are anticipated.

7.2.3 If field surveys identify GWDTEs or PWS to be present, mitigation would be put in place to ensure that effects are avoided or reduced and therefore residual effects are unlikely to be significant.

7.2.4 Where the indicative grid connection would cross watercourses, the watercourse crossings will be regulated by the Environmental Authorisations (Scotland) Regulations 2018 (EASR) (amendments to which came into effect on 1st November 2025 to replace the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (revoked)) and installed with standard industry good practice, as required by SEPA. Due to the number of watercourse crossings, and proximity to a number of waterbodies, there

is the potential for construction effects on hydrology. However, it is considered that with the application of embedded mitigation such as adherence to any SEPA recommended buffers between infrastructure and watercourses, avoidance of infrastructure within flood risk zones and the application of appropriate good practice guidance, any significant construction effects would be avoided.

7.2.5 Overall, taking into consideration embedded mitigation and good practice guidance, significant effects on geology, hydrology and peat are considered unlikely to arise.

7.2.6 No operational effects are likely to arise for hydrology, hydrogeology, geology and peat.

7.3 Appraisal of Potential Significant In-Combination Effects

7.3.1 It is considered unlikely that the indicative grid connection would give rise to significant construction or operational effects on hydrology, hydrogeology, geology or peat following the implementation of embedded mitigation and good practice guidance.

7.3.2 The Appin Wind Farm EIA Report concluded that there would be no significant effects on geology, hydrology and peat.

7.3.3 The in-combination effects of the Proposed Development with the indicative grid connection route would not give rise to any new significant effects, or increase the level of effects associated with the Proposed Development such that they would be deemed significant for hydrology, hydrogeology, geology or peat.

7.4 Appraisal of Differences from Conclusions of the EIA Report

7.4.1 As noted above, assessment of the combined projects would not change the conclusions reported in Appin Wind Farm EIA Report for hydrology, hydrogeology, geology or peat.

7.4.2 At this stage, and based on the indicative grid connection show in Figure 1b, it will be important for the detailed routeing and design of the grid connection to take into account the following design principles to effectively design out or minimise significant hydrological and peat effects:

- avoid areas of peat and deeper peat as far as practicable;
- avoid areas of GWDTE where possible;
- minimise infrastructure footprints being within watercourse buffers and flood zones, where possible;
- minimise the number of water crossings as far as possible; and
- avoid interaction with any PWSs or public water supply systems.

8. Traffic and Transport

8.1 Baseline

8.1.1 The indicative grid connection route utilises existing forestry and wind farm tracks as far as practicable and does not intersect any major roads as it is rural in nature. The wider area is serviced by a number of major and minor roads, which provide access and transport routes to settlements, individual residences and the wider strategic road network.

8.1.2 As noted in Chapter 4: Landscape and Visual Amenity, the SUW crosses the indicative grid connection corridor three times. There is one core path (Benbuie to Troston Hill) that the indicative grid connection intersects with in several locations and runs adjacent to for approximately 0.9 km.

8.2 Appraisal of Potential Significant Effects from the Grid Route

8.2.1 The construction of the grid connection will require temporary access to various points along the indicative grid connection route. However, the route has been designed to utilise existing forestry and wind farm tracks as far as practicable. Due to the nature, design and rate of construction of the indicative grid connection, it is anticipated that vehicle movements at any location would be limited over the course of the construction period which will not lead to any noticeable increase in traffic volumes on the surrounding road network, albeit there will be a slight change in traffic composition as HGVs will be required to deliver materials for the UGC.

8.2.2 It is anticipated that a Construction Traffic Management Plan (CTMP) will be implemented for the indicative grid connection to manage traffic movements on the surrounding public road network, and this would be coordinated with the construction of the Proposed Development should construction works overlap. Additionally, an Access Management Plan (AMP) would be required where the indicative grid connection intersects with the identified recreational routes. Any felling required to construct the indicative grid connection, mainly restricted to the southwestern-most section within FLS land which is

noted to be partially felled, is unlikely to generate significant levels of forestry HGV traffic across the length of the route.

8.2.3 During operation there would be infrequent visits by maintenance teams and therefore significant effects as a result are unlikely to arise.

8.2.4 Given the small number of anticipated vehicle movements associated with its construction and operation, it is considered unlikely that the indicative grid connection would give rise to significant construction or operational traffic and transport effects.

8.3 Appraisal of Potential Significant In-Combination Effects

8.3.1 It is considered unlikely that the indicative grid connection would give rise to significant construction or operational effects on traffic and transport.

8.3.2 The Appin Wind Farm EIA Report concluded that there would be no significant effects arising from traffic and transport.

8.3.3 The in-combination effects of the Proposed Development with the indicative grid connection route would not give rise to any new significant effects, or increase the level of effects associated with the Proposed Development such that they would be deemed significant for traffic and transport.

8.4 Appraisal of Differences from Conclusions of the EIA Report

8.4.1 As noted above, assessment of the combined projects would not change the conclusions reported in the Appin Wind Farm EIA Report for traffic and transport.

9. Noise

9.1 Baseline

9.1.1 The indicative grid connection route passes primarily through environments that are rural in nature, consisting mostly of rolling hills and forestry. The existing baseline noise environment is likely to be typical of a quiet/rural environment, characterised by 'natural' sources such as wind and disturbed vegetation, as well as some anthropogenic sound such as forestry activity and operational wind farms.

9.1.2 There are three dwellings located in proximity to the indicative grid connection in the vicinity of the Proposed Development, including Shinnelhead to the north of the Proposed Development site boundary, and Blairoch and Benbuie to the south of the Proposed Development site boundary. In addition, three dwellings have been identified from a desk based review of available OS maps which are situated along the minor road to the north of the indicative grid connection route as it runs adjacent to the Euchan Water. The status and occupation of these properties would require to be confirmed by SPT.

9.2 Appraisal of Potential Significant Effects from the Grid Route

9.2.1 It is typically accepted that grid connection construction works are linear in geographical extent and of short duration at any one location. As construction progresses, noise generated will diminish quickly, particularly for underground cable, moving the activity away from any noise sensitive receptors, such that significant effects are not likely. Given the limited traffic expected to be generated for the construction and operation of the grid connection, it is not considered that traffic-related noise will be significant.

9.2.2 If required, mitigation measures will be implemented in relation to any necessary HDD required to construct sections of the UGC (i.e., at the Euchan Water). This may include measures relating to any vibration generation.

9.2.3 Additional good practice measures for controlling/minimising noise and vibration during construction may include the following:

- restricted hours of construction to avoid sensitive periods;
- the use of equipment with appropriate noise control measures (e.g. silencers, mufflers and acoustic hoods); and
- additional good practice measures as set out in BS 5228-1/2:2009+A1:2014 (BS 5228)[8].

9.2.4 Overall, any noise and vibration effects during construction would be short term and temporary and, with good practice mitigation in place, significant effects are unlikely to arise.

[8] UK Government, 2009. British Standards Institution 5228. Code of practice for noise and vibration control on construction and open sites (BS 5228), BSI, 2009, Amended 2014.

9.2.5 There will be no significant effects associated with operation of the UGC.

9.3 Appraisal of Potential Significant In-Combination Effects

9.3.1 It is not considered likely that the grid connection would give rise to significant construction or operational effects relating to noise and vibration.

9.3.2 The Appin Wind Farm EIA Report concluded that there would be no significant effects relating to noise and vibration.

9.3.3 It is not considered that any in-combination effects of the Proposed Development and the grid connection would have a greater level of significance than those identified in the Appin Wind Farm EIA Report for the Proposed Development in isolation for noise and vibration.

9.4 Appraisal of Differences from Conclusions of the EIA Report

9.4.1 The above appraisal of the grid connection does not change the conclusions reported in the Appin Wind Farm EIA Report with respect to noise and vibration.

10. Cumulative Effects

10.1.1 High level commentary on the cumulative effects associated with the indicative grid connection are noted below. It is assumed that all existing operational or under construction developments form part of the existing baseline conditions against which the indicative grid connection would be assessed.

10.1.2 Consideration has been given to whether the Proposed Development and the indicative grid connection route, together with other developments (including the grid connections of neighbouring wind farms) could give rise to significant cumulative effects on the environment.

10.1.3 It should be noted that, in some cases, the grid connection for another wind farm development may be at a preliminary stage and therefore there may be no (or limited) knowledge and understanding as to the nature and location of such works. The carrying out of a cumulative assessment in these circumstances would be at odds with well-established EIA practice, which scopes out cumulative developments where there is a high degree of uncertainty as to their characteristics and in turn their potential to cause likely significant effects. This applies to most (but not necessarily all) development that is not yet the subject of a planning application or consented (noting that operational schemes and those under construction form part of the existing baseline as noted above).

10.1.4 Where there is reasonable knowledge as to the nature and location of other grid connection works, and in particular works that are either the subject of an application or consented, it will need to be considered (by virtue of the nature, scale and location of those works) whether there is any prospect of likely significant effects arising cumulatively with the Proposed Development or its indicative grid connection route.

10.1.5 As such, a cumulative assessment would only consider projects within 3 km of the indicative grid connection route, on the basis that effects beyond this distance would be unlikely to be significant for the indicative grid connection in isolation. The following schemes have been identified[9]:

- Rowancraig Collector (the indicative grid connection will connect into this substation; no further information is curently available);
- Euchanhead Wind Farm (ECU00002141, indicative grid connection route runs through wind farm, application submitted);
- Rowancraig Wind Farm (24/0025/FUL, 360 m south, application submitted);
- Cloud Hill Wind Farm (ECU00003461, 430 m south-east, consented); and
- Lorg Wind Farm (ECU00003283, 500 m west, consented).

10.1.6 Although other potential developments may connect into the existing Glenglass Substation and the Rowancraig Collector in the future, the form and corridor of such grid connections are unknown at this point in time, and are therefore not considered within this report.

10.1.7 As noted above, no additional significant effects would be likely to arise as a result of the combined projects than have already been reported within the EIA Report. No additional cumulative effects when considering the indicative grid connection are anticipated on the basis that it is unlikely to result in any significant effects in isolation, and assuming that all projects, including their grid connections, will be progressed in line with good practice and will follow mitigation measures such that any residual effects

[9] A review of the Dumfries and Galloway Council planning portal map did not identify any additional non-energy related schemes within 3 km (https://eaccess.dumgal.gov.uk/online-applications/search.do?action=simple&searchType=Application).

will be limited. In a scenario where the aforementioned developments are present, the grid connection would form a very small feature and contribute to very limited additional effects in this context.

11. Summary

11.1.1 This appraisal seeks to provide an overview of the indicative grid connection type, an indicative route and the likelihood for it to give rise to any significant environmental effects, alone or in-combination with the Proposed Development, and cumulatively with other known developments. The assessment is a proportionate appraisal based on available information and baseline data limitations are recognised.

11.1.2 Based on the information available at this stage, it is not considered that the construction and operation of the indicative grid connection will result in significant short-term (during construction) or long-term (during operation) effects if the final grid connection follows careful routeing and design, as well as the implementation of standard good practice and mitigation measures.

11.1.3 It is re-iterated that the Applicant is not seeking consent for the indicative grid connection presented and that separate planning consent will be sought for the grid connection by SPT following any consent granted for the Proposed Development, and in line with the grid reform process.