Glenlee Substation Extension
Environmental Impact Assessment Report

Volume 1: Text and Figures

SP Energy Networks

September 2019

Glenlee Substation Extension

EIA Report

Volume 1: Text and Figures

Prepared by LUC

on behalf of

SP Energy Networks

September 2019

Preface

This Environmental Impact Assessment (EIA) Report has been prepared in support of an application for consent to construct and operate an extension to the operational Glenlee Substation ('the proposed development'). The site is located in Dumfries and Galloway, approximately 1.5km south-west of St John's Town of Dalry.

The EIA-R is divided into two volumes as follows:

- **Volume 1:** Text and Figures (this volume)
- **Volume 2:** Technical Appendices

The EIA Report has been prepared by LUC and supporting sub-consultants on behalf of SP Energy Networks (SPEN). In addition, the EIA Report is accompanied by standalone reports, including a Non-Technical Summary (NTS), Design and Access Statement (DAS) and Pre-Application Consultation Report (PAC).

Electronic copies of the NTS and all other EIA Report documents can be downloaded free of charge via the Project website: www.spendgsr.co.uk.

The EIA Report is available for public inspection during normal opening hours at the following locations :

- **Dalry Library:** Main Street, ST. John's Town of Dalry, DG73UP. Tel: 01644 430234. Opening hours: Tuesday 10.30am to 2pm and Friday 11am to 4.30pm.
- **Kirkcudbright Library:** DG Customer Services – Kirkcudbright, Daar Road Offices, Kirkcudbright, DG6 4JG. Tel: 01557 332516. Opening Hours: Monday to Friday 9am to 5pm, Saturday 10am to 1pm.
- **Dumfries Ewart Library:** Catherine Street, Dumfries, DG1 1JB. Tel: 01387 253820. Opening hours: Monday 9am to 6.30pm, Tuesday 9am to 5pm, Wednesday 9am to 6.30pm, Thursday 9am to 6pm, Friday 9am to 5pm, Saturday 10am to 3pm.
- **Dumfries Planning Office:** English Street, Dumfries, DG12HS. Opening hours: Monday to Friday 9am to 5pm.

High resolution electronic copies of the EIA Report may be purchased for £15 and hard copies for £75 by contacting SPEN using the contact details set out below:

- Dedicated freephone number: 0800 157 7353
- Dedicated project email address: dgsr@communityrelations.co.uk
- Freepost address: FREEPOST SPEN DGSR

Any representations to the application may be submitted to Dumfries and Galloway Council at:

- https://www.dumgal.gov.uk/article/15337/Comment-on-a-planning-application;
- by email to planningrepresentations@dumgal.gov.uk; or
- by post to Head of Planning and Regulatory Services at Development Management, Kirkbank House, English Street, Dumfries, DG1 2HS.

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Introduction

1.1 SP Energy Networks (SPEN) is applying to Dumfries and Galloway Council under the Town and Country Planning (Scotland) Act 1997 for planning permission for an extension to the existing 132 kilovolt (kV) Glenlee substation. In addition to the substation extension, the planning application will also include proposals for other works including road improvements, landscaping, temporary compounds, soils, materials and vehicle storage areas and drainage. The location of the site is shown in EIA Report **Figure 1.1**.

1.2 The extension to the existing substation is required to support and operate the wider Kendoon to Tongland 132kV Reinforcement Project (the KTR Project) as detailed further in section 3 of this report. In addition to the extension to the substation, the planning application also includes proposals for other works including road improvements, landscaping, temporary compounds, soils, materials and vehicle storage areas and drainage. The substation and other works are referred to within this document as 'the proposed development'.

1.3 The substation extension which forms part of the proposed development is a 'national development' as it falls within a category of development set out in Scotland's Third National Planning Framework (NPF3) (Annex A – national developments):

1.4 "Development consisting of… new and/or upgraded onshore sub stations directly linked to electricity transmission cabling of or in excess of 132 kilovolts."

1.5 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations') list the development types which may require Environmental Impact Assessment (EIA). Schedules 1 and 2 of the EIA Regulations specify developments which require, or which may require, that an EIA be undertaken. Whilst the proposed development does not fall explicitly within the 'descriptions of development' set out in Schedule 1 or Schedule 2 of the EIA Regulations, it forms part of the wider KTR Project for which an EIA is being undertaken. SPEN is also responsive to local concerns and therefore as a matter of good practice has elected to treat the proposed development as an EIA development. Further details on the EIA process are provided in section 2 of this report.

1.6 The findings of the EIA have been detailed in the EIA Report that accompanies the planning application for the proposed development. This document provides a non-technical summary (NTS) of the EIA Report. The NTS includes information on the EIA process, the links with the wider KTR Project, the location and features of the proposed development, and the likely effects on construction and operation of the proposed development on the environment.

What is Environmental Impact Assessment?

1.7 EIA is a structured process aimed at ensuring that the likely significant environmental effects of a proposed development are assessed in a systematic way and that the measures envisaged to avoid or reduce any of the significant effects are identified. The EIA process is intended to be clearly understood and to provide sufficient information to the public and the local planning authority before a decision is made on whether or not a development should be granted planning permission.

1.8 The findings and conclusions of the EIA are set out in the detailed EIA Report for the proposed development, which has been summarised in this NTS.

1.9 The EIA of the proposed development has been conducted in accordance with the EIA Regulations and good practice guidance. The EIA has:

- Examined the existing environmental character of the area likely to be affected by the proposed development through desk based and field studies.
- Identified relevant natural and manmade processes that may already be changing the character of the site.
- Considered the possible interactions between the proposed development and both existing and future site conditions.
- Predicted the possible effects, both beneficial and adverse, of the proposed development on the environment. This includes cumulative effects, both in terms of i) interaction between, and combination of effects from, the proposed development itself, and ii) effects of the proposed development in combination with other future developments nearby.
- Introduced measures to avoid or reduce any adverse effects, and enhance beneficial effects.

The EIA Team

1.10 The EIA was coordinated and managed by LUC in accordance with the EIA Regulations, with input from a number of specialists, as shown in **Table 1**. The design of the proposed development was undertaken by SPEN.

Table 1: EIA Report Authors

EIA Report Topic Chapter	Author
Chapter 6: Landscape and Visual Amenity	LUC
Chapter 7: Hydrology and Water Resources	Kaya Consulting Limited
Chapter 8: Ecology	LUC
Chapter 9: Cultural Heritage	CFA Archaeology Limited
Chapter 10: Construction Noise	Hoare Lea
Chapter 11: Access, Traffic and Transport	Mott MacDonald

Consultation

1.11 Potential effects arising from the proposed development were originally intended to be assessed in the EIA for the KTR Project. As such, consultation undertaken for the KTR Project has informed the scope of the assessment for the proposed development. Where considered necessary, supplementary consultation

with relevant organisations, including Dumfries and Galloway Council, was undertaken specifically in relation to the proposed development. This is set out in detail in the relevant chapters of the EIA Report.

1.12 Extensive consultation with the public has been undertaken for the proposed development, both as part of the wider KTR Project and in isolation. These consultations included public exhibitions held in March 2018 and June 2019. Subsequent feedback received at these events has been considered in the design of the proposed development. In addition to the public exhibitions, SPEN has been in ongoing discussions with the owners and residents of the properties located in proximity to the site of the existing substation to be extended. Full details on the consultation undertaken are included in the Pre-Application Consultation (PAC) Report which accompanies the planning application.

How is the Proposed Development linked to the KTR Project?

1.1 The KTR Project consists of proposals for the replacement of approximately 46km of 132kV overhead transmission line which is supported on steel towers between Polquhanity in the north, through Glenlee, and south to the Tongland substation. The transmission lines to be replaced (known as 'N' and 'R' routes) currently connect five hydro-electric power stations in Galloway that serve the population of Dumfries and Galloway. The existing overhead lines are coming towards the end of their operational life and therefore require to be replaced to ensure secure, reliable supplies to existing and future customers. The five connections which make up the KTR Project are detailed below. Delivering the five connections will also allow SPEN the opportunity to remove approximately 43km of existing 132kV lattice steel tower overhead line infrastructure (the 'N' and 'R' routes) that is no longer required. The proposed development is required to facilitate this. The five connections of the KTR Project and the existing infrastructure to be removed are illustrated on EIA Report **Figure 1.3**. The five new connections comprise:

- A new 132kV steel tower overhead line, of approximately 10.6km in length between Polquhanity (approximately 3km north of the existing Kendoon substation) and Glenlee substation, via the existing Kendoon substation (P-G via K).
- A new 132kV wood pole overhead line, of approximately 2.6km in length, between Carsfad and Kendoon (C-K).
- A new 132kV wood pole overhead line, of approximately 1.6km in length, between Earlstoun and Glenlee (E-G).
- A new 132kV steel tower overhead line deviation of the existing BG route, at Glenlee substation approximately 1km in length (BG Deviation).
- A new 132kV steel tower overhead line, of approximately 32.5km in length, between Glenlee and Tongland (G-T).

1.2 Five applications will be submitted to Scottish Ministers seeking consent under section 37 of the Electricity Act 1989 for the new overhead lines, as well as deemed planning permission for the removal of the N and R routes. It is anticipated that the applications will be made in Autumn 2019. The KTR Project is subject to a separate EIA to assess the likely significant environmental effects of the project during construction and operation and removal of N and R routes.

1.3 The substation extension which forms part of the proposed development needs to be operational before the new overhead lines are built. On this basis, SPEN agreed with Dumfries and Galloway Council that, whilst it remains part of the overall KTR Project, a planning application for the proposed development will be lodged in advance of, and progressed separately from the applications for the KTR Project.

Where is the Proposed Development Located?

1.4 The existing Glenlee substation adjoins the Glenlee hydro power station on the Water of Ken, near St John's Town of Dalry. The existing Glenlee substation, which is owned and operated by SPEN, converts the 11kV electricity output from the hydro power station up to a grid voltage of 132kV.

1.5 The site of the substation extension which forms part of the proposed development is bounded to the north by the existing Glenlee substation, hydro power station and local road (the U2s), to the east by residential housing and a local road (the U3s), to the south by undeveloped green field land, and to the west by the penstock of the Glenlee hydro power station and undeveloped green field land. In the wider area, there is an overflow car park located directly across from the existing substation and the rest of the surrounding land is currently mainly agricultural, and is used for grazing livestock.

1.6 Glenlee Hill to the south-west of the site has a peak elevation of approximately 270m which slopes steeply in a north-easterly direction, levelling out close to the site. Areas to the north and north-east of the site and local road are relatively flat and vary in elevation from approximately 53m AOD (Above Ordnance Datum, which broadly approximates to average sea level) to 50m AOD. This low-lying area likely represents the historic floodplain of the Coom Burn prior to its realignment and the construction of the hydro power station.

What is the Proposed Development and how will it be Constructed?

1.7 Excluding the temporary works as detailed below, the proposed development covers approximately 0.35ha. The site boundary covers a total of 8.69ha and extends primarily to the south-west of SPEN's current land ownership boundary.

1.8 The substation extension will consist of the following elements:

- a new 4.5m wide access track;
- new electrical switchgear and plant;
- a new 3m steel palisade security fence around the perimeter;
- an extension of approximately 4m x 8m to the existing control building located adjacent to the access off the U2s;
- drainage works including diversion of the existing watercourse that crosses the field into a culvert underneath the substation; and
- removal of existing trees and replacement planting.

1.9 In addition, the following temporary works will also be required as illustrated on EIA Report **Figure 4.1**[1]:

- temporary construction compounds;
- a temporary vehicle holding area up-slope from the proposed substation extension;
- temporary topsoil storage areas; and
- temporary Sustainable Drainage Systems (SuDs), including settlement ponds and ditches, to prevent the pollution of watercourses during construction;
- installation of a noise fence (further details are provided below in the section on Construction Noise).

Construction Programme and Working Methods

Construction Programme

1.10 Subject to receiving planning permission and the fulfilment of any associated conditions, construction is anticipated to commence in August 2020 and the substation extension will be commissioned in September 2024, with final demobilisation, reinstatement and landscaping due to be completed by the end of 2024. Beyond this, works may be required within the substation periodically to tie in the proposed new KTR connections. The timing of these works will be dependent on consents being obtained for the KTR Project.

Working Hours

1.11 Construction activities will be undertaken during daytime periods only, on Monday to Friday between approximately 07:00 to 19:00 hours in summer (April to September), and 08:00 to 17:00 hours (or as daylight allows) in winter (October to March). Hours will be 07:00 to 13:00 hours on Saturdays and there will be no working on Sundays or public holidays. It is anticipated that any variations to the hours stated here will be agreed in advance with Dumfries and Galloway Council through the Construction and Environmental Management Plan (CEMP) (see below).

[1] The noise fence is illustrated on Figure 10.1.

Construction and Environmental Management Plan

1.12 Adherence to a CEMP will ensure that any potential environmental effects associated with the proposed development are minimised during the construction period and that all environmental legislation is complied with. The CEMP also provides information on the overarching environmental principles and procedures which will be adhered to throughout the course of the works, including requirements relating to:

- traffic management;
- protection of water resources;
- management of noise;
- waste management;
- ecological protection;
- protection of archaeology and heritage; and
- access and management of traffic.

Community Liaison

1.13 SPEN and the appointed contractors will maintain close liaison with local community representatives, landowners and statutory consultees throughout the construction period. This is likely to include circulation of information about ongoing activities, particularly those that could potentially cause disturbance. A telephone number will be provided and persons with appropriate authority to respond to calls and resolve any problems made available.

Operation and Maintenance

1.14 Glenlee substation is currently unmanned and will remain so when the extended site comes into operation. Maintenance will take place regularly during the lifetime of the substation and this is usually carried out during periods of planned operational outages in the operation of the electricity network, e.g. when electricity demand is low, typically during the summer period.

Health and Safety

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

1.16 What are the Environmental Effects of the Proposed Development?

1.17 The EIA examined potential effects of the proposed development on the following topics:

- Landscape and Visual Amenity;
- Hydrology and Water Resources;
- Ecology;
- Cultural Heritage;
- Construction Noise; and
- Access, Traffic and Transport.

1.18 The following topics were scoped out of detailed assessment based on consultation and the professional judgement of the EIA team:

- Ornithology;
- Socio-economics, Recreation and Tourism;
- Climate Change;
- Human Health;
- Risk of Major Accidents and Disasters;
- Dust and Air Quality;
- Land and Agriculture;
- Effects on Existing Services (e.g. gas and water); and
- Decommissioning Effects.

1.19 The key findings of the EIA with respect to each topic are set out below.

1.20 Terms that are commonly used within the assessment include:

- **Effect**: Refers to the change in the existing environmental conditions that will result from the proposed development during construction and operation. **Significant effects** must be reported in the EIA Report. Effects can be adverse or beneficial.
- **Cumulative effects**: Effects which may arise as a result of: i) interaction between, and combination of effects from, the proposed development (e.g. the effect of changes to water quality on animal species nearby), as well as ii) effects of the proposed development in combination with other future developments nearby.
- **Mitigation**: Refers to measures that will be taken to avoid or reduce any adverse effects identified. Residual effects are those that remain following mitigation.
- **Receptor:** Refers to elements of the natural and built environment and also people and communities that may experience effects – adverse or beneficial – as a result of the proposed development. Examples of receptors include people, historic features, animal and plant species, watercourses etc.

1.21 To assist with interpretation of the assessment and identification of likely significant effects, potential effects are identified as major, moderate, minor or none. **Major** and **moderate** effects are considered to be **significant** in the context of the EIA Regulations.

1.22 The assessments were informed by desk studies, field surveys, and consultation undertaken as part of the wider KTR Project, and for the proposed development where relevant.

Assessment Findings

Landscape and Visual Amenity

1.23 Overall, the proposed development will result in very localised significant adverse effects on the Site of the proposed development and localised significant adverse visual effects on views within an approximate radius of 0.5km, largely experienced from the community of Glenlee.

1.24 **Major** effects are predicted during construction on the landscape character of the site the immediate locality. **Major** effects are also predicted for two viewpoints (rear of Rannoch and rear of Orrin). Construction effects will be short-term adverse and reversible.

1.25 Once operational, **Moderate** effects are predicted on the landscape character of the site and immediate locality. A **Major** effect is predicted for the viewpoint to the rear of Rannoch, and a **Moderate** effect is predicted for the rear of Orrin. Landscape mitigation planting will be implemented during the operational phase which will help screen close proximity views, reducing the effect to the rear of Orrin to **Minor**. The mitigation planting will also help integrate the substation extension into the wider rural landscape looking into Glenlee substation extension in longer distance elevated view as it matures.

1.26 **Moderate** cumulative effects are predicted on the landscape character of the site, and a **Major** cumulative effect is predicted for the viewpoint to the rear of Rannoch as a result of cumulative effects associated with the KTR Project, primarily the BG Deviation.

Hydrology and Water Resources

1.27 This assessment considered the potential effects of construction of the proposed development on water quality of surface and ground water, water quality of private water supplies, channel morphology (due to the requirement to realign an existing culvert and field drain as detailed above), and run-off rates and flood risk.

1.28 Following the implementation of mitigation, including adherence to the CEMP, there will be no residual significant effects on hydrology and water resources during construction. Drainage has been designed to accommodate the potential for a 1 in 30 year rainfall event. Whilst considered unlikely, extreme storms

greater than this could exceed the capacity of the drainage system. Should such an extreme event occur, an emergency area for water treatment has been identified within the site.

1.29 The assessment considered the potential for operational effects on run-off rates and flood risk, and channel morphology. To protect the morphology of the banks of the watercourse where the new culvert is proposed, bank protection will be installed. This will prevent any significant effects on morphology from arising. All other effects are also considered to be not significant.

1.30 The assessment did not identify any potential cumulative effects on hydrology and water resources.

Ecology

1.31 The ecology assessment considered the potential effects of construction on habitats of conservation concern and on protected species (red squirrel, bats and otter).

1.32 The potential direct effects of habitat loss and habitat severance (i.e. disruption of ecological processes through fragmentation, isolation and barriers) were assessed as being not significant prior to mitigation. Potential effects on red squirrel and bats were assessed in terms of direct habitat loss, mortality, and disturbance and potential effects on otter were considered in terms of mortality, and disturbance. The assessment did not identify any significant effects on protected species, however a number of measures were identified to minimise any potential effects, including:

- pre-construction surveys no more than six months prior to any tree felling, and retention of trees with potential to support bats where possible;
- installation of bat roost boxes on suitable trees;
- sensitive timing of works to avoid red squirrel and bat breeding seasons where possible; and
- delivery of 'toolbox talks' to all workers on the site to advise them of what to do in the event that any protected species are found during the works.

1.33 No operational or cumulative effects were considered likely so this was not assessed in detail.

Cultural Heritage

1.34 The assessment considered the potential effects of the construction of the proposed development on cultural heritage assets within and directly adjacent to the site boundary. These include the Glenlee and Earlstoun hydro power station listed buildings, Glenlee Park National Inventory Designed Landscape, and a number of non-designated features. Prior to the implementation of mitigation, the assessment identified a potential **major** effect on the possible buried remains of an early (prehistoric or medieval) bloomery during construction. Proposed mitigation includes a grid of hand-dug test pits across the site of the possible bloomer to identify any remains, and subsequent analysis which will reduce the significance of the residual effect to **minor**. No other significant effects were identified.

1.35 Operational effects on the setting of heritage assets were assessed within 1km of the Glenlee substation extension, excluding the temporary works and the access; no setting effects were identified.

1.36 The assessment did not identify any cumulative effects on cultural heritage.

Construction Noise

1.37 The construction noise assessment assessed the potential for significant effects during construction of the proposed development on nearby residential receptors. Potential effects associated with vibration were not assessed in detail as no plant or equipment likely to result in vibration effects will be used during construction or installed once operational.

1.38 The assessment identified that there will be **moderate** to **major** effects on the nearby properties during construction of the proposed development, prior to mitigation. Through the installation of a noise barrier, in addition to close liaison with the local community and implementation of good practice working measures, the residual effect will be **minor** and not significant.

1.39 The proposed use of the site is unlikely to introduce any significant source of noise during its operation, therefore a detailed assessment of operational noise effects was not undertaken.

1.40 No cumulative effects during construction were identified.

Access, Traffic and Transport

1.41 The assessment considered the potential effects of construction traffic on driver delay, road safety and community impacts on the public road network. Once operational, substations typically generate very low levels of traffic associated with operation, maintenance, repairs and servicing. As such, potential effects on access, traffic and transport were not assessed for the proposed development once operational.

1.42 No significant effects were identified prior to mitigation, however it is proposed that temporary impacts relating to an increase in construction traffic will be minimised through the implementation of the locally focused Construction Traffic Management Plan (CTMP). The CTMP will promote interventions that will assist the safe and efficient transportation of components and materials to site in order to reduce the likelihood of driver delay and adverse impacts upon the communities identified within the study area. The Police and relevant roads authorities will be consulted on the CTMP, and as far as reasonably practicable, deliveries will be scheduled outwith school opening and closing times.

1.43 The assessment did not identify any significant cumulative effects.

Interrelated Effects

1.1 The EIA considered the potential for interrelated effects e.g. changes to hydrology resulting from the proposed development could result in effects on protected habitats and species. It is not considered likely that there will be any significant interrelated effects either during construction or once the proposed development is operational.

Conclusion

1.2 The EIA Report concludes that there will be no significant residual effects in relation to:

- Hydrology and Water Resources;
- Ecology;
- Cultural Heritage;
- Construction Noise; and
- Access, Traffic and Transport.

1.3 Residual significant effects will remain only in relation to landscape and visual amenity as detailed above:

- Construction:
  - **Major** landscape effect on the site of the proposed development and immediate locality;
  - **Major** visual effect at viewpoint 1: Rear of Rannoch; and
  - **Major** visual effect at viewpoint 2: Rear of Orrin.
- Operation:
  - **Moderate** landscape effect on the site of the proposed development and immediate locality; and
  - **Major** visual effect at viewpoint 1: Rear of Rannoch.
- Cumulative (once operational):
  - **Moderate** landscape effect on the site of the proposed development and immediate locality; and
  - **Major** visual effect at viewpoint 1: Rear of Rannoch.

1.4 As detailed above, mitigation planting will provide some screening in close proximity views looking into the proposed development and will help integrate the proposed development into the wider rural landscape in longer distance views experienced from elevated positions.

Chapter 1
Introduction

1 Introduction

Introduction

1.1 This Environmental Impact Assessment (EIA) Report has been prepared by LUC on behalf of SP Energy Networks (SPEN)[1] in support of a planning application submitted under the Town and Country (Scotland) Act 1997 for the proposed extension to the existing 132 kilovolt (kV) Glenlee substation located approximately 1.5km south-west of St John's Town of Dalry in Dumfriesand Galloway. The substation extension covers an area of approximately 90m x 40m (excluding earthworks and landscape planting areas) to the existing 132kV Glenlee substation compound, to accommodate the new switchgear required to support and operate the wider Kendoon to Tongland 132kV Reinforcement (KTR) Project as detailed further below. In addition to the substation extension, the planning application will also include proposals for other works including road improvements, landscaping, temporary compounds, soils, materials and vehicle storage areas and drainage. Full details of the construction and operational details of the substation extension are provided in **Chapter 4: Development Description and Construction, Operation and Maintenance**. The substation extension and other works are hereinafter referred to as the 'proposed development'.

1.2 The substation extension which forms part of the proposed development is a 'national development' as it falls within a category of development set out in Scotland's Third National Planning Framework (NPF3) (Annex A – national developments):

"Development consisting of… new and/or upgraded onshore sub stations directly linked to electricity transmission cabling of or in excess of 132 kilovolts."

1.3 This EIA Report has been prepared to meet the requirements of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 ('the EIA Regulations') and documents the EIA process undertaken in connection with the proposed development. The location of the proposed development is shown on **Figure 1.1** and further details on the requirements associated with the EIA process are provided in **Chapter 2: Approach to the EIA**.

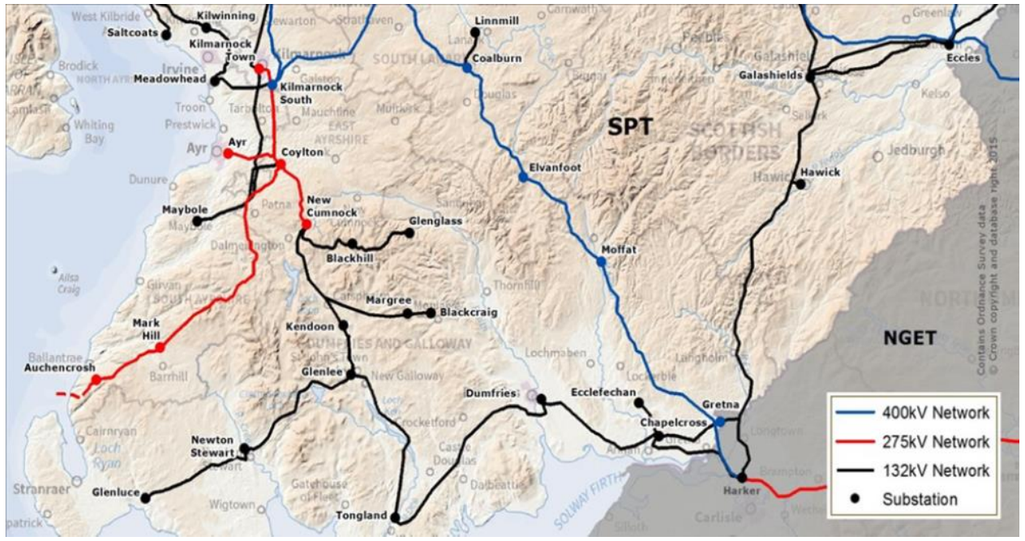
The Existing Electricity Transmission Network

1.4 The existing electricity transmission network in the south-west of Scotland, as seen in **Figure 1.2**, was developed between the 1930s and 1970s to supply local customers and to connect the area's hydro generation schemes. It currently serves more than 83,000 customers. As illustrated on **Figure 1.2**, a 132kV overhead line runs from Glenluce to Newton Stewart, then on to Glenlee, before heading north towards Dalmellington and south to Tongland. From Tongland, the line heads east via Dumfries towards Gretna, where a 400kV line heads south, across the border into England, connecting to the National Grid substation at Harker, near Carlisle. A separate 275kV transmission line links Auchencrosh in South Ayrshire to Coylton in East Ayrshire.

1.5 When SPEN assessed the network as part of its asset replacement programme, nearly 90km of the transmission lines in Dumfries and Galloway were found to be approaching the end of their operational life. Specifically, these are the lines running from Kendoon to Glenlee, from Glenlee to Tongland, from Tongland to Dumfries and to a lesser extent the line from Chapelcross to Harker. As assets get older, the need for maintenance work becomes more critical and more difficult, and the exposure to unplanned outages (faults) increases. Asset replacement is essential to provide secure, reliable supplies to existing and future customers and users for the next 60 to 70 years.

[1] SPEN, the trading name for Scottish Power Energy Network Holdings Limited which owns and operates the electricity transmission and distribution networks in central and southern Scotland through its wholly-owned subsidiaries SP Transmission plc (SPT) and SP Distribution plc (SPD). SP Transmission plc is the holder of a transmission licence. The references within this EIA Report to SPEN in the context of statutory and licence duties should be read as applying to SP Transmission plc.

Figure 1.2 Electricity Transmission System in South West Scotland



Background to the Development and Relationship with the KTR Project

1.6 The KTR Project consists of proposals for the replacement of approximately 46km of 132kV overhead transmission line which is supported on steel towers between Polquhanity in the north, through Glenlee, and south to the Tongland substation. The transmission line to be replaced currently connects five hydro-electric power stations in Galloway that serve the populations of Galloway, Dumfries and Ayrshire with electricity. Built in the 1930s and running at full capacity, the existing line is at the end of its operational life and is therefore in need of replacing to ensure secure, reliable supplies to existing and future customers. The five connections comprised in the KTR Project are detailed below. Delivering the five connections will also allow SPEN the opportunity to remove approximately 43km of existing 132kV lattice steel tower overhead line infrastructure (the 'N' and 'R' routes) that is no longer required. The proposed development is required to facilitate this. The five connections of the KTR Project, and the existing infrastructure to be removed, are illustrated on **Figure 1.3**. The five new connections comprise:

- A new 132kV double circuit steel tower overhead line, of approximately 10.6km in length between Polquhanity (approximately 3km north of the existing Kendoon substation) and Glenlee substation, via the existing Kendoon substation (P-G via K).
- A new 132kV single circuit wood pole overhead line, of approximately 2.6km in length, between Carsfad and Kendoon (C-K).
- A new 132kV single circuit wood pole overhead line, of approximately 1.6km in length, between Earlstoun and Glenlee (E-G).
- A new 132kV double circuit steel tower overhead line deviation of the existing BG route, at Glenlee substation approximately 1km in length (BG Deviation).
- A new 132kV double circuit steel tower overhead line, of approximately 32.5km in length, between Glenlee and Tongland (G-T).

1.7 Five applications will be submitted to Scottish Ministers seeking consent under section 37 of the Electricity Act 1989 for the overhead lines comprised in the KTR Project ('section 37 consent'), as well as applications seeking directions that planning permission be deemed to be granted under section 57 (2) of the Town and Country Planning (Scotland) Act 1997, as amended, for the overhead lines, associated works as well as the removal of the N and R routes ('deemed planning permission'). It is anticipated that the applications will be made in Autumn 2019. The KTR Project is subject to a separate EIA to assess the likely significant environmental effects of the project during construction and operation.

1.8 The substation extension which forms part of the proposed development needs to be operational before the new overhead lines of the KTR Project are built. The works on the overhead lines will take place at differing times and will be dependent on when 'outages' can be secured on the existing network to connect the new lines with minimal disruption and risk to the electricity network in the region. On this basis, SPEN agreed with Dumfries and Galloway Council (D&GC) at a meeting on 16th August 2017 that, whilst it remains part of the overall KTR Project, a planning application for the proposed development will be lodged in advance of, and progressed separately from the applications for section 37 consent and deemed planning permission for the other parts of the KTR Project. Similarly, the overhead lines and towers associated with the KTR Project will not form part of the application for planning permission for the proposed development which will be limited to the infrastructure proposed within the red line application boundary for the development as shown on **Figure 4.1**. The cumulative effects associated with the KTR Project are considered in this EIA, and similarly the proposed development will be considered in the EIA for the KTR Project.

The Glenlee Substation Extension Location and Surrounding Area

1.9 The existing Glenlee substation adjoins the Glenlee hydro power station on the Water of Ken, near St John's Town of Dalry. The Glenlee Substation, which is owned and operated by SPEN, converts the 11kV electricity output from the hydro power station up to a grid voltage of 132kV.

1.10 The site of the substation extension which forms part of the proposed development is bounded to the north by the existing Glenlee substation, hydro power station and local road (the U2S), to the east by residential housing and a local road (the U3S), to the south by undeveloped green field land, and to the west by the penstock of the Glenlee hydro power station and undeveloped green field land. In the wider area, there is an overflow car park located directly across from the existing substation and the rest of the surrounding land is currently mainly agricultural, and is used for grazing livestock.

1.11 Glenlee Hill to the south-west of the site has a peak elevation of approximately 270m which slopes steeply in a north-easterly direction, levelling out close to the site. Areas to the north and north-east of the site and local road are relatively flat and vary in elevation from approximately 53m AOD to 50m AOD. This low-lying area likely represents the historic floodplain of the Coom Burn prior to its realignment and the construction of the power station.

1.12 Excluding the temporary works, the proposed development covers approximately 0.35 ha, and extends primarily to the south-west of SPEN's current land ownership boundary, as illustrated by **Figure 4.1**. In addition, the planning application boundary encompasses the areas around the substation extension itself to accommodate the following temporary works:

- To the north-east, the site boundary extends to the other side of the U2S to accommodate drainage features and as a reserve water treatment area for discharge from the site.
- A temporary construction compound for initial enabling works (including road improvements and formation of the main construction works compound), on the site of the overflow car park, north-east of the substation on the opposite side of the public road (U2S).
- A number of temporary construction elements will be located to the north-west of the proposed extension site, west of the penstock. This will include the construction access from the U2S, the main temporary construction compound, settlement ponds, and temporary topsoil storage areas.
- South of the site of the proposed extension, the site boundary extends to include a temporary vehicle holding area, settlement ponds and material storage areas.
- Passing places are proposed along the A762 from the junction with the A716 and from the junction of the U2S to the new permanent access to the site. The planning application boundary therefore extends along the public road to accommodate these features.

The Applicant

SPEN's Statutory and License Duties

1.13 SPEN owns and operates the electricity transmission and distribution networks in central and southern Scotland through its wholly-owned subsidiaries SP Transmission plc (SPT) and SP Distribution plc (SPD). Its transmission network is the backbone of the electricity system in its area carrying large amounts of electricity at high voltages from generating sources such as windfarms and power stations across long distances. The transmission network includes more than 4,000km of overhead lines and more than 360km of underground cables. The electricity is then delivered via the distribution system serving two million customers, with 83,000 customers located in south-west Scotland.

1.14 As a transmission licence holder for central and southern Scotland, SPEN is required under section 9(2) of the Electricity Act 1989 to:

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

1.15 SPEN also has the following obligations pursuant to its licence conditions:

- To provide for new electricity generators wishing to connect to the transmission system in its licence area. SPEN is also obliged to ensure that the system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity.
- To plan and develop its transmission system in accordance with the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS) and in so doing take account of National Grid's obligations as system operator, to co-ordinate and direct the flow of electricity on, to and over the transmission system in Great Britain.

1.16 In response to statutory and licence obligations upon it, SPEN therefore requires to ensure that the transmission system is developed and maintained in an economic, coordinated and efficient manner in the interests of existing and future customers.

1.17 Section 38 and Schedule 9 of the Electricity Act 1989 imposes a further statutory duty on SPEN to take account of the following factors in formulating any relevant proposals:

"(a) to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and,

(b) to do what it reasonably can to mitigate any effects which the proposals would have on the natural beauty of the countryside or any such flora, fauna, features, sites, buildings or objects."

1.18 SPEN has a 'Schedule 9 Statement' which sets out how it will meet the duty placed upon it under Schedule 9. The Statement also refers to the application of best practice methods to assess the environmental impacts of proposals and to identify appropriate mitigation measures for new substations and overhead lines.

The Planning Application and Environmental Impact Assessment Process

1.19 SPEN has taken the decision as the applicant to submit the planning application for the proposed development in advance of, and separately from, the wider KTR Project. As noted above, this has been agreed with D&GC.

1.20 The requirement for EIA is provided by the EIA Regulations. Schedules 1 and 2 of the EIA Regulations specify developments which require, or which may require, that an EIA be undertaken. Schedule 1 developments are those which require an EIA in every case, and Schedule 2 developments are those which may require EIA if they are likely to have significant effects on the environment by virtue of their size, location, nature, etc. The proposed development in itself is not a category of development listed in either Schedule 1 or 2 of the EIA Regulations and as such would not be deemed as an EIA development.

1.21 Whilst the proposed development does not fall explicitly within the 'descriptions of development' set out in Schedule 1 or Schedule 2 of the EIA Regulations, it forms part of the wider KTR Project. SPEN is also responsive to local concerns and therefore as a matter of good practice has elected to treat the proposed development as an EIA development. Although no prior Screening Opinion has been adopted by D&GC and no Screening Direction has been made by the Scottish Ministers, the submission by a developer of

an EIA Report is an event which determines if a development in terms of regulation 6 (2)(c) of the EIA Regulations. In this case SPEN has undertaken an EIA and prepared an EIA Report[2].

Structure of this Report

1.22 The EIA Report comprises the following chapters as well as a free-standing Non-technical Summary (NTS):

- **Chapter 1: Introduction** (this chapter) provides a brief introduction to the proposed project and the legislative requirements for an EIA, together with an outline of the structure of the EIA Report and an introduction to the development and the applicant.
- **Chapter 2: Approach to the EIA** describes the EIA process in relation to the requirements of the EIA Regulations, including the key steps in the process of EIA, and the consultation undertaken. Information on topics 'scoped out' of detailed assessment is also provided in this chapter.
- **Chapter 3: Site Selection and Development Design** includes details of the alternatives considered in developing the design of the proposed extension to Glenlee Substation. The development is described and construction programme and activities are summarised.
- **Chapter 4: Development Description and Construction, Operation and Maintenance** provides a description of the development and details of the development proposal.
- **Chapter 5: Planning Policy Context** sets out the relevant national and local planning policy of relevance to the development.
- **Chapter 6: Landscape and Visual Amenity** assesses the potential effects of the development on landscape and visual amenity (including the visual amenity of residents), including a consideration of the implications for designated landscapes.
- **Chapter 7: Hydrology and Water Resources** sets out the assessment of the potential effects on hydrology which has been undertaken, including consideration of changes required to the existing culvert which is located within the site.
- **Chapter 8: Ecology** considers potential effects of the development on habitats and protected species.
- **Chapter 9: Cultural Heritage** considers the potential for direct and indirect setting effects on cultural heritage assets within the site boundary and in the surrounding area.
- **Chapter 10: Construction Noise** considers the potential effects of the development relating to construction noise. The potential effect associated with operational noise is also considered in this chapter.
- **Chapter 11: Access, Traffic and Transport** assesses potential effects relating to access, traffic and transport including reference to a Construction Traffic Management Plan (CTMP) which has been prepared to manage this. The CTMP also details the improvements to the public road network that are required to facilitate the development.
- **Chapter 12: Summary** sets out all the potential significant effects identified in **Chapters 6-11**.

1.23 Within each of these environmental topic chapters, the information provided is structured in a consistent way, as far as practicable. **Box 1** provides further information on the structure of each chapter.

Box 1: Structure of EIA Report Topic Chapters (Chapters 6-11)

Introduction: outlines the content and key objectives of the chapter.

Scope of the Assessment: identifies the key issues to be considered in the assessment and any issues which are considered unlikely to be significant and which have been scoped out of detailed assessment.

Assessment Methodology: outlines the legislation and guidance that the assessment has been undertaken in accordance with, the consultation undertaken with statutory consultees and other organisations, methods used (desk study, surveys etc.), the study area, the criteria used to assess the significance of the effects and, (as required by the EIA Regulations) any limitations encountered in undertaking the assessment.

Existing Conditions: summarises the baseline situation, including field survey results where appropriate.

The 'Do Nothing' Scenario: include a description of the predicted environmental conditions and proposed or likely changes likely to occur in the absence of the development which are of relevance to the topic assessed.

Design Considerations: outlines any further modifications to the design as part of the iterative design process.

Micrositing: includes any additional topic specific micrositing considerations that are required.

Assessment of Effects: details the likely significance of effects (both negative and positive) of the development during the construction and operational phases, as well as the cumulative effects for each connection. Proposed mitigation and residual effects are detailed.

Interrelationship between Effects: considers where effects between topics may interact to lead to interrelated effects on a single receptor.

Further Survey Requirements and Monitoring: summarises any additional surveys or monitoring which are to be undertaken post-construction.

Summary of Effects: summarises in tabular format the significance of effects, mitigation measures and residual effects.

1.24 The assessment section of each specialist chapter is structured in a way that is most logical for that particular topic area and, whilst maintaining the general structure identified above, may include other sections specific to that particular topic.

1.25 The final part of the EIA Report **Chapter 12: Summary** presents the findings of the EIA, together with a summary of the mitigation measures identified that should be secured through the use of conditions. The report is supported by a number of figures and appendices.

1.26 The planning application is also accompanied by a Pre-Application Consultation (PAC) Report which sets out the details of the consultation undertaken. A Design and Access Statement has also been provided as required for National Development under the provisions of the Town and Country Planning (Development Management Procedure) Regulations (Scotland) 2013 and the relevant provisions of the Town and Country (Scotland) Act 1997 (as amended). The Design and Access Statement sets out the design principles and concepts that have been applied for the proposed development.

Statement of Expertise

1.27 Regulation 5(5) of the EIA Regulations requires that:

"(5) In order to ensure the 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."

1.28 LUC has coordinated the EIA and compiled this EIA Report on behalf of SPEN. LUC has secured the Institute of Environmental Management and Assessment (IEMA) Quality Mark for EIA. This provides

[2] Regulation 6 (2)(c) of the EIA Regulations relates to *"determining whether Environmental Impact Assessment is required"* where, as is the case for the proposed extension to Glenlee substation, *"no screening opinion has been adopted by the planning authority and no screening direction has been made by the Scottish Ministers, the submission by the developer in relation to the development of an EIA report"*.

assurance to third party stakeholders that LUC is committed to producing EIA Reports of high quality which are regularly independently reviewed by IEMA. LUC prepared the introductory chapters (**Chapters 1-5**) in conjunction with SPEN and the summary chapter (**Chapter 12**) in addition to a number of specialist topic areas as noted in **Table 1.1** below. Whilst LUC had overall responsibility for the EIA Report, sub-consultants have undertaken specialist assessments where necessary as detailed in **Table 1.1**.

Table 1.1: Responsibilities for the EIA Report[3]

ES Topic Chapter	Organisation Responsible
Landscape and Visual Amenity	LUC
Hydrology and water Resources	Kaya Consulting Limited
Ecology	LUC
Cultural Heritage	CFA Archaeology Limited
Construction Noise	Hoare Lea
Access, Traffic and Transport	Mott MacDonald

1.29 Details of the relevant qualifications and experience of the lead members of the EIA team are set out in **Appendix 1.1**.

Availability of the EIA Report

1.30 Electronic copies of the NTS and all other EIA Report documents can be downloaded free of charge via the Project website: www.spendgsr.co.uk.

1.31 The EIA Report is available for public inspection during normal opening hours at the following locations:

- **Dalry Library:** Main Street, ST. John's Town of Dalry, DG73UP. Tel: 01644 430234. Opening hours: Tuesday 10.30am to 2pm and Friday 11am to 4.30pm.
- **Kirkcudbright Library:** DG Customer Services – Kirkcudbright, Daar Road Offices, Kirkcudbright, DG6 4JG. Tel: 01557 332516. Opening Hours: Monday to Friday 9am to 5pm, Saturday 10am to 1pm.
- **Dumfries Ewart Library:** Catherine Street, Dumfries, DG1 1JB. Tel: 01387 253820. Opening hours: Monday 9am to 6.30pm, Tuesday 9am to 5pm, Wednesday 9am to 6.30pm, Thursday 9am to 6pm, Friday 9am to 5pm, Saturday 10am to 3pm.
- **Dumfries Planning Office:** English Street, Dumfries, DG12HS. Opening hours: Monday to Friday 9am to 5pm.

1.32 High resolution electronic copies of the EIA Report may be purchased for £15 and hard copies for £75 by contacting SPEN using the contact details set out below.

- Dedicated freephone number: 0800 157 7353
- Dedicated project email address: dgsr@communityrelations.co.uk
- Freepost address: FREEPOST SPEN DGSR.

[3] Data used in preparation of the figures of **Chapters 6-12** of the EIA Report was supplied by the relevant organisations detailed in **Table 1.1**.

Glenlee Substation Extension EIA Report

Figure 1.1: Glenlee Substation Extension Location

- Planning application boundary
- Substation extension
- Temporary compound and access for main works
- Temporary construction vehicle holding area
- Passing place

CB:JN EB:robertson_s LUCGLA FIG01-01_6118-002_Glenlee_Substation_Location 27/08/2019

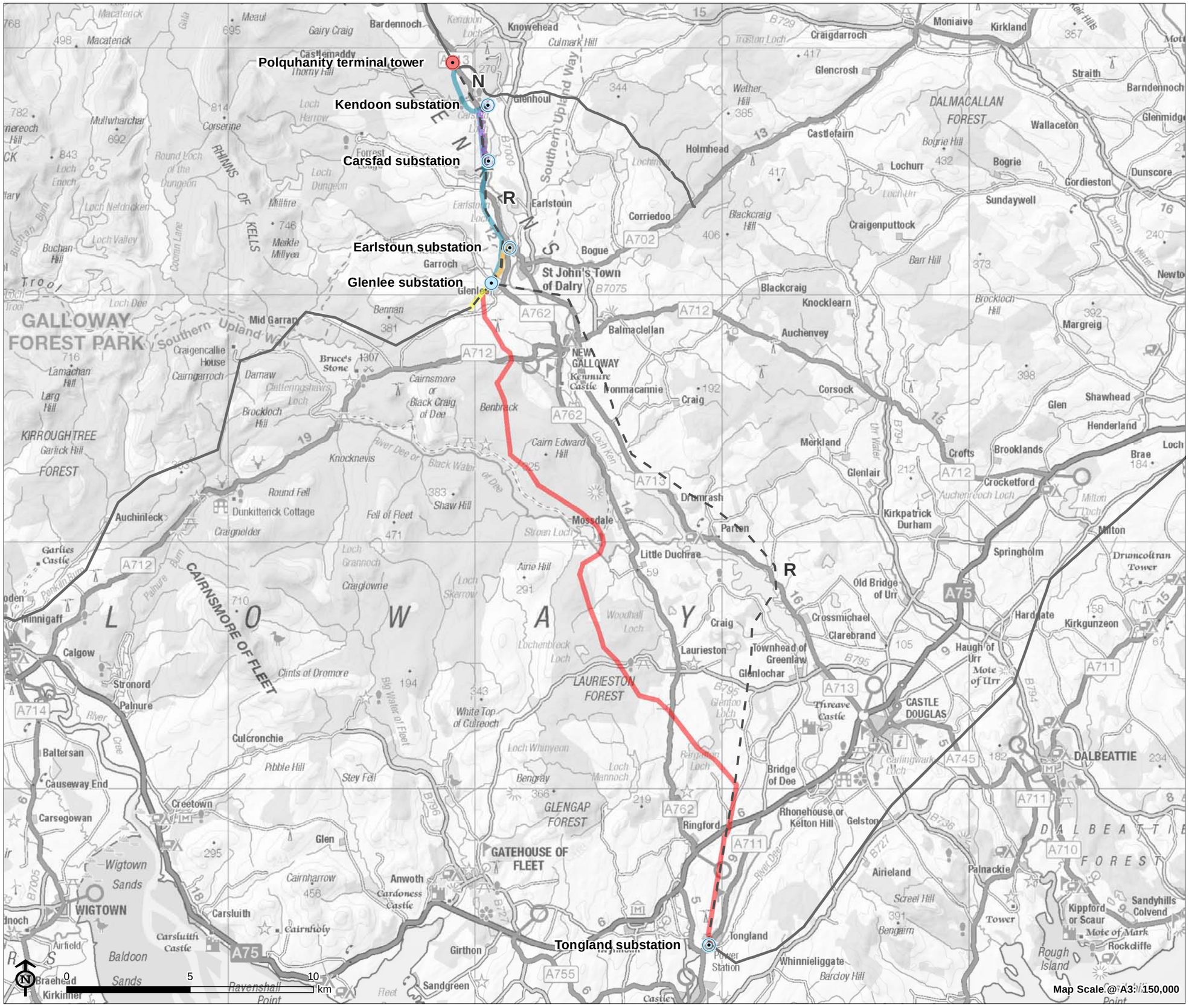


Figure 1.3: The Five Connections of the KTR Project

The KTR Project

- Polquhanity sealing end and terminal tower
- Substation and hydro electricity generating station
- Polquhanity to Glenlee via Kendoon
- Carsfad to Kendoon
- Earlstoun to Glenlee
- BG route deviation
- Glenlee to Tongland
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network