

Site Selection Consultation Document – Alyth Substation Extension

October 2026



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Glossary

Term	Definition
Alternating Current (AC)	Type of electrical current in which the direction of flow of electrons switches back and forth at regular intervals or cycles.
Ancient Woodland (AW)	Land that is currently wooded and has been continually wooded, at least since 1750.
Ancient Woodland Inventory (AWI)	In response to a 1980 select committee which recommended that ancient woods should be recognised and treated as a separate category, the Nature Conservancy Council compiled the Inventories of Ancient, Long-established and Semi-natural woodlands. A more sophisticated classification was developed for woodlands in Scotland due to the nature of the available historical sources.
Area of Search (Study Area)	A broad geographical area within which possible sites might be capable of identification within approximately 5 km of the required connectivity point; usually determined by geographical features such as coastlines or hill/mountain ranges, or designation boundaries, such as National Park boundaries.
Biodiversity Net Gain (BNG)	An approach to development and land management that leaves the natural environment in a measurably better condition than it was before the project began. SSEN is committed to delivering at least a 10% increase in biodiversity value on all new consenting sites, alongside protecting irreplaceable habitats and aiming for no net loss
Biodiversity Units (BU)	The standard, measurable units used to quantify the ecological value of natural habitats under the UK's Biodiversity Net Gain framework
Consultation	The dynamic process of dialogue between individuals or groups, based on a genuine exchange of views and, normally, with the objective of influencing decisions, policies or programmes of action.
Distribution Network Operator (DNO)	A licensed company that owns and operates the network of cables, transformers and towers that provide electricity.
Engagement	The establishment of effective relationships with individuals or groups.
Geographical Information System (GIS)	A system that spatially maps out our electricity distribution network assets.
Gigawatt (GW)	A unit of electrical power equal to one billion watts.
Grid Supply Point (GSP)	The point at which electricity enters the distribution network, leaving the transmission network
Groundwater Dependant Terrestrial Ecosystems (GWDTE)	Natural wetland habitats that critically rely on underground water sources rather than just rainfall.
High Voltage Direct Current (HVDC)	HVDC is an effective way to transmit electricity and is primarily transmitted in this form by overhead lines or underground cables.
Holistic Network Design (HND)	Detailed report identifying the electricity network needs to enable connection of 23GW of offshore wind, including the needs associated with the offshore and onshore transmission network, facilitating the UK government offshore wind target of 50 GW by 2030.
Kilovolt (kV)	A unit of electrical power equal to one thousand volts.
Kilowatt	A unit of electrical power equal to one thousand watts.

Landscape Character Type (LCT)	A distinct, generic kind of landscape that shares broadly similar combinations of physical and cultural attributes wherever it appears
Land Capability for Agriculture (LCA)	A classification system that ranks agricultural land based on its potential productivity and cropping flexibility, as determined by long-term physical limitations from soil, climate, and relief (topography).
Long-established woodland of plantation origin (LEPO)	Refers to an area of land that was first mapped as a plantation on historical maps (such as the 1750 or 1860 maps used in the Scottish Ancient Woodland Inventory) and has remained continuously wooded up to the present day.
Local Development Plan (LDP)	LDP's are usually prepared by the Local Planning Authority and set out the proposals for future development and use of land in their area.
Megawatt (MW)	A unit of electrical power equal to one million watts.
MVAr	Mega Volt-Amperes Reactive
National Planning Framework 4 (NPF4)	The national spatial strategy for Scotland. It sets out the spatial principles, regional priorities, national developments and national planning policy. It replaces NPF3 and Scottish Planning Policy.
Planning Red Line Boundary	This area should include all land necessary to carry out the Proposed Development.
Preferred Site	The Option that is the preferred choice, following Stage 2 – Detailed Site Selection based on environmental, engineering and cost perspectives.
Scheduled Monument (SM)	A nationally important archaeological site, building, ruin, earthwork, or structure that is legally protected by the government because of its special historic, architectural, traditional, artistic, or archaeological interest
Special Area of Conservation (SAC)	A strictly protected site designated under the European Union's Habitats Directive to safeguard rare, threatened, or vulnerable natural habitats and species
Scottish Hydro Electric Power Distribution (SHEPD)	Distribution area for the northern part of Scotland that is part of SSEN
Site and Monument Record Entries (SMR)	Individual, catalogued database profiles that detail known archaeological sites, historic buildings, artifacts, and modified landscapes within a specific geographic region
Special Protection Area (SPA)	Strictly protected sites designated to conserve rare, vulnerable, and migratory wild birds classified under the Conservation of Habitats and Species Regulations.
Stakeholders	Organisations and individuals who can affect or are affected by SSEN Transmission works.
Substation	A node on the network to allow safe control of the electricity network. This could include convergence of multiple circuits, transformation of voltage or other functions to maintain and operate the electricity network.
Substation Site Area	Site area identified as necessary to deliver all the substation infrastructure requirements e.g. platform, access tracks, temporary construction area, drainage including SUDS, landscaping.
STATCOM	Static Synchronous Condenser. A grid stabilising device that keeps voltage steady by adding or removing reactive power.
The National Grid	The electricity transmission network in Great Britain.
Volts	The international unit of electric potential and electromotive force.
Watts	The unit of measurement for the rate at which electrical energy is transferred or used.

Works	Constructing new transmission infrastructure such as substations, overhead lines, underground cables, major refurbishment of these, the dismantling and removal of any parts of the system; and associated works, which may include formation of access tracks, bridge and road improvements, tree cutting, drainage etc.
Zone of Influence (Zol) (Ecology and Ornithology)	The Zone of Influence of the development is the area over which ecological / ornithological features may be subject to effects as a result of its construction and operation, which may extend beyond the boundary of the Site. The Zol will vary for different ecological features depending on their sensitivity to an environmental change.

1 Introduction

This document has been prepared by Scottish and Southern Electricity Networks Transmission (SSEN Transmission). SSEN Transmission, operating under licence held by Scottish Hydro Electric Transmission plc (SHE Transmission), owns, operates and develops the high voltage electricity transmission system in the north of Scotland and remote islands. This document invites comments from all interested parties on the potential site for a new 225 Mega Volt-Amperes Reactive (MVar) Static Synchronous Compensator (STATCOM) and ancillary infrastructure (hereafter referred to as the 'Proposed Development') at land southwest of Alyth 275kV substation, Alyth, Perth and Kinross.

This document describes the site selection process followed, site options identified, the appraisal undertaken, the alternatives considered during the selection of options and the suggestion for a potential site.

This Consultation Document, alongside other information is available to the public and consultees as part of the ongoing consultation and can be found on the project website:

[Alyth 400kV Substation - SSEN Transmission](#)

Comments and feedback on this Consultation Document should be sent to:

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All comments are requested by 24 November 2026.

1.1 Proposed Development Background and Need

The Proposed Development comprises an extension to the existing Alyth 275kV substation platform and installation of a 225 MVar STATCOM. Ancillary infrastructure would be required to facilitate this including an underground cable (UGC) link, cable sealing end compound, busbar extension and Gas Insulated Bar (GIB) to connect the new STATCOM to the existing Alyth 275kV substation.

The purpose of the Proposed Development is to install additional reactive compensation equipment in the Alyth area to maintain network performance and provide enhanced voltage control capability. The development is required to address low-voltage and voltage step change constraints identified through SSEN Transmission network studies and ensure compliance with the National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS) by maintaining voltages within planning and operational limits as the transmission network develops.

Since the system need at Alyth is driving the new STATCOM installation, proximity to the existing Alyth 275kV substation is a key consideration, the existing substation was designed and constructed to 400kV standard and an upgrade to 400kV operation is planned for completion in 2029. Locating the STATCOM at a greater distance would increase underground cable length and introduce additional consenting, environmental and cost challenges. The project therefore focuses on identifying a suitable nearby location capable of supporting the required infrastructure. This included potential satellite site options, potential extension options to the existing Alyth 275kV substation, and potential reconfiguration of the existing Alyth 275kV substation platform, while minimising the overall project impact.

1.2 Substation Proposals

Originally the Scope of the project included the possibility of constructing of a new 400kV substation, which required a larger site area and additional infrastructure. However, as the project has developed and further technical studies were completed, the preferred technical solution evolved and a full new substation was no longer needed. The scope of the project was able to be refined and the scope of each of the satellite site, extension and reconfiguration can be found below.

1.2.1 Scope of Satellite Sites

Satellite site options consisted of the development of a new standalone STATCOM compound. These options typically required the construction of a greenfield or brownfield development area with associated electrical, civil, and access infrastructure.

The scope associated with satellite site options generally included:

- Development of a new fenced compound suitable for installation of the STATCOM equipment and associated auxiliary systems.
- Construction of new internal access roads, drainage systems, earthworks, platforms, and security infrastructure.
- Installation of new foundations and civil infrastructure to support STATCOM equipment, buildings, transformers, and associated plant.
- Provision of new earthing systems and extension of telecommunications and SCADA systems to the new site.
- Installation of new underground cable circuits and/or overhead line interfaces between the satellite compound and the existing Alyth substation. Cable routes varied by option and

included road crossings, watercourse interfaces, and potential Horizontal Directional Drilling (HDD) requirements in some locations.

- Development of temporary construction compounds and construction access arrangements.
- Potential diversion or accommodation works associated with existing utilities, land drainage, agricultural land use, or nearby infrastructure.
- Additional environmental and consenting considerations due to development outwith the existing operational boundary, including landscape and visual impacts, ecology constraints, landowner interfaces, and planning considerations.

Satellite site options also introduced increased interface requirements between the new compound and the existing operational substation, including outages and tie-in works during commissioning activities.

Examples of Stage 1 satellite site options included Options 1, 2, 3, 4, 5, 16, 17, and 18. These options generally required dedicated cable routes ranging from approximately 400m to 1.75km in length depending on location.

1.2.2 Scope of Substation Extension

Substation extension options consisted of extending the existing Alyth substation operational boundary to accommodate the new STATCOM installation adjacent to the existing infrastructure.

The scope associated with substation extension options generally included:

- Extension of the existing substation fence boundary and operational compound area.
- Earthworks and platform development adjacent to the live substation.
- Installation of new STATCOM equipment, associated buildings, transformers, cooling systems, and auxiliary infrastructure within the extended area.
- Extension and integration of existing substation systems including earthing, drainage, LVAC supplies, security, telecommunications, and control systems.
- Modifications to existing site drainage and Sustainable Drainage System (SuDS) infrastructure where required.
- Localised diversion or modification of existing site features including bunds, access roads, drainage systems, and buried services.
- Construction of short cable connections between the new STATCOM equipment and the existing substation infrastructure.
- Integration works within close proximity to operational assets requiring careful outage coordination and construction sequencing.

Compared to satellite site options, extension sites generally reduced cable route complexity and external land impacts, while increasing the complexity of interfaces with existing operational infrastructure and existing site constraints. Stage 1 extension options included Options 21 and 22.

1.2.3 Scope of re-configuration of the existing site

Reconfiguration options consisted of modifying the existing Alyth substation layout within the current operational boundary to create sufficient space for installation of the new STATCOM equipment.

The scope associated with reconfiguration options generally included:

- Rearrangement and relocation of existing substation equipment, infrastructure, or overhead line interfaces within the live operational compound.
- Modification of existing busbar arrangements, plant positions, and clearances to create suitable space for the STATCOM installation.
- Relocation of existing overhead line terminations and associated gantries where required.
- Significant temporary works, construction phasing, and outage planning to maintain operational integrity of the existing transmission network during construction.
- Installation of new foundations, cable routes, earthing, drainage, and auxiliary systems within a constrained live substation environment.
- Extensive coordination with operations and outage planning teams due to the requirement to work adjacent to or directly modify operational assets.
- Increased construction and programme complexity associated with maintaining system availability and network resilience throughout delivery.

Within the Stage 1 options assessment, Option 20 represented the primary reconfiguration-based solution. This option required internal movement of the SY1 and SY2 lines within the existing substation boundary and associated outages during construction activities.

1.3 Site Selection Process

The site selection process has followed formal internal guidance to enable a consistent and rigorous selection of potential sites. Technical, environmental, and cost considerations are brought together in a way which seeks the best balance in accordance with SSEN Transmission's Network Operator's Licence and the Electricity Act 1989. This staged process leads to the identification of a finalised proposed substation site which will be taken forward for planning.

The site selection process has been carried out in compliance with SSEN Transmission's Substation Site Selection Procedures for Voltages at or above 132kV document PR-NET-ENV-502. In line with this guidance, the principal site selection stages are:

- **Stage 1: Initial Site Screening:** This stage seeks to identify technically feasible, economically viable and environmentally acceptable site options within a defined area. The search area may vary depending on terrain, other infrastructure, designated areas and features and connection options. The aim is to identify several potential sites which are initially assessed for suitability and to identify which of the sites can be shortlisted for further assessment.
- **Stage 2: Detailed Site Selection:** This stage seeks to identify a potential substation site, which avoids where possible physical, environmental and amenity constraints, is likely to be acceptable to stakeholders and is economically viable, taking into account engineering and connection requirements.

This document describes the findings from Stages 1 and 2. For Stage 2, all considerations within engineering, environmental / consent and cost categories have been assigned RAG (Red, Amber, Green) ratings.

Table 1.1 defines the high-level convention for assigning colour coded RAG ratings (from Annex 7 of the guidance document PR-NET-ENV-502).

Table 1.1. General RAG Rating Key

Performance	Comparative Appraisal
Most preferred	Low potential for the development to be constrained.
-	Intermediate potential for the development to be constrained.
Least preferred	High potential for the development to be constrained.

1.4 Potential Site Area Information Sheets

The following list of figures, called Potential Site Area Information Sheets, have been produced to accompany the Stage 1 and Stage 2 appraisals and are contained within Appendix A:

- Figure 1 Site Identification
- Figure 2 a Location of Stage 1 Sites
- Figure 2 b Location of Stage 1 Sites
- Figure 3 a Location of Stage 2 Sites
- Figure 3 b Location of Stage 2 Sites
- Figure 4 Ecological Designated Sites
- Figure 5 Cultural Heritage
- Figure 6 Water Framework Directive Rivers
- Figure 7 Aquifer Classification
- Figure 8 River Flooding
- Figure 9 Surface Water Flooding
- Figure 10 Forest and Wood Strategy
- Figure 11 Forest Ownership
- Figure 12 Land Capability for Agriculture
- Figure 13 Landscape Character Types
- Figure 14 Combined Environmental Constraints
- Figure 15 Site 22 Combined Environmental Constraints

2 Stage 1: Initial Site Screening

2.1 Site Identification

An initial list of 22 sites, within a 5km buffer of the existing Alyth 275 kV substation (shown in Figure 1) were identified using SSEN Transmission's multi-criteria analysis (MCA) tool where Geographical Information Systems (GIS) maps were produced highlighting areas with the highest potential / fewest constraints for a new substation. These areas are significantly larger than the likely site area required for the new substation, which allows for micro-siting if necessary.

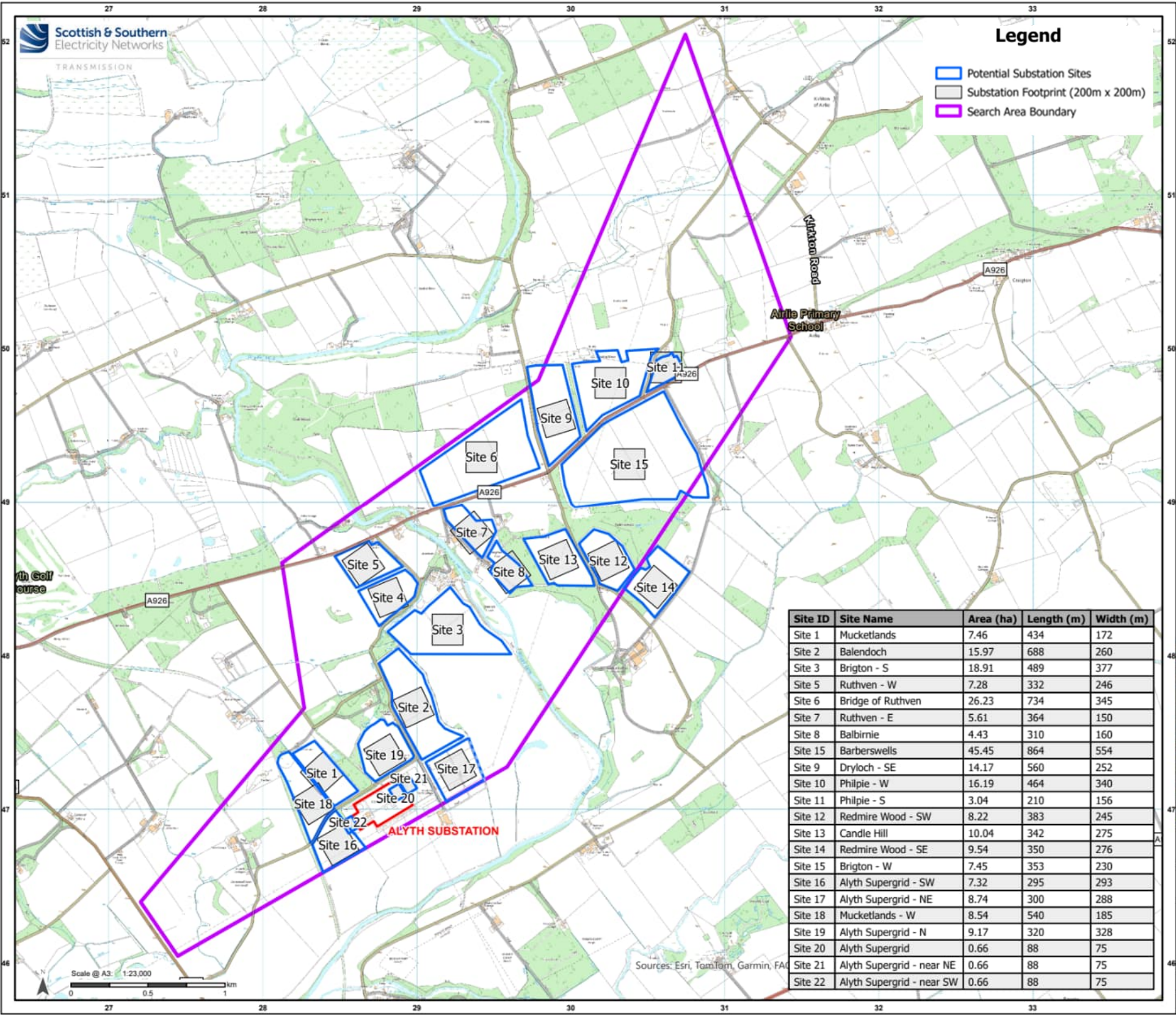


Figure 1. Site Identification

2.2 Initial Site Sifting

The initial site sifting stage comprised a site walkover and high-level desktop review to identify which sites were too sensitive, constrained or technically challenging to progress further. Through this assessment the project team were able to discount sites 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 19. This resulted in a total of eight sites taken forward for the Stage 1 assessment.

2.3 Stage 1 Site Summaries

A desk-based environmental appraisal of the potential substation sites was conducted by AECOM, and a desktop technical review was carried out by the Engineering Team. This information was then reviewed and the project team worked together to identify which sites should be taken forward to Stage 2. This section describes each of the eight sites and summarises the key considerations from an environmental and engineering perspective. Figure 2 shows locations of the eight sites. The constraints summarised in this section are presented in the Potential Site Area Information Sheets in Appendix A.

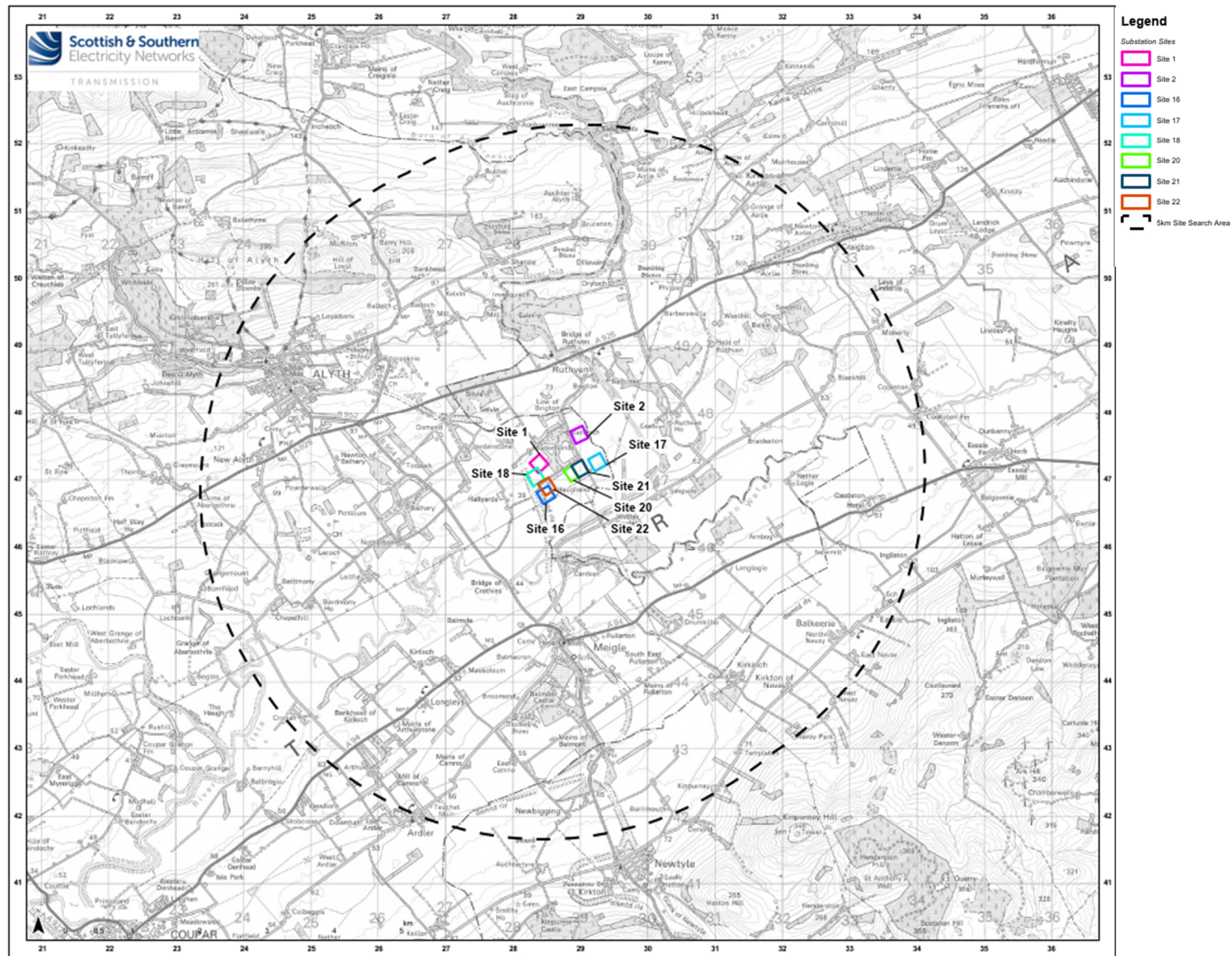


Figure 2a. Locations of Stage 1 Sites

2.3.1 Site 1

Site 1 is located approximately 3.5km southeast of the town of Alyth at its nearest point and is located approximately 300m northwest of the existing Alyth 275kV substation. The River Isla is located approximately 850m southeast of Site 1.

Engineering

- Site 1 would require an electrical connection route of approximately 450m to the existing Alyth 275kV substation.
- The indicative connection route would require a road crossing. The final connection arrangement, including whether it would comprise underground cable, overhead line or a combination of both, would require further assessment.
- A new platform, access arrangements, drainage infrastructure and associated earthworks would be required on the greenfield site.
- The cable route, construction access and delivery route for abnormal loads would require further development following topographical and ground investigations.

Environmental

- Site 1 is located approximately 1km northwest of the River Tay Special Area of Conservation (SAC) designated for Annex I river habitat, notable fish and otter *Lutra lutra*.
- Site 1 is 65m southwest of Long-Established Woodland of Plantation Origin (LEPO).
- An active felling license for thinning (Case ref: FPA-11607) exists approximately 95m east of this site.
- Site 1 is located within a Drinking Water Protection Zone for groundwater and is located on a moderately productive aquifer (Class 2B)¹.
- Haughend enclosure scheduled monument (SM7263) is located approximately 350 m southeast of Site 1.
- Site 1 is located within Landscape Character Type (LCT): 384: Broad Valley Lowlands – Tayside².
- Site 1 is located on land within a Land Capability for Agriculture (LCA) of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.
- The closest Core Path (ALTH/141) is located approximately 130 m west of Site 1.

¹ Scotland's Environment (2024). *Scotland's Environment Map* [Online]. Available from: [Map | Scotland's environment web](#)

² NatureScot (2019). Broad Valley Lowlands - Tayside [Online]. Available from: LCT 384 - Broad Valley Lowlands - Tayside - final pdf.pdf

2.3.2 Site 2

Site 2 is located approximately 4km southeast of the town of Alyth at its nearest point and is located approximately 460m northeast of the existing Alyth 275kV substation. The River Isla is located approximately 650m east of Site 2.

Engineering

- Site 2 would require an electrical connection route of approximately 500m to the existing Alyth 275kV substation.
- The indicative route would require one or more road crossings, increasing the complexity of the electrical connection and its construction.
- The available connection corridor may be constrained by the surrounding road network and nearby properties. The final underground cable and/or overhead line arrangement would require further assessment.
- A new platform, access, drainage and associated earthworks would be required.

Environmental

- Site 2 is located approximately 700m northwest of the River Tay SAC designated for Annex I river habitat, notable fish and otter.
- Site 2 is located 40m east of an area of LEPO Woodland.
- An active felling license for thinning (Case ref: FPA-11607) exists approximately 30m west of this site.
- Site 2 is located within a Drinking Water Protection Zone for groundwater and is located on a moderately productive aquifer (Class 2B)¹.
- Site 2 is located 30m west of an unnamed tributary of the River Isla (SEPA ID: 6523) with potential for water vole suitability.
- Haughend enclosure scheduled monument (SM7263) is located approximately 670m southwest of Site 2.
- Site 2 is located within LCT: 384: Broad Valley Lowlands – Tayside².
- Site 2 is located on land within a LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.
- The closest Core Path (ALTH/141) is located approximately 840m west of Site 2.

2.3.3 Site 16

Site 16 is located approximately 3.8km southeast of the town of Alyth at its nearest point and is located approximately 330m southwest of the existing Alyth 275kV substation. The River Isla is located approximately 410m southeast of Site 16.

Engineering

- Site 16 provides a relatively short connection to the existing Alyth 275kV substation, with an indicative route length of approximately 400 m.
- The indicative route does not require a public road crossing, reducing the complexity of cable installation compared with several of the other options.
- Existing overhead lines are located close to the site. These may provide opportunities for the connection arrangement but would also introduce electrical clearance, construction safety and outage considerations.
- A new platform, access, drainage and associated earthworks would be required. The final underground cable and/or overhead line arrangement would require further development.

Environmental

- Site 16 is located approximately 500m northwest of the River Tay SAC designated for Annex I river habitat, notable fish and otter.
- Site 16 is located 410m south of an area of LEPO Woodland.
- Site 16 is within close proximity of woodlands with potential habitat suitability for pine marten, red squirrel and foraging bats.
- Site 16 is located within a Drinking Water Protection Zone for groundwater and is located on a moderately productive aquifer (Class 2B)¹
- Haughend enclosure scheduled monument (SM7263) is located approximately 70m northeast of Site 16.
- Site 16 is located within LCT: 384: Broad Valley Lowlands – Tayside².
- Site 16 is located on land within a LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.
- The closest Core Path (ALTH/141) is located approximately 60 m west of Site 16.

2.3.4 Site 17

Site 17 is located approximately 4.4km southeast of the town of Alyth at its nearest point and is located approximately 370m east of the existing Alyth 275kV substation. The River Isla is located approximately 520m southeast of Site 17.

Engineering

- Site 17 would require an electrical connection route of approximately 550m to the existing Alyth 275kV substation, including one or more road crossings.
- The site overlaps with an operational pig farm. Development at this location could therefore require changes to existing access and farming operations, as well as careful coordination of construction activities.
- Existing overhead lines pass close to the site, introducing potential electrical clearance, crossing and outage requirements.
- A new platform, access, drainage and associated earthworks would be required. The final connection technology and alignment would require further assessment.

Environmental

- Site 17 is located approximately 700m northwest of the River Tay SAC designated for Annex I river habitat, notable fish and otter
- Site 17 is located 450m southeast of an area of LEPO Woodland.
- An unnamed tributary of the River Isla runs 40m from the eastern edge of Site 17.
- Haughend site, an undesignated site and monument record entry (SMR) (Site ID: 278753³) located within the southwestern section of Site 17.
- Site 17 is located within a Drinking Water Protection Zone for groundwater and is located on a moderately productive aquifer (Class 2B)¹.
- Haughend enclosure scheduled monument (SM7263) is located approximately 540m southwest of Site 17.
- Site 17 is located within LCT: 384: Broad Valley Lowlands – Tayside².
- Site 17 is located on land within a LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.
- The closest Core Path (ALTH/141) is located approximately 950 m southwest of Site 17.

³ Trove Scotland (2026). Haughend site (278753). [Online] Available from: Haughend | Place | trove.scot

2.3.5 Site 18

Site 18 is located approximately 3.5km southeast of the town of Alyth at its nearest point and is located approximately 350m west of the existing Alyth 275kV substation. The River Isla is located approximately 720m southeast of Site 18.

Engineering

- Site 18 would require an electrical connection route of approximately 500m to the existing Alyth 275kV substation.
- The indicative route includes a road crossing, which would increase cable installation and traffic management requirements.
- Existing overhead lines are located close to the proposed site, creating potential interfaces with the compound layout and construction activities.
- A new platform, access, drainage and associated earthworks would be required. Further assessment would be needed to confirm whether the connection would use underground cable, overhead line or a combination of both.

Environmental

- Site 18 is located approximately 700m northwest of the River Tay SAC designated for Annex I river habitat, notable fish and otter.
- Site 18 is located 220m southwest of an area of LEPO Woodland.
- Site 18 contains habitat with potential suitability for roosting, commuting and foraging bats, which could be directly impacted.
- Site 18 contains and is in close proximity to woodlands with potential habitat suitability for pine marten and red squirrel.
- Site 18 is located within a Drinking Water Protection Zone for groundwater and is located on a moderately productive aquifer (Class 2B)¹.
- Haughend enclosure scheduled monument (SM7263) is located approximately 230m southeast of Site 18.
- Site 18 is located within LCT: 384: Broad Valley Lowlands – Tayside².
- Site 18 is located on land within a LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.
- The closest Core Path (ALTH/141) passes adjacent to Site 18, approximately 5m west.

2.3.6 Site 20

Site 20 is located approximately 4km southeast of the town of Alyth at its nearest point and is located within the boundary of the existing Alyth 275kV substation. The River Isla is located approximately 550m southeast of Site 20.

Engineering

- Site 20 is located within the existing Alyth 275kV substation and would therefore minimise additional land requirements and the length of the connection to the existing 400kV network.
- Construction within the operational substation would create significant interfaces with existing equipment, access routes and electrical safety clearances.
- The option would require the existing SY1 and SY2 circuits to be moved or reconfigured, with associated outages likely to be required during construction.
- The restricted working area would make construction sequencing, crane access, abnormal-load deliveries and cable routing more complex than for an external compound.
- Existing equipment, services and drainage infrastructure may also require diversion or relocation.

Environmental

- Site 20 is located 600m northwest of the River Tay SAC, designated for Annex I river habitat, notable fish and otter.
- Site 20 is located 260m southeast of an area of LEPO.
- Site 20 is located within a Drinking Water Protection Zone for groundwater and is located on a moderately productive aquifer (Class 2B)¹.
- Haughend enclosure scheduled monument (SM7263) is located approximately 160m southwest of Site 20.
- Site 20 is located within LCT: 384: Broad Valley Lowlands – Tayside².
- Site 20 is located entirely within the footprint of the existing Alyth 275kV substation, therefore would not be built on any land with agricultural capability.
- The closest Core Path (ALTH/141) is located 550m west of Site 20.

2.3.7 Site 21

Site 21 is located approximately 4.1km southeast of the town of Alyth at its nearest point and is located adjacent to the east of the existing Alyth 275 kV Substation. The River Isla is located approximately 550m southeast of Site 21.

Engineering

- Site 21 is located immediately east of the existing Alyth 275kV substation and would provide a relatively short electrical connection.
- Locating the STATCOM outside the existing operational compound would reduce the extent of construction within the live substation and could avoid the need to relocate the SY1 and SY2 circuits.
- The option would require an extension or amendment to the existing substation boundary.
- Development to the east would affect existing drainage infrastructure, including the screening bund and SuDS pond, which would require relocation or redesign.
- Cable routing into the existing substation, construction access and outage requirements at the final connection point would require further development.

Environmental

- Site 21 is located approximately 600m northwest of the River Tay SAC, designated for Annex I river habitat, notable fish and otter.
- Site 21 is located 320m southeast of an area of LEPO Woodland.
- Site 21 contains some potential habitat suitability for water vole.
- Site 21 is located within a Drinking Water Protection Zone for groundwater and is located on a moderately productive aquifer (Class 2B)¹.
- Haughend enclosure scheduled monument (SM7263) is located approximately 290m southwest of Site 21.
- Site 21 is located within LCT: 384: Broad Valley Lowlands – Tayside².
- Site 21 is located on land within an LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.
- The closest Core Path (ALTH/141) is located approximately 700m west of Site 21.

2.3.8 Site 22

Site 22 is located approximately 3.8km east of the town of Alyth at its nearest point and is located approximately 260m west of the existing Alyth 275kV substation. The River Isla is located approximately 510m southeast of Site 22.

Engineering

- Site 22 is located immediately west of the existing Alyth 275kV substation and would provide a comparatively short electrical connection to the 400kV network.
- The site would allow most of the new compound to be constructed outside the operational substation, reducing live-site construction interfaces compared with Site 20.
- A new platform, access, drainage infrastructure and extension of the substation security boundary would be required.
- The connection corridor into the existing substation is constrained by existing equipment and infrastructure. The final cable alignment, installation clearances and outage requirements would require further development.
- Site-specific topographical and ground investigations would be required to confirm platform levels, earthworks, foundation design and groundwater management.

Environmental

- Site 22 is located approximately 500m northwest of the River Tay SAC, designated for Annex I river habitat, notable fish and otter.
- Site 22 contains habitat which is potentially suitable habitat for roosting, commuting and foraging bats.
- Site 22 contains and is in close proximity to woodland with potential habitat suitability for pine marten and red squirrel.
- Site 22 is located within a Drinking Water Protection Zone for groundwater and is located on a moderately productive aquifer (Class 2B)¹.
- The Haughend enclosure scheduled monument (SM7263) is approximately 10m southeast of Site 22.
- Site 22 is located within LCT: 384 Borad Valley Lowlands – Tayside².
- Site 22 is located on land within an LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.
- The closest Core Path (ALTH/141) is located approximately 120m west of Site 22.

3 Stage 2: Detailed Site Selection

The appraisal conducted in Stage 1 concluded that Sites 16, 20, 21 and 22 were recommended to be taken forwards into Stage 2. Figure 3 shows locations of the four sites. A combination of field surveys and walkovers coupled with desk-based studies have informed this assessment. Site walkovers were undertaken by several disciplines by AECOM environmental specialists between April and June 2026.

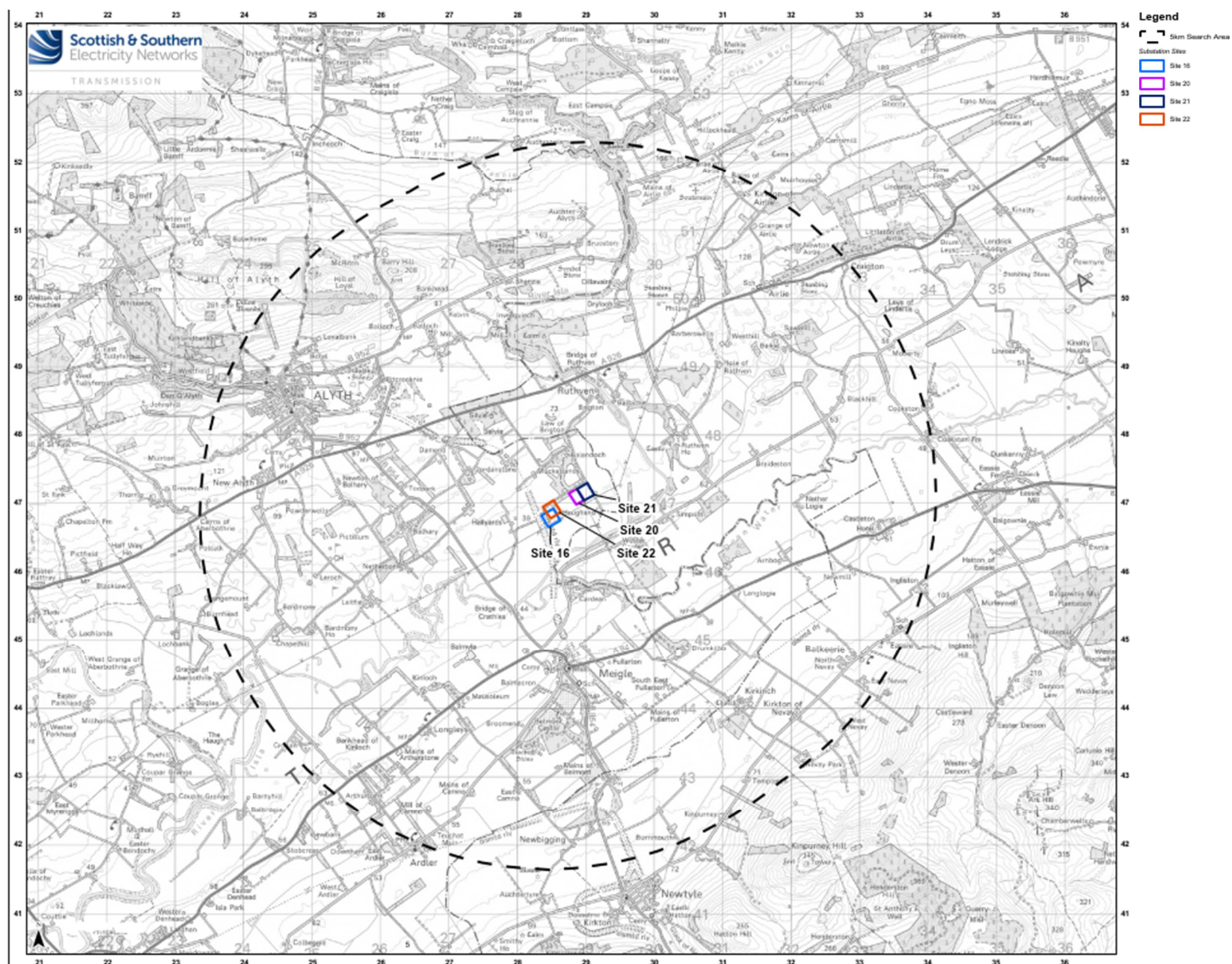


Figure 3a. Locations of Stage 2 Sites

3.1 Stage 2 Site Summaries

A summary outlining the key constraints identified for each of the four sites are set out below, while a summary of the comparative analysis is found in Section 3.2. Figures showing the environmental constraints associated with each site are presented in Appendix A.

3.1.1 Site 16

Engineering

- Site 16 would require an electrical connection of approximately 400m to the existing Alyth 275kV substation.
- The indicative connection route would not require a public road crossing, reducing installation and traffic management requirements compared with several other options.
- Existing overhead lines are located close to the site. These may provide opportunities for the connection arrangement but would introduce electrical clearance, construction safety and potential outage considerations.
- A new platform, access, drainage infrastructure and associated earthworks would be required. Further assessment would be needed to confirm whether the connection would comprise underground cable, overhead line or a combination of both.

Environmental

- Site 16 is located adjacent to woodland with likely opportunities for roosting, commuting and foraging bats.
- Site 16 is in close proximity (less than 10m southeast) to woodlands with potential habitat suitability for pine marten and red squirrel.
- Site 16 baseline habitats comprise of low distinctiveness 'Cropland-cereal crop' only. The SSE optioneering toolkit for Site 16 indicates that there is a baseline unit value of 8.00 biodiversity units (BU) at this location.
- Haughend enclosure scheduled monument (SM7263) is located approximately 70m northeast of Site 16.
- Several residential properties are located in close proximity, including Gamekeepers Cottage (c.560m northeast), Haughend Farm Cottage (c.630m east), Muckletlands (c.570m north) and Hallyards Cottages (c.500m west) which may be visible in relation to Site 16.
- Site 16 is located on land within a LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.

3.1.2 Site 20

Engineering

- Site 20 is located within the existing Alyth 275kV substation and would minimise additional land requirements and the length of the electrical connection.
- Construction within the operational substation would create significant interfaces with existing equipment, services, access routes and electrical safety clearances.
- The option would require the existing SY1 and SY2 circuits to be moved or reconfigured, with associated outages likely to be required during construction.
- The restricted working area would make construction sequencing, crane access, equipment deliveries and cable routing more complex than for an external compound.
- Existing equipment and infrastructure may also require relocation or modification to accommodate the STATCOM development.

Environmental

- Site 20 is located close to habitats with potential suitability for pine marten (within 250m) and red squirrel (within 50m).
- Site 20 comprises mostly of very low distinctiveness 'Urban-Developed land; sealed surface' with and an area of 0.05 ha of high distinctiveness 'Grassland-Other neutral grassland' within the site boundary. The SSE optioneering toolkit for Site 20 indicates that there is a BU of 0.73 at this location.
- Haughend enclosure scheduled monument (SM7263) is located approximately 160 m southwest of Site 20.
- Several residential properties are located in close proximity, including Gamekeepers Cottage (c.150m northeast), Haughend Farm Cottage (c.175m east), Mucktlands (c.590m north) and Hallyards Cottages (c.860m west) which may be visible in relation to Site 20.
- Site 20 is located entirely within the footprint of the existing Alyth 275kV substation, therefore would not be built on any land with agricultural capability.

3.1.3 Site 21

Engineering

- Site 21 is located immediately east of the existing Alyth 275kV substation and would provide a relatively short electrical connection to the existing 400kV network.
- Locating the STATCOM outside the existing operational compound would reduce the extent of construction within the live substation and could avoid the need to relocate the SY1 and SY2 circuits.
- Development would require an extension or amendment to the existing substation boundary.
- The option would affect existing drainage infrastructure, including the screening bund and SuDS pond, which would require relocation or redesign.
Cable routing into the existing substation, construction access and the outage requirements at the final connection point would require further development.

Environmental

- Site 21 is located close to habitats with potential suitability for pine marten (within 250m) and red squirrel (within 50m).
- Site 21 has a BU value of 52.13 comprising high distinctiveness 'Grassland-Other neutral grassland' and 'Grassland-Lowland dry acid grassland' as well as low distinctiveness individual trees.
- Haughend enclosure scheduled monument (SM7263) is located approximately 290m southwest of Site 21.
- Several residential properties are located in close proximity, including Gamekeepers Cottage (c.50m north), Haughend Farm Cottage (c.3m east), Mucketlands (c.650m northwest) and Hallyards Cottages (c.1km west) which may be visible in relation to Site 21.
- Site 21 is located on land within a LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.

3.1.4 Site 22

Engineering

- Site 22 is located immediately west of the existing Alyth 275kV substation and would provide a comparatively short electrical connection to the 400 kV network.
- The site would allow most of the new compound to be constructed outside the operational substation, reducing live-site construction interfaces compared with Site 20.
- A new platform, access, drainage infrastructure and extension of the substation security boundary would be required.
- The connection corridor into the existing substation is constrained by existing equipment and infrastructure. Further development would be required to confirm the cable alignment, installation clearances and outage requirements.
- Topographical and ground investigations would be required to confirm the platform level, earthworks requirements, foundation design and groundwater management measures.

Environmental

- Site 22 contains an area of woodland which is potentially suitable habitat for roosting, commuting and foraging bats.
- Site 22 contains an area of woodland with potential habitat suitability for pine marten and red squirrel.
- Site 22 comprises cropland-cereal crop', 'Urban-Developed land; sealed surface', 'Grassland-Other neutral grassland' and 'Woodland and forest-Other woodland and has a BU value of 19.11.
- Site 22 is located 10 m northwest of the Haughend enclosure scheduled monument (SM7263).
- Several residential properties are located in close proximity, including Gamekeepers Cottage (c.520m northeast), Haughend Farm Cottage (c.550m east), Muckletlands (c.470m north) and Hallyards Cottages (c.440m west) which may be visible in relation to Site 22.
- Site 22 is located on land within a LCA of Class – 2 Land capable of producing a wide range of crops. This is classed as prime agricultural land.

3.2 Stage 2 Sites Comparative Analysis

3.2.1 Engineering

All four site options are considered technically feasible. The engineering assessment considered the electrical connection, interaction with the existing Alyth 275kV substation, construction complexity, access, drainage, earthworks and long-term operational requirements.

Electrical Connection

Site 16 would require an electrical connection of approximately 400m to the existing Alyth 275kV substation. The indicative route would not require a public road crossing, and the site provides sufficient space to develop the compound and connection arrangement with relatively few physical constraints. Existing overhead lines are located close to the site, which may provide opportunities for the connection design but would also require appropriate electrical clearances and construction controls. Further assessment would be required to confirm whether the connection would comprise underground cable, overhead line or a combination of both.

Sites 20, 21 and 22 are located within or immediately adjacent to the existing substation and would therefore require shorter electrical connections. However, the proximity of these options to existing equipment creates additional interfaces with operational infrastructure. Sites 21 and 22 would require new cable routes into the substation, with the final alignments, electrical clearances and connection outages requiring further development.

The connection corridor associated with Site 22 is more constrained than the route associated with Site 16 due to the need to pass through or around existing substation infrastructure. Although Site 22 is geographically closer to the connection point, this results in a more complex cable and construction interface.

Constructability and Operational Interfaces

Site 16 would comprise a standalone compound on a greenfield site. This would require a new platform, access arrangements, drainage infrastructure, utilities, security fencing and associated earthworks. However, most construction could take place away from the operational substation, reducing live-site working and allowing greater flexibility when developing the compound layout and construction sequence.

Site 20 is located within the existing Alyth 275kV substation. This would minimise additional land requirements but would create the greatest level of interaction with live electrical equipment. The option would require existing infrastructure, including the SY1 and SY2 circuits, to be moved or reconfigured. Associated outages would likely be required during construction. Restricted working space would also make construction sequencing, temporary works, crane operations, equipment deliveries and cable installation more complex. Site 20 is therefore the least preferred option from an engineering perspective.

Site 21 is located immediately east of the existing substation. Most construction could take place outside the operational compound, reducing live-site interfaces compared with Site 20. However, the option would require an extension to the existing security boundary and the relocation or redesign of existing drainage infrastructure, including the screening bund and SuDS pond. The available space and interaction with existing infrastructure would also influence the final compound and cable arrangement.

Site 22 is located immediately west of the existing substation. The site would allow the majority of the new compound to be constructed outside the operational substation while retaining a comparatively short electrical connection. This reduces construction and outage requirements compared with Site 20. However, the connection into the existing substation, the available cable corridor and the interaction with existing infrastructure would require careful coordination.

Access, Ground Conditions and Drainage

Site 16 would require new permanent access arrangements and a suitable route for abnormal-load deliveries. Sites 20, 21 and 22 could make greater use of the existing substation access arrangements, although these would need to be assessed against the size and swept-path requirements of the STATCOM transformer and other major components.

New platforms and drainage infrastructure would be required at Sites 16, 21 and 22. Site-specific topographical and ground investigations would be required to confirm platform levels, earthworks quantities, foundation requirements, groundwater conditions and drainage designs. Site 20 would make use of the existing substation platform, although the suitability of the existing ground and drainage infrastructure for the proposed equipment would still require confirmation.

3.2.2 Environmental

Natural Heritage

Designations

The following sites are found with the Zone of Influence (Zoi)⁴ for national and international designated sites. Loch of Lintrathen Special Protection Area (SPA) and Ramsar site, designated for notable geese, are located between 6.9km and 7.2km northeast of all sites, with the closest being Site 21. Similarly, the Loch of Kinnordy SPA and Ramsar site, also designated for notable geese, are located between 9.0km and 9.6km to the north of all sites, with the closest being Site 21. The River Tay SAC, which is designated for its Annex I river habitat and notable species such as fish and otter, is situated between 500m to 600m to the southeast of all sites, with the closest being Sites 16 and 22.

Woodland listed on the Ancient Woodland Inventory (AWI) is located between 260m and 410m from all sites, (Site 20 is located closest to LEPO woodland).

No sites are found within the Zoi for locally designated nature conservation sites.

The distances to the above designated sites and notable woodlands are similar between the sites; and there is no preferred site in relation to natural heritage designations.

Protected Species

Site 22 contains and is adjacent to wooded habitat with potential suitability for breeding, commuting and foraging bats, pine marten and red squirrel. Site 16 does not contain these habitats but is likely to have opportunities for these species in the woodland approximately 25m northwest of the site.

For Sites 20 and 21, there is little to no potential for roosting bats and the habitat suitability for commuting and foraging is poor, the presence of potential bat commuting routes is therefore unlikely within these sites.

⁴ Zone of Influence - Ecology and Ornithology (Zoi): The Zone of Influence of the development is the area over which ecological / ornithological features may be subject to effects as a result of its construction and operation, which may extend beyond the boundary of the Site. The Zoi for national and international designated sites is within 10 km of the site options (or further where a hydrological or other ecological / ornithological connection may exist – e.g. 20 km for foraging geese).

For all sites, there is the possibility for pine marten to use woodlands within 250m, and for red squirrel within 50m of the sites. There was no suitable otter habitats identified within 200m of the sites, and no suitable water vole habitat identified within 50m of all the sites.

All sites have similar potential to be constrained by the presence of protected species. However, due to the presence of woodland adjacent to Site 16 and within Site 20 these sites are least preferred in relation to protected species.

Habitats and Biodiversity

For all sites, there is little to no potential for Annex I habitats and little to no potential for Ground Water Dependent Terrestrial Ecosystems (GWDTE). The area is dominated by highly disturbed and well-drained arable land. Therefore, all sites have low potential to be constrained by the presence of GWDTE or Annex I habitats.

Site 20 was found to have the lowest baseline biodiversity unit (BU) value (0.73 BU), compared to Sites 16 (8.00 BU), 22 (19.11 BU) and 21 (52.13 BU). Development at all sites will result in a loss of biodiversity units of varying degrees. However, based on the baseline BU findings, Site 20 is the most preferred and Site 21 is the least preferred site in relation to habitats and biodiversity.

Ornithology

Site 21, Site 22 and Site 16 all provide potentially suitable foraging and nesting habitat for barn owl, goshawk and red kite, all listed on Schedule 1 of the Wildlife and Countryside Act 1981 (WCA) and the Birds of Conservation Concern (BoCC) Red List.

Although Site 22 does potentially provide habitat for a greater diversity of bird species, owed to the presence of the wooded habitat with the Site, overall it is judged there is still a moderate potential to constrain the development therefore Site 22. Site 20 provides limited suitable habitats for bird species within the site itself as it is within the existing substation and entirely comprised of hardstanding.

All four sites provide similarly suitable habitat for Schedule 1 species to breed within 2 km of all sites. Additionally, there is an osprey nest within the vicinity of the existing Alyth 275kV substation, which has also been considered in the assessment.

Therefore, Sites 20 is the preferred site in terms of Ornithology.

Hydrology/Geology

All four sites are located within Strathmore (ID: 150681) and Isla and Lower Tay Valleys (ID: 150740) Drinking Water Protection Zones (Ground). All four sites are located above a moderately productive aquifer (2B - Flow is virtually all through fractures and other discontinuities).

All sites are within both the River Isla and River Tay catchments. All sites are located within 550m of the River Isla and 1.1km of Dean Water (a tributary of the River Isla). The closest of the four sites to both rivers is Site 16 at 410m from the River Isla and 800m from Dean Water. The River Isla has a WFD overall classification of 'Good' and Dean Water has a WFD overall classification of 'Moderate', as of 2022. An unnamed tributary of the River Isla runs along the east of the four sites, with the closest being Site 21 at a distance of 320m.

There is no preference in terms of hydrology and geology as all site options are comparable across these criteria.

Cultural Heritage

Designations

There are no World Heritage Sites (WHS), Inventory Gardens and Designed Landscapes (GDL) or Inventory Battlefields within the 2km of the sites. There are eight Scheduled Monuments (SMs) found within the 2km of the sites. The nearest is Haughend, enclosure (Reference: SM7263) which is closest to Site 22, located approximately 10m southeast, and furthest from Site 21, approximately 290m southwest. The seven other SMs are more than 500m from any site.

Therefore, Site 21 is the most preferred and Site 22 is the least preferred relating to heritage designations.

Sites and Monument Record Entries

There are 100 SMRs within the 2km study area of the four sites. The closest record entry is Alyth 275kV substation (Site ID: 370111⁵) located within the northwest section of Site 20. The next nearest is Haughend (Site ID: 278753³), which is in closest proximity to Site 20, approximately 44m west. All other SMRs are over 100m from all sites.

Therefore Site 20 is the least preferred site relating to SMR entries.

Cultural Heritage Assets

There are no Non-Inventory GDL or Conservation Areas within or 2km from any of the sites. There are 21 Listed Buildings within the 2km study area. All sites are over 400m from any of the assets identified. There are no non-inventory GDL or Conservation Areas with 2km of the sites.

There is no site preference in relation to cultural heritage assets as all sites are comparable.

Landscape and Visual

Designations

There are no national or regional landscape designations within 2km of any of the sites. Therefore, all Sites would have low potential to be constrained by landscape designations.

Drumkilbo GDL lies just beyond the 2km study area. However, the designation is largely enclosed by woodland canopy and shelterbelts, which substantially limit intervisibility with all sites.

The Local Landscape Areas of Sidlaw (Angus) and the Sidlaw Hills (Perth and Kinross) are located at least 4km from all sites. Intervisibility with these areas is further constrained by woodland at Cardean and Wester Cardean, as well as Belmont Castle and its associated woodland. Views from Sidlaw Hills are additionally reduced by built-up areas at Meigle and intervening topography.

Given the distance and restricted intervisibility, the extent of influence on the landscape designations would be very limited. There is a low potential for all sites to compromise the setting of the GDL or the Local Landscape Areas and therefore there is no preferred site in relation to landscape designations.

Landscape Character

All sites are located within LCT 384: Broad Valley Lowlands – Tayside. All sites have moderate potential to be constrained by the landscape character types of the area. However, Site 20 is the preferred site in terms of landscape character, as changes would take place entirely within the

⁵ Trove Scotland (2026). Alyth Substation site. [Online] Available from: [Alyth Substation | Place | trove.scot](#)

boundary of the existing substation rather than affecting wider landscape features. This means the potential to be constrained by the LCT would be more limited than for the other sites.

Woodland around all sites considerably limits intervisibility, which reduces the potential to be constrained for all sites.

Therefore, there is no preferred site in relation landscape character types. However, Site 22 would be the least preferred option due to the removal of trees located on the western side of the existing Substation, which would open up views into both the Proposed Development and existing infrastructure.

Careful positioning of the Proposed Development is critical for all sites to minimise vegetation removal and to retain existing woodland screening, which is essential in limiting intervisibility and associated landscape effects.

Visual

The sites do not differ in terms of visual amenity for road users and recreational receptors, as visibility of all sites is largely screened by woodland in the immediate surroundings of the existing substation.

For residential receptors, Site 20 is the preferred site, as all changes would be contained within the perimeter of the existing substation, thereby limiting the extension footprint of the Proposed Development. Site 20 further reduces the potential to be constrained further by retaining existing mitigation measures, including bunding, whip planting and shelterbelt trees around the site perimeter.

Of all the sites, Site 21 is the least preferred due to the lack of a meaningful visual buffer to Haughend Farm Cottage. The remaining two sites are broadly similar in terms of their levels of constraint due to residential receptors.

Nevertheless, for all sites, careful positioning and orientation of structures and infrastructure, together with the provision of robust mitigation planting and/or earthworks, will be required to reduce potential constraints.

Therefore, Site 20 is the preferred site in relation to visual receptors, while Site 21 is the least preferred site owing to the lack of a visual buffer to the site.

Land Use

Agriculture

Sites 16, 21 and 22 are all located on land within a LCA of Class – 2 Land capable of producing a wide range of crops. Site 20 is located entirely within the footprint of the existing substation, therefore would not be built on any land with agricultural capability.

Therefore, Site 20 is the preferred site relating to agriculture because it is not located on prime agricultural land.

Commercial Forestry / Woodland

There are no large commercial forestry operations within the 1 km study area or within any of the sites. A single active felling license for thinning (Case ref: FPA-11607) exists within the study area. The closest site to this (Site 20) is 130m northwest. All four sites are located within the Perth and Argyll Conservancy Area.

Site 22 is located within a small area of woodland; Site 16 is located adjacent to the same area of woodland.

There is no preferred site in relation to commercial forestry as there is moderate potential for all sites to be constrained. However, it should be noted that Site 20 is located the closest to an active thinning licence and all sites are located within a conservancy area.

Sites 20 and 21 are more preferred in relation to woodland as they are not located within or adjacent to any wooded habitat compared to Site 16 which is located adjacent to a small area of wooded habitat and Site 22 which is located within the same area of wooded habitat.

Recreation

There are no recorded National Cycle Routes within 2km of any of the sites. There are two golf courses within 5km of the four sites.

There are no Core Paths found within any of the four sites. However, Sites 16 and 22 have five Core Paths within 2km and Sites 20 and 21 have four. Core Path ALTH/141 is the closest to all four sites and is closest to Site 16 (60m west of Site 16).

Alyth is located in the Perthshire area, which is popular for highland sports including fishing, stalking and shooting. However, there is no evidence of any highland sport within 2km of any of the four sites.

There is no preferred site in relation to recreation as all sites are largely comparable across these criteria.

Planning

Policy

All sites are within the Perth and Kinross Council area. Sites 16 and 22 intersect or sit adjacent to prime agricultural land and a small area of woodland, so they are more likely to be constrained by NPF4 policy areas on Soils (51), Prime Agricultural Land (50), and Forestry, Woodland and Trees (40).

However, due to their location in the countryside, all sites are assigned a moderate baseline risk of constraint from NPF4 policy areas relating to development in the countryside, natural places and biodiversity, landscape and trees, soils, flood risk / water environment, transport / access, and the historic environment.

Overall, there is no preferred site relating to planning policy.

Proposals

There are fourteen development proposals within 5 km of the four sites, none of which are within 2 km of any of the sites. These developments are associated with energy transmission and renewable energy developments, construction and extension of residential dwellings and works associated with agriculture.

Overall, there is no preferred site relating to Planning.

3.2.3 Cost

The Capital costs and Operational costs were also assessed. Capital Costs assesses the likely costs associated with site preparation works, earthworks, drainage infrastructure, access arrangements, supporting infrastructure, electrical connection works, construction complexity and land requirements. Whilst Operational costs consider the likely costs associated with the operation and maintenance of the proposed development, including the extent of infrastructure requiring ongoing maintenance, operational efficiency, access for maintenance activities and long-term asset management requirements.

Cost is an important consideration because it helps ensure investment in the electricity transmission network is delivered efficiently whilst continuing to satisfy engineering, environmental and land requirements. Whilst cost is only one of several assessment criteria, selecting a site that can be developed and operated efficiently can help reduce overall project complexity and minimise the extent of supporting works required.

Capital Costs

Site 16 involves the development of a new standalone facility on a greenfield site and requires a significant amount of new supporting infrastructure. In addition to the proposed development itself, new access arrangements, operational facilities, utility connections and security infrastructure would be required. The site also represents the largest land take of the four options and would require woodland removal in some areas. As a result, Site 16 was assessed as one of the less favourable options from a capital cost perspective.

Site 20 benefits from being located within the existing substation boundary and therefore requires limited additional land and earthworks. However, significant construction activities would need to be undertaken within a live operational environment. This would require modifications to existing infrastructure and extensive coordination with operational activities. Whilst the site performs favourably in some respects, the complexity associated with working within the existing substation reduces its overall performance from a capital cost perspective.

Site 21 is located adjacent to the existing Alyth 275kV substation and is able to make use of much of the existing infrastructure and access arrangements. The site would require some relocation of drainage and supporting infrastructure but avoids the significant construction constraints associated with Site 20 and the additional infrastructure requirements associated with Site 16. As a result, Site 21 performed favourably from a capital cost perspective.

Site 22 also benefits from its location adjacent to the existing Alyth 275kV substation and makes efficient use of existing infrastructure. Construction can largely take place outside the operational substation environment and requires only limited modifications to existing infrastructure. Although some drainage and earthworks would still be required, the assessment concluded that Site 22 offered the most efficient construction solution of the four options.

Capital Cost Summary

The capital cost assessment identified Site 22 and Site 21 as the strongest performing options. Both sites benefit from their proximity to the existing Alyth 275kV substation and can make use of existing infrastructure, reducing the amount of additional supporting works required. Site 20 benefits from being located within the existing substation boundary but performs less favourably due to the complexity associated with construction within an operational environment. Site 16 requires the greatest amount of additional infrastructure and supporting works. Overall, Site 22 was identified as the preferred option from a capital cost perspective because it provides the most efficient construction solution and minimises the requirement for additional infrastructure.

Operational Costs

Site 16 would require the greatest amount of new standalone infrastructure and facilities. This would increase the number of assets requiring ongoing inspection, maintenance and management throughout the life of the development. As a result, Site 16 was assessed as the least favourable option from an operational cost perspective.

Site 20 benefits from its location within the existing substation boundary and can make use of existing operational arrangements. However, its position within the operational substation environment introduces additional operational constraints and interfaces with existing infrastructure, increasing long-term operational complexity.

Site 21 performed favourably from an operational cost perspective due to its proximity to the existing Alyth 275kV substation and its ability to utilise existing infrastructure and operational arrangements. The amount of additional infrastructure requiring maintenance is relatively limited compared with Sites 20 and 16.

Site 22 was assessed as the strongest performing option from an operational cost perspective. The site benefits from an efficient layout adjacent to the existing substation and requires limited additional infrastructure. This reduces long-term inspection, maintenance and operational requirements compared with the alternative options.

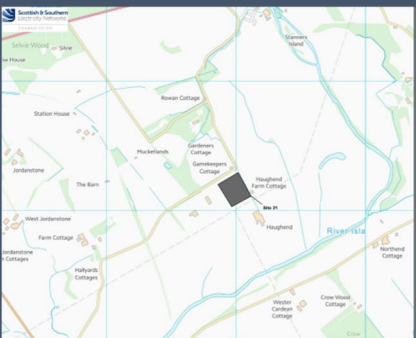
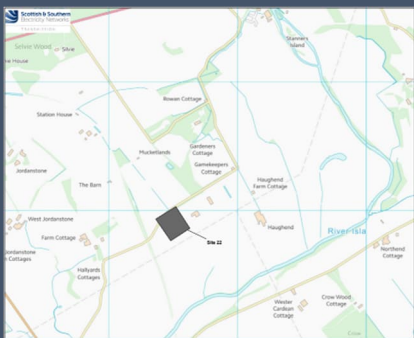
Operational Cost Summary

The operational cost assessment identified Site 22 as the strongest performing option due to its efficient layout, limited additional infrastructure requirements and ability to make use of existing Alyth 275kV substation facilities. Site 21 also performed favourably and would be expected to have similar operational requirements. Site 20 introduces greater long-term operational complexity due to its interaction with existing operational infrastructure, whilst Site 16 would result in the largest amount of standalone infrastructure requiring ongoing maintenance. Overall, Site 22 was identified as the preferred option from an operational cost perspective.

4 Summary of RAGs

Table 4-1, Table 4-2 and Table 4-3 below provide a summary of the key differentiating factors between Sites 16, 20, 21, and 22.

Table 4-1. Engineering Comparison of Shortlisted Options

Category	Site 16	Site 20	Site 21	Site 22
				
Engineering				
Connectivity:				
Existing Circuits/Networks				
Future Development Possibilities				
Interface with SSEN Distribution and Generation				
DNO Connection				
Footprint Requirements:				
Technology				
Adjacent Land Use				
Space Availability				
Hazards:				
Unique Hazards				
Existing Hazards				
Ground Conditions:				
Topography				
Geology				
Environmental Conditions:				
Elevation				
Salt Pollution				
Flooding				
Carbon Footprint				
SF6				
Contaminated Land				
Noise				
Substation Access Road (from public road)				

Transformer Delivery Route				
Access				

Table 5-2. Environmental Comparison of shortlisted Options

Category	Site 16	Site 20	Site 21	Site 22
Environmental/Consent				
<i>Natural Heritage:</i>				
Designation				
Protected Species				
Habitats				
Ornithology				
Hydrology/Geology				
<i>Cultural Heritage:</i>				
Designation				
Cultural Heritage Assets				
<i>Landscape and Visual:</i>				
Designation				
Landscape Character				
Visual				
<i>Land Use:</i>				
Agriculture				
Woodland/Forestry				
Recreation				
<i>Planning:</i>				
Policy				
Proposals				

Table 5-3. Cost Comparison of Shortlisted Options

Category	Site 16	Site 20	Site 21	Site 22
Environmental/Consent				
Capital				
Operational				

4.1 Summary of Comparative Analysis

4.1.1 Environmental

Following detailed assessment of the four sites against environmental criteria noted above, the preferred site is Site 20, followed by Sites 16 and 22 (which are considered largely comparable), with Site 21 considered the least preferred.

Site 20 is the preferred site overall as it is least likely to be constrained across the environmental RAG criteria. Site 20 is the least likely to be constrained ecologically overall and has a biodiversity unit baseline of 0.73 BU, avoids prime agricultural land and limits visual constraints due to it being located within the existing substation footprint. Along with Site 21, Site 20 is preferred in regard to protected species and woodland as it avoids wooded habitat with potential suitability for breeding, commuting and foraging bats, pine marten and red squirrel.

Site 16 has the second lowest biodiversity unit baseline value (8.00 BU) of all sites. However, it should be noted that Site 16 is located adjacent to the wooded habitat found in 22 therefore there is potential for the presence of protected species adjacent to the Site. Site 16 is the second least preferred site option regarding protected species and woodland as it is adjacent to wooded habitat with potential suitability for breeding, commuting and foraging bats, pine marten and red squirrel.

Site 22 is less favourable overall compared to Site 16 and Site 20 due to having a higher biodiversity unit baseline value (19.11 BU). It is also the closest of the four site options to a Scheduled Monument (20m north). Site 22 is the least preferred site, regarding protected species and woodland due to presence of wooded habitat within the site 22 with potential suitability for breeding, commuting and foraging bats, pine marten and red squirrel.

Site 21 is the most constrained site on average across the environmental criteria. Site 21 has the highest biodiversity unit baseline value (52.13 BU) and contains high distinctive grassland and is likely to require the most compensatory planting. Additionally, Site 21 is the most likely to be constrained for landscape and visual due to the limited visual buffering to Haughend Farm Cottage and other receptors. Along with Site 20, Site 21 is more preferred in regard to protected species and woodland due to the lack of wooded habitat within the sites with potential suitability for breeding, commuting and foraging bats, pine marten and red squirrel.

All sites are similarly constrained across the other Environmental RAG criteria, including designated natural heritage sites, commercial forestry, and policy & planning.

Overall, from an environmental perspective, Site 20 is therefore the preferred site.

4.1.2 Engineering

Following detailed assessment of the four sites against the engineering criteria, the preferred site is Site 16, followed by Site 22, Site 21 and Site 20, which is considered the least preferred. All four sites are considered technically feasible, but they differ in terms of electrical connectivity, constructability, interaction with the operational substation, access, drainage and supporting infrastructure requirements.

Site 16 is the preferred option from an engineering perspective. It provides a relatively short and straightforward connection to the existing Alyth 275kV substation, with an indicative route length of approximately 400m and no requirement to cross a public road. The site provides sufficient space to

develop the proposed compound and connection arrangement, while allowing most construction activities to take place away from the operational substation. This reduces live-site working, outage requirements and interfaces with existing equipment. However, Site 16 would require a new standalone platform, access, drainage, utilities and security infrastructure.

Site 22 is the second most favourable engineering option. Its location immediately west of the existing substation provides a comparatively short electrical connection and allows most of the proposed development to be constructed outside the operational compound. This would reduce construction and outage interfaces compared with Site 20. However, the cable route into the existing substation is more constrained than the connection associated with Site 16 due to existing equipment, infrastructure and the limited available connection corridor. Site 22 would also require a new platform, access and drainage infrastructure.

Site 21 is the third most favourable option. Its location immediately east of the existing substation would provide a short electrical connection and allow most construction activities to take place outside the live compound. However, the option would require an extension to the existing substation boundary and the relocation or redesign of existing infrastructure, including the screening bund and SuDS pond. These works, together with the cable connection into the existing substation, increase the engineering and construction complexity of the option.

Site 20 is the least preferred option from an engineering perspective. Although its location within the existing Alyth 275kV substation would minimise additional land requirements and the length of the electrical connection, construction would take place within a constrained and operational environment. The option would require existing infrastructure, including the SY1 and SY2 circuits, to be moved or reconfigured, with associated outages likely to be required. Restricted working space would also complicate construction sequencing, crane operations, equipment deliveries and cable installation.

All four sites would require further design development to confirm the final STATCOM layout, electrical connection arrangement, access, platform levels, drainage, earthworks and foundation requirements. Site-specific surveys and ground investigations would also be required. Overall, Site 16 is the preferred site from an engineering perspective because it provides the most straightforward connection and the greatest separation from the operational substation, thereby reducing construction, outage and operational interfaces.

4.1.3 Cost

The assessment identified Site 22 as the strongest performing option across both capital and operational cost considerations. While all four sites were capable of accommodating the proposed development, Site 22 offered the best balance between construction efficiency, operational practicality and supporting infrastructure requirements. When considered alongside the environmental, engineering and land assessments, Site 22 was identified as the preferred site option.

4.1.4 Conclusion

Overall Site 22 was the site selected to be taken forward as on average as it is found to have the least significant constraints across the engineering, environmental and cost criteria.

From an engineering perspective, the preferred site was found to be Site 16, followed by; Site 22, Site 21 and Site 20 (least preferred). This is driven primarily by the favourable connectivity of Site 16 to the existing Alyth 275kV substation, enabling a relatively short and straightforward electrical connection, noting that proximity alone does not result in a simpler connection. Whilst Site 22 is second most favourable option, from an engineering standpoint, it performs relatively well across

several criteria. Although, it introduces increased complexity in connectivity and/or site constraints when compared to Site 16 (most favourable engineering site), these constraints are deemed manageable.

From an environmental perspective, the preferred site is Site 20 which is the least constrained across all environmental criteria, followed by Sites 16 and 22 (which are considered comparable), with Site 21 considered the least preferred due to landscape and visual and habitat constraints.

Site 22 is the preferred site from a cost perspective and is recommended for progression on the basis of the most favourable overall capital and operational cost profile across all assessed constraints. Site 22 is favourable for Construction, Diversions, Public Roads, and Consent Mitigations, and is only less favourable for Felling and Land Assembly — both of which are well-understood risks with established mitigation routes.

Although Site 22 is not the most preferred site in relation to the environmental criteria, the environmental constraints were found to be mostly moderate and all manageable across the criteria. On average Sites 16, 20 and 21 were found to be more constrained from an engineering and cost perspective. Whilst Site 22 was rated second most preferred across the engineering criteria and constraints were identified as being manageable. For Cost, Site 22 was rated the most preferred site.

Therefore, Site 22 is the preferred site as on average as it is found to have the least significant constraints across the engineering, environmental and cost criteria.

5 Next Steps

The responses received from the consultation event, and those sought from statutory consultees and other key stakeholders will inform further consideration of the Preferred Site.

A Report on Consultation will be produced which will document the consultations received, and the decisions made in light of these responses.

The outcome of the site selection process will be a development for which a Proposed Site Option will be confirmed and consent under the Town & Country Planning (Scotland) Act 1997 sought. The application will identify:

- The site boundary clearly shown in red (the Planning Red Line Boundary) including any access route (up to the public road including junction improvements).
- The Proposed Development in relation to the site boundary with dimensions of all permanent structures, buildings, perimeter fencing, and any key drainage features e.g. SuDS Pond.

The application may be subject to EIA under the Town & Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. This may result in further alterations to the Proposed Development to reflect outcomes of the EIA consultation process. Should the Proposed Development be deemed non-EIA (due to its scale or number and significance of potential environmental effects), a voluntary Environmental Appraisal (EA) would be carried out to support the application.

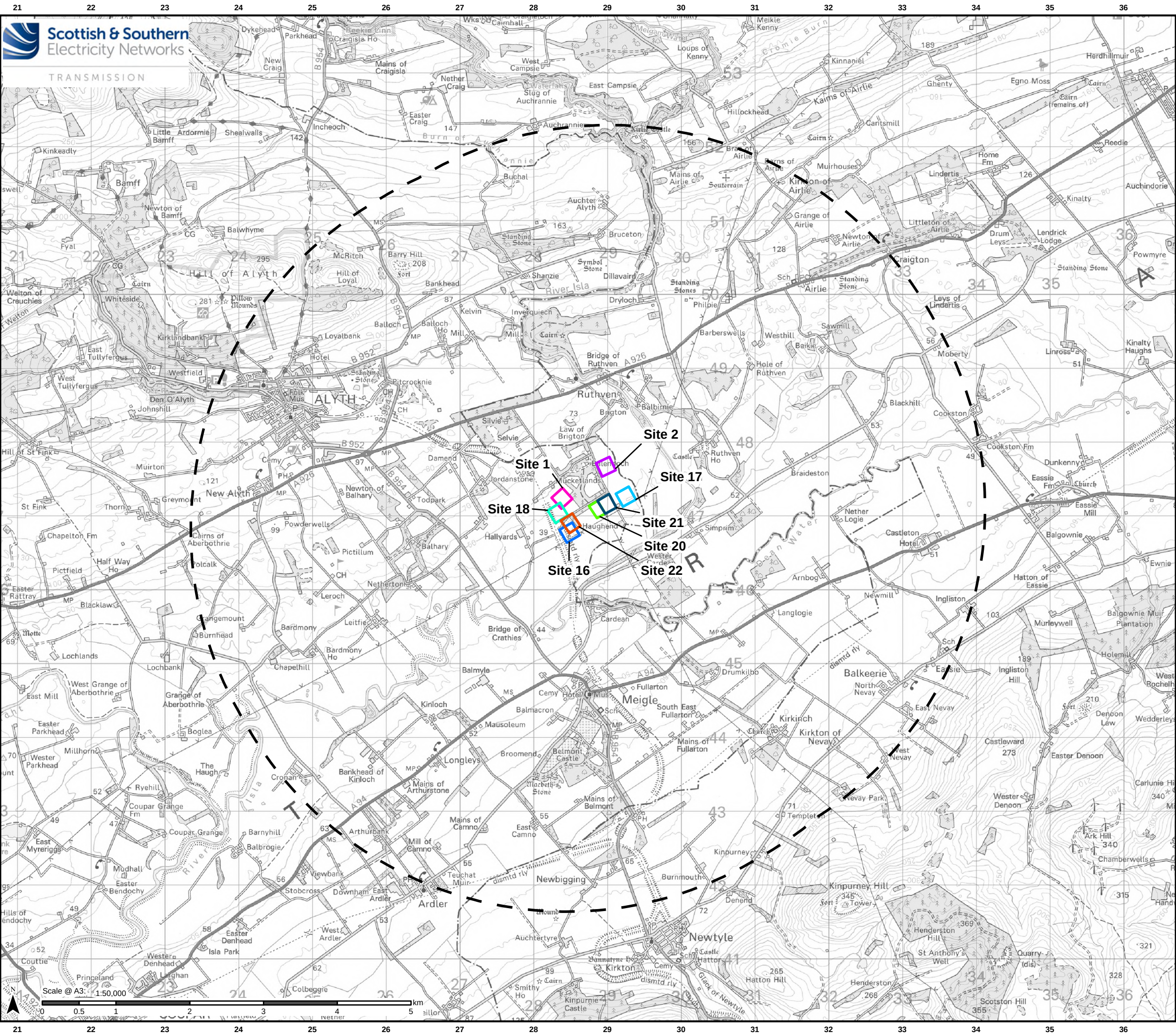
Further public and stakeholder consultation will be undertaken to present our proposals ahead of submitting a planning application

5.1 Questions for Consideration by Consultees

When providing your comments and feedback, SSEN Transmission would be grateful for your consideration of the questions below:

- Do you feel sufficient information has been provided to enable you to understand what is being proposed and why?
- Do you have any comments (positive or negative) or concerns in relation to the project, or about the proposed site location (Site 22)?
- Are there any environmental features, that you consider important and should be brought to the attention of the project team?
- Is there anything you'd like to bring to our attention that you believe we may not have already considered during project development?
- Is there anything regarding the Alyth Substation Extension Project proposals that you feel you require more information about?

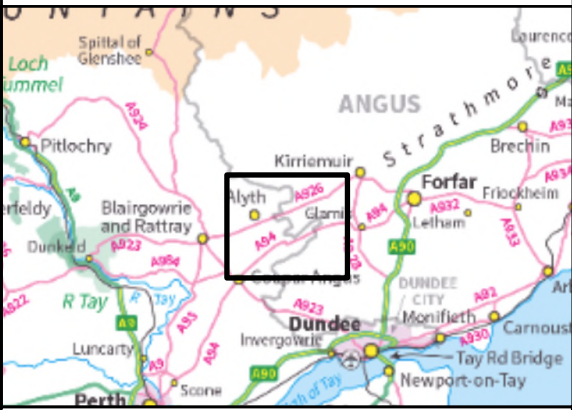
Appendix A Potential Site Area Information Sheets



Legend

Substation Sites

- Site 1
- Site 2
- Site 16
- Site 17
- Site 18
- Site 20
- Site 21
- Site 22
- 5km Study Area



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Project No: LT000639

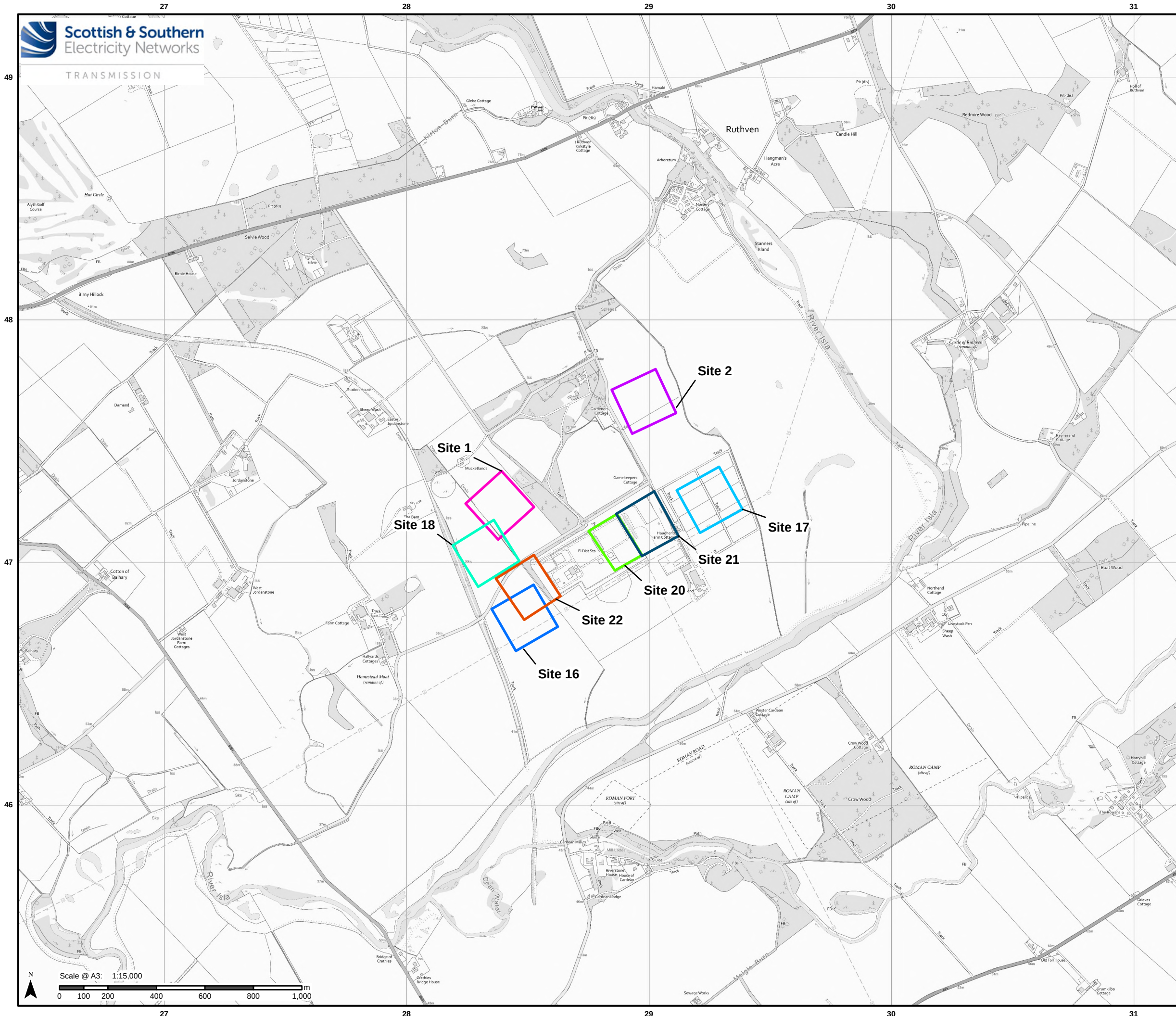
Project: Aylth Substation

Title:
Location of Stage 1 Sites

Drawn by: AROSBOTHAM

Date: 08/10/2026

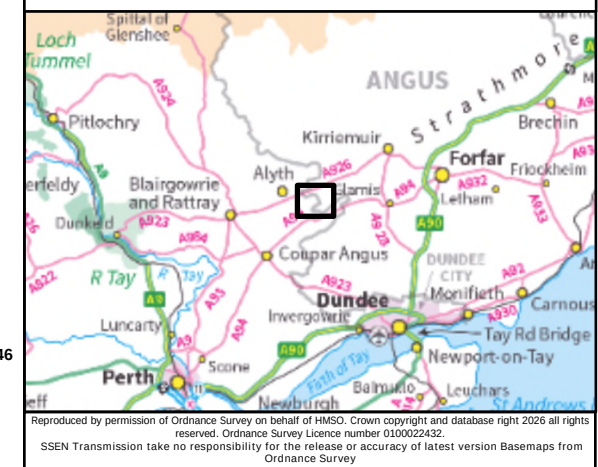
Drawing: Figure 2a



Legend

Substation Sites

- Site 1
- Site 2
- Site 16
- Site 17
- Site 18
- Site 20
- Site 21
- Site 22



Project No: LT000639

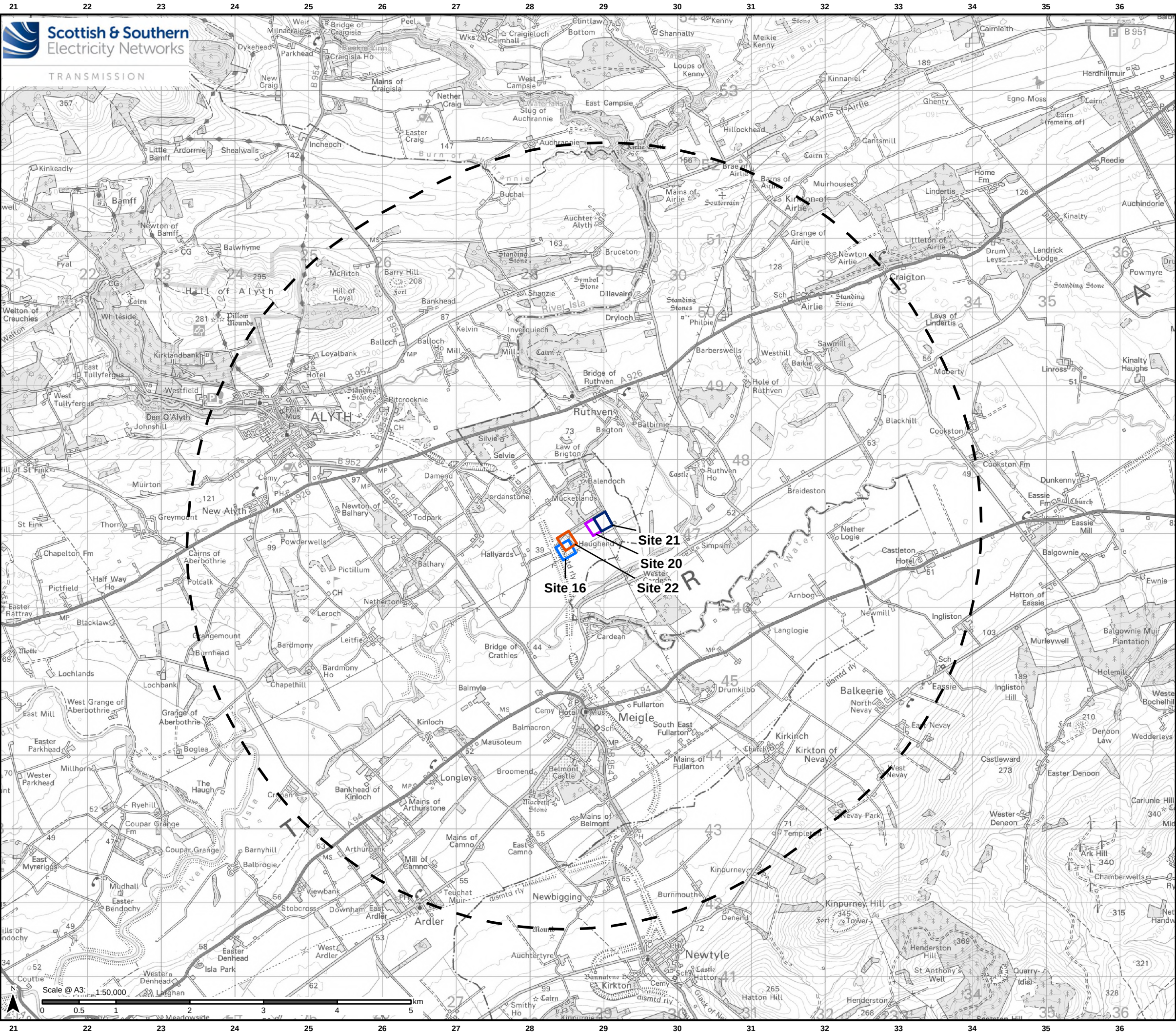
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Title:
Location of Stage 1 Sites

Drawn by: AROSBOTHAM

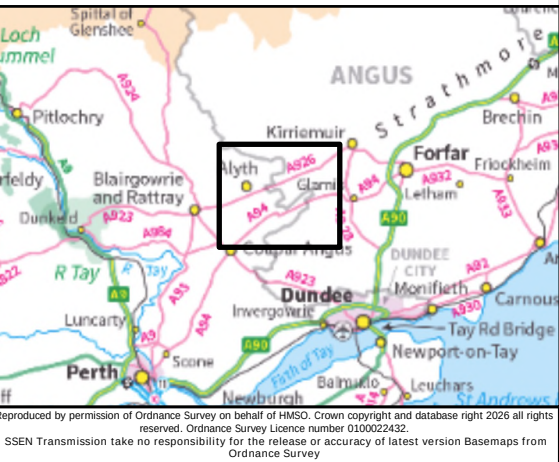
Date: 08/10/2026

Drawing: Figure 2b



Legend

- 5km Study Area
- Substation Sites
- Site 16
 - Site 20
 - Site 21
 - Site 22



Project No: LT000639

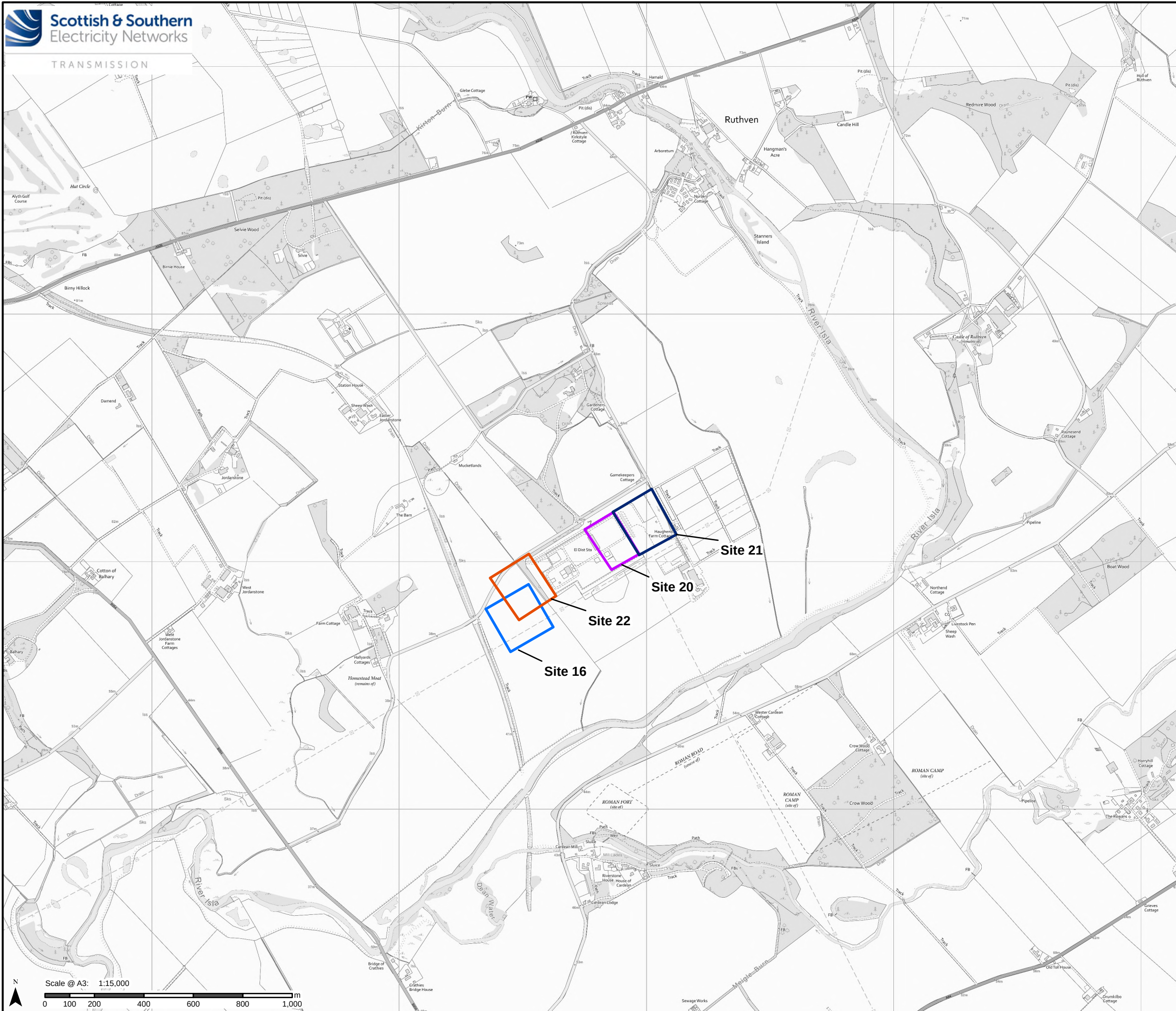
Project: Alyth Substation

Title:
Location of Stage 2 Sites

Drawn by: AROSBOTHAM

Date: 08/10/2026

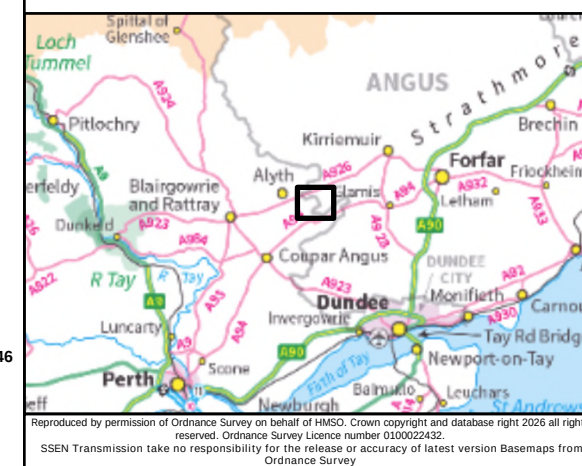
Drawing: Figure 3a



Legend

Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22



Project No: LT000639

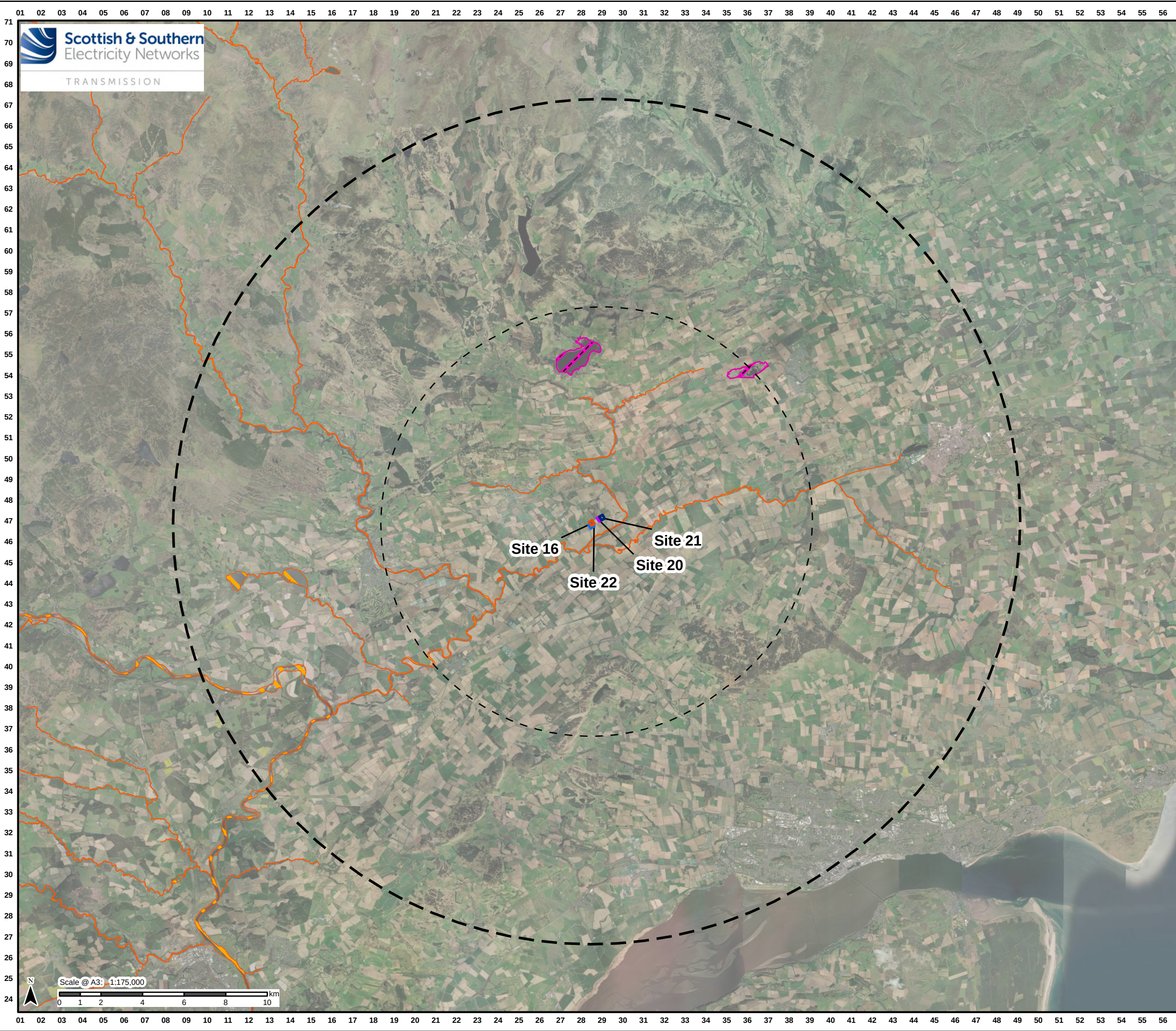
Project: Alyth Substation

Title:
Location of Stage 2 Sites

Drawn by: AROSBOTHAM

Date: 08/10/2026

Drawing: Figure 3b



Legend

Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22
- 10km Study Area
- 20km Study Area

Designated Sites

- Special Protected Area (SPA)
- Special Area of Conservation (SAC)

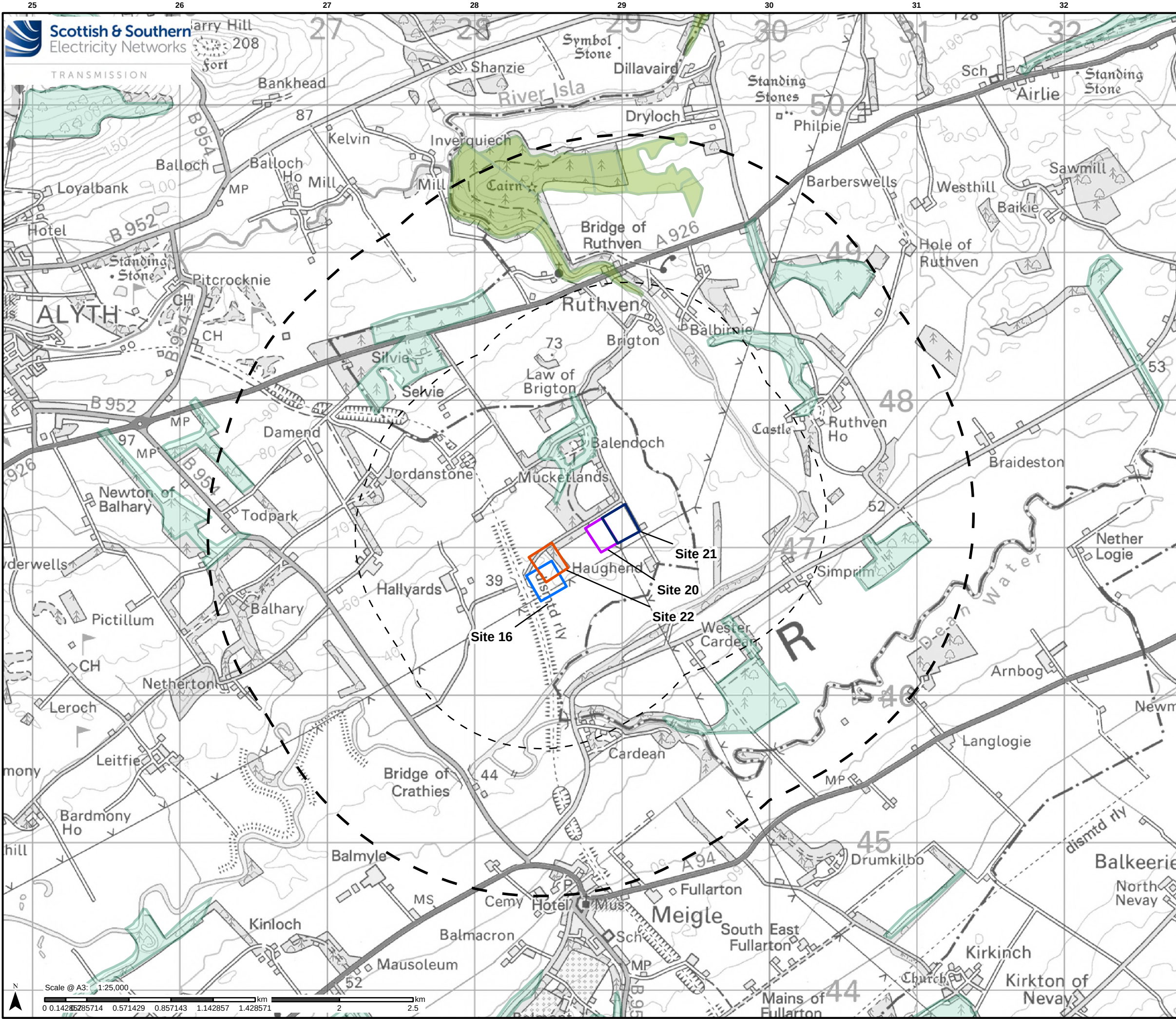
Project No: LT000639

Project: Alyth Substation

Title: Potential Site Area Information Sheet
Ecological Designated Sites

Drawn by: AROSBOTHAM Date: 08/10/2026

Drawing: Figure 4 Sheet 1 of 2



Project No: LT000639

Project: Alyth Substation

Title: Potential Site Area Information Sheet
Ecological Designated Sites

Drawn by: AROSBOTHAM Date: 08/10/2026

Drawing: Figure 4 Sheet 2 of 2

ANGUS

Strathmore

Forfar

Dundee

Perth

Arbroath

Montrose

St Andrews

File Ness

Angus

Strathmore

Forfar

Dundee

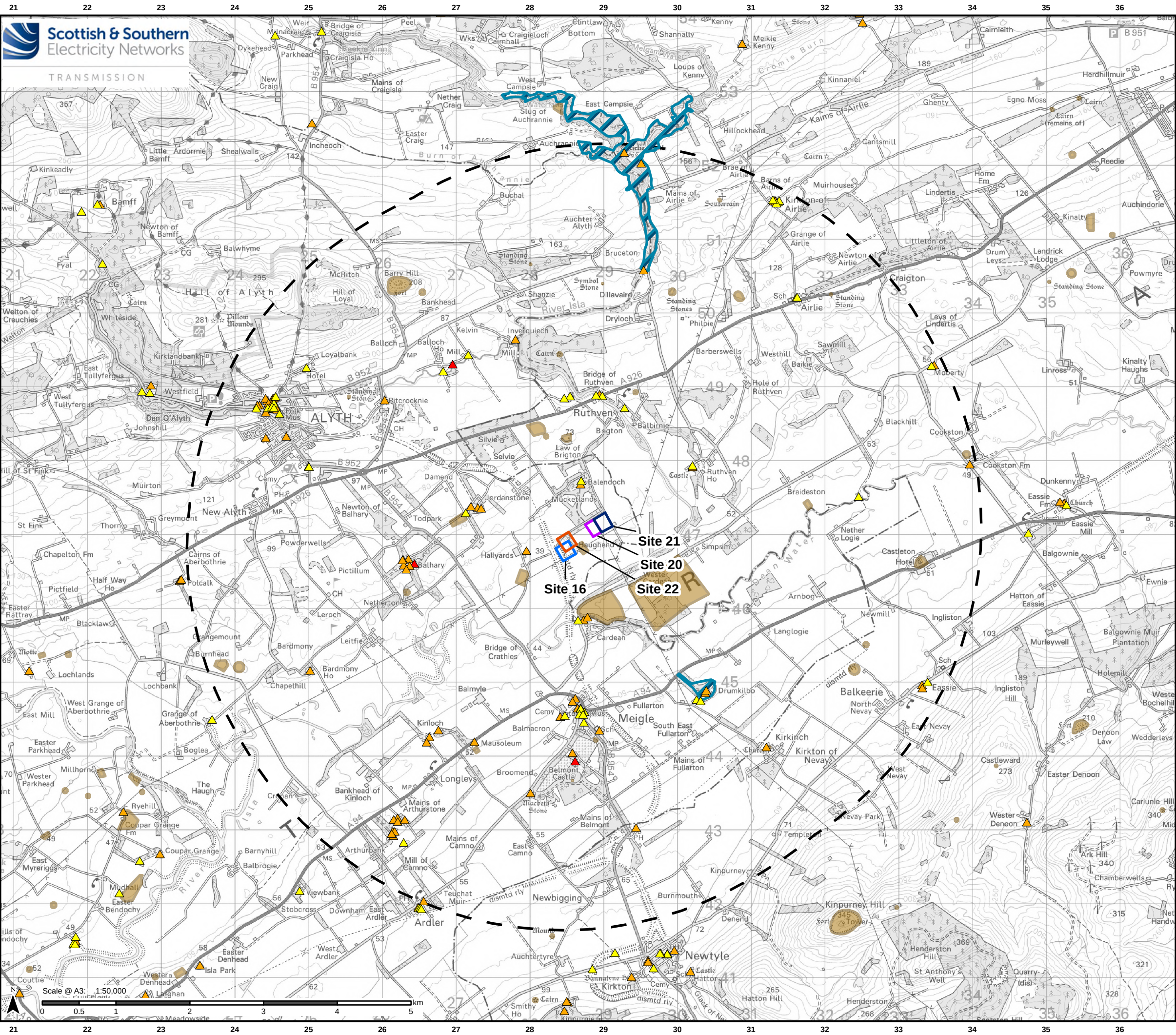
Perth

Arbroath

Montrose

St Andrews

File Ness



Legend

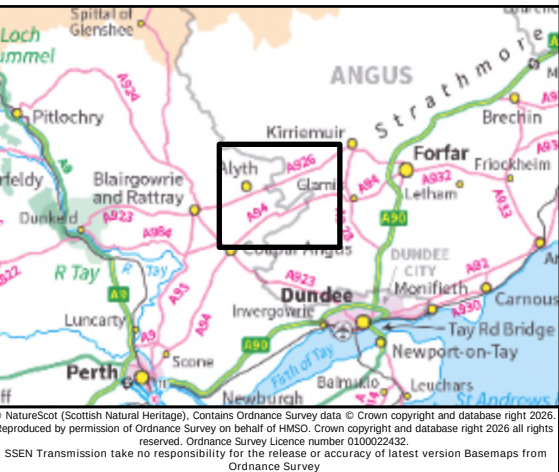
Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22
- 5km Study Area

Heritage Assets

Listed Building Classification

- A
- B
- C
- Scheduled Monument
- Garden or Designed Landscape



Project No: LT000639

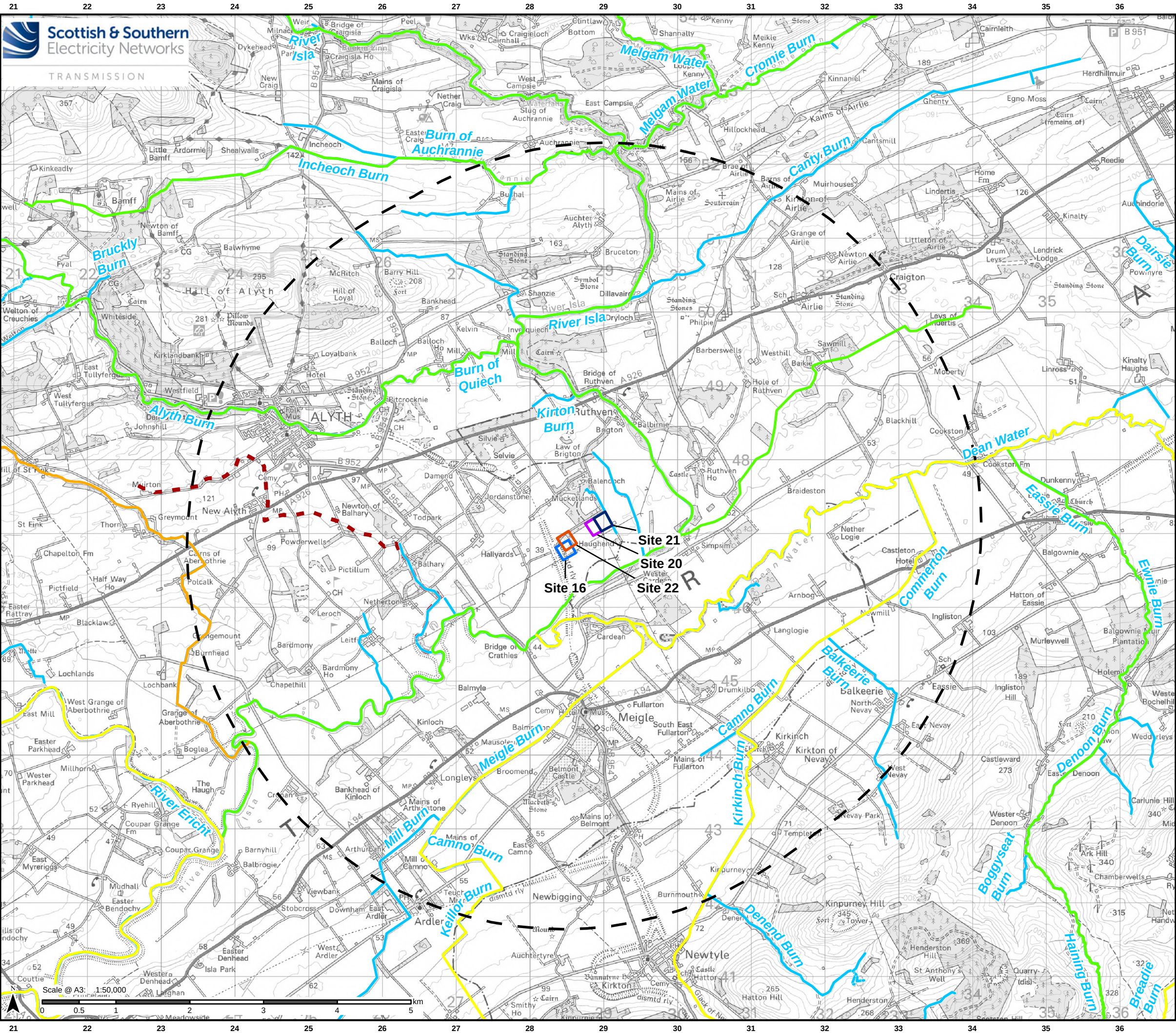
Project: Alyth Substation

Title:
Potential Site Area Information Sheet
Cultural Heritage

Drawn by: AROSBOTHAM

Date: 08/10/2026

Drawing: Figure 5



Legend

Substation Sites

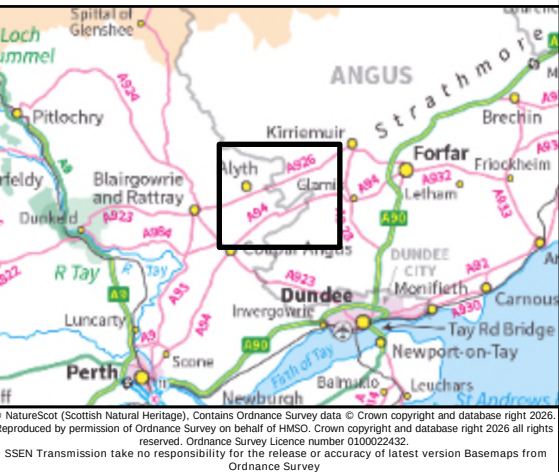
- Site 16
- Site 20
- Site 21
- Site 22
- 5km Study Area

River - WFD Classification

- Good status/potential
- Moderate status/potential
- Poor status/potential
- Bad status/potential
- Surface Watercourse

Drinking Water Protected Areas

- Rivers



Project No: LT000639

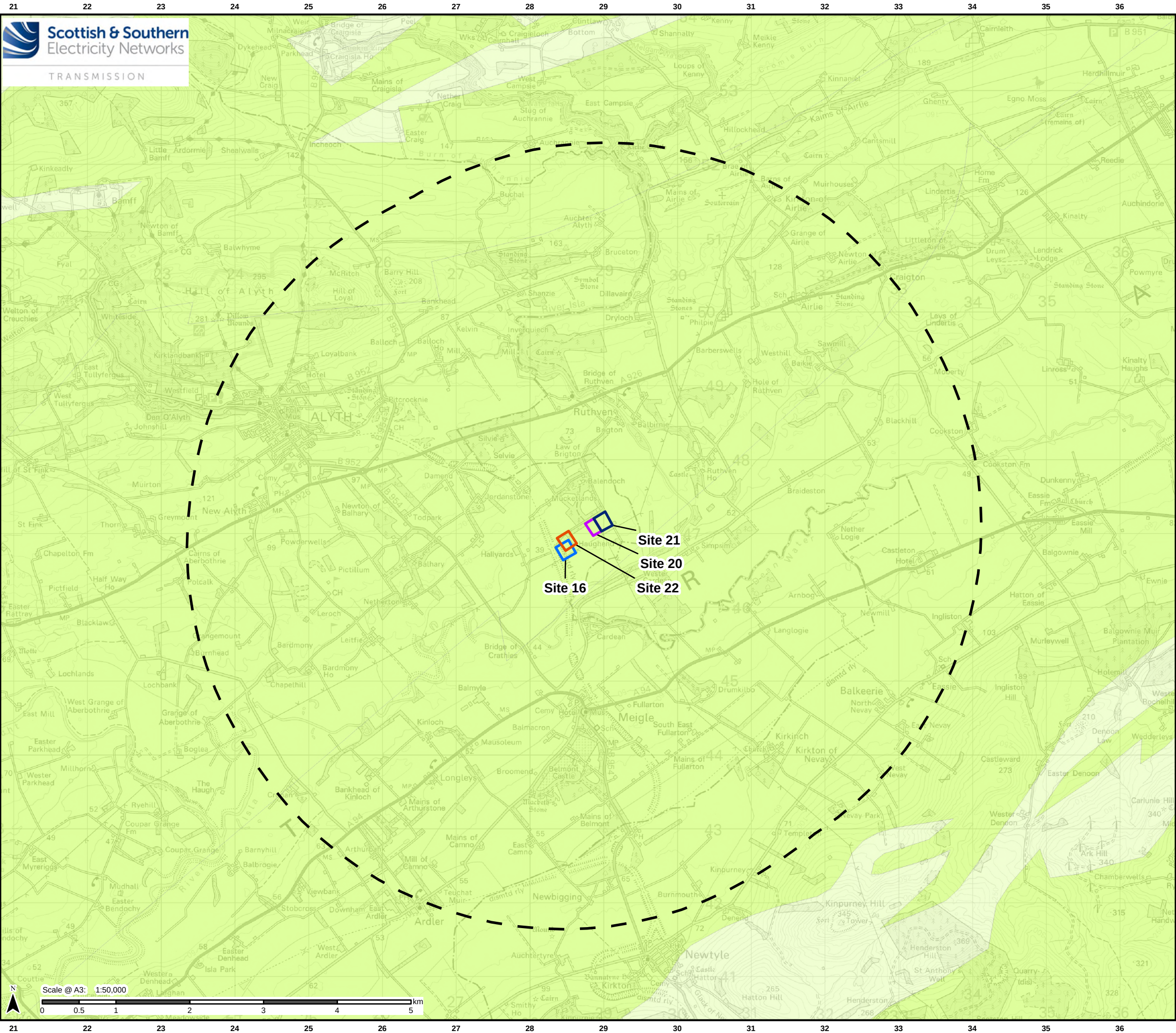
Project: Alyth Substation

Title:
Potential Site Area Information Sheet -
Water Framework Directive Rivers

Drawn by: AROSBOTHAM

Date: 08/10/2026

Drawing: Figure 6



Legend

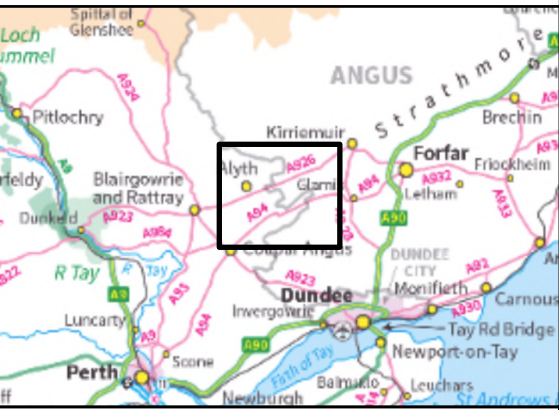
Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22

5km Study Area

Aquifer Classification

- Moderately productive aquifer
- Low productive aquifer



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Project No: LT000639

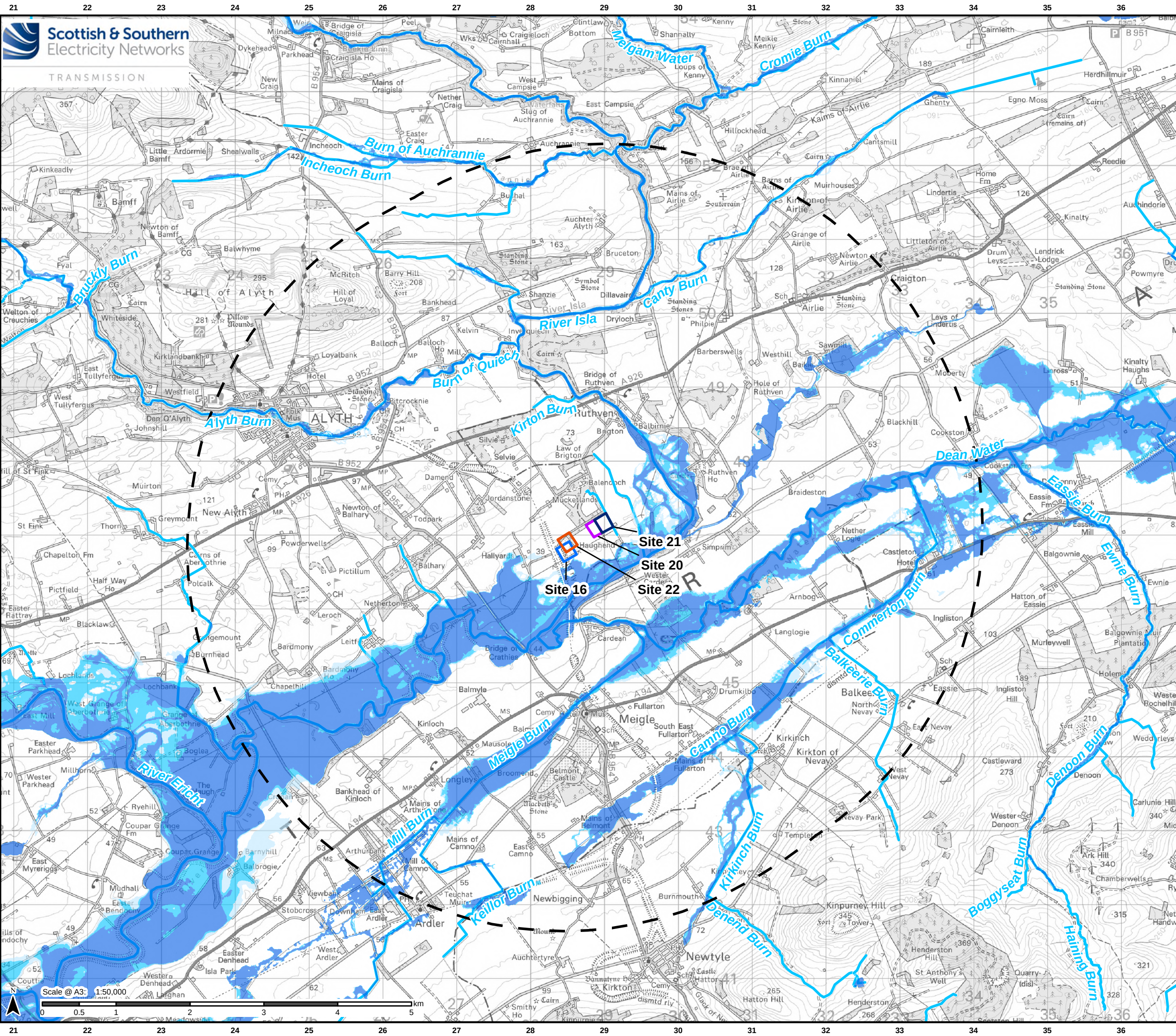
Project: Alyth Substation

Title:
Potential Site Area Information Sheet -
Aquifer Classifications

Drawn by: AROSBOTHAM

Date: 08/10/2026

Drawing: Figure 7



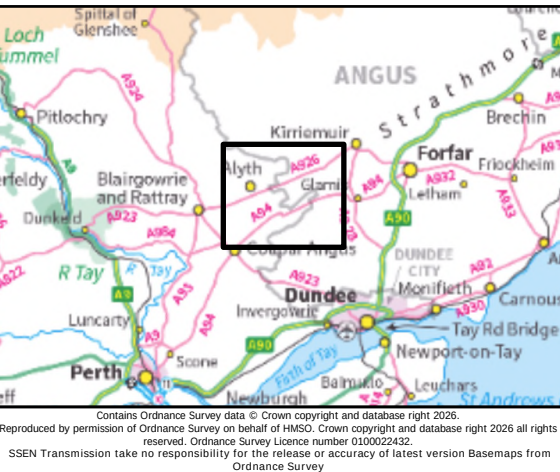
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Substation Sites

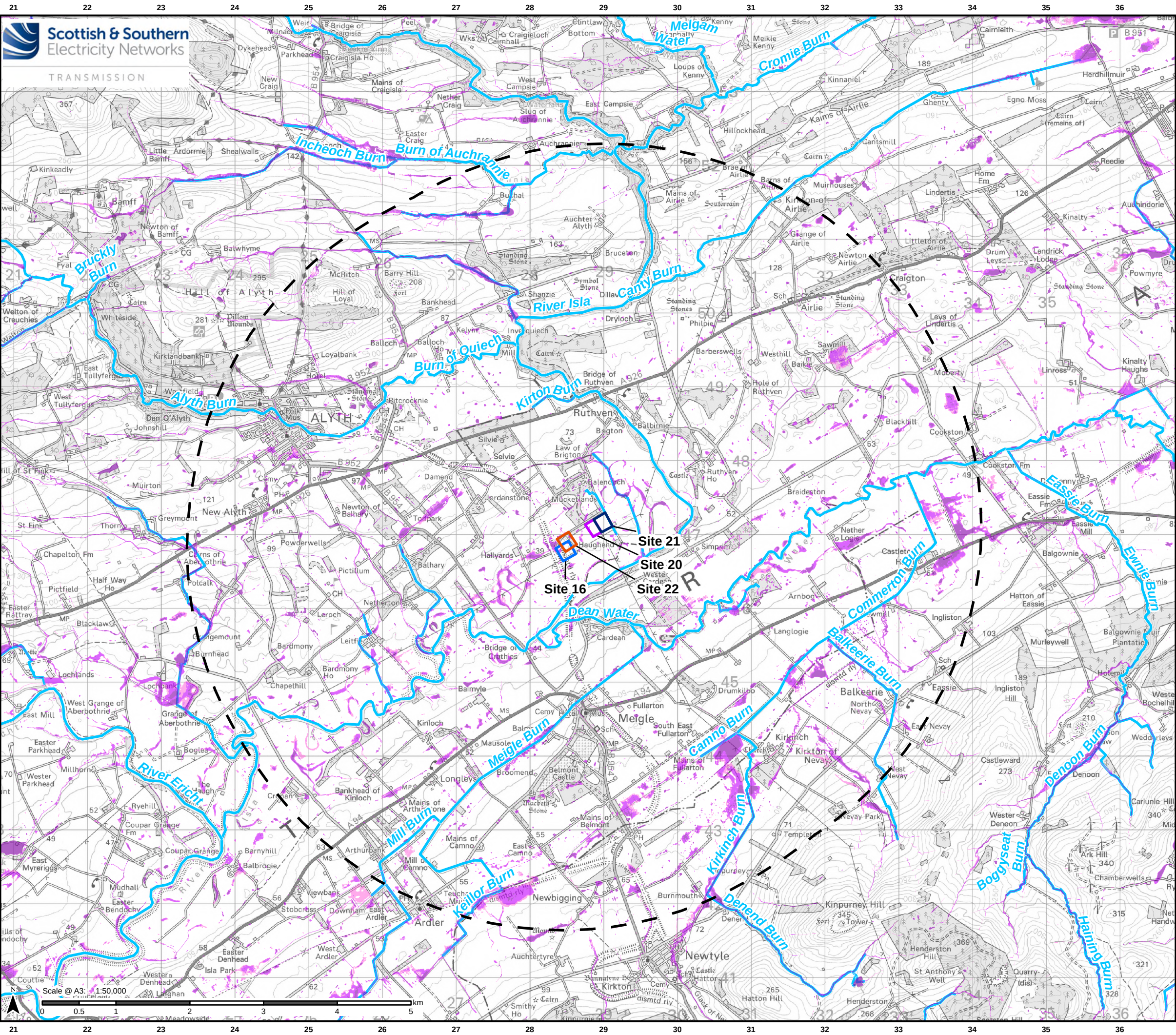
- Site 16
- Site 20
- Site 21
- Site 22
- 5km Study Area
- Surface Watercourse

Likelihood of River Flooding

- High
- Medium
- Low



Project No: LT000639	
Project: Alyth Substation	
Title: Potential Site Area Information Sheet - River Flooding	
Drawn by: AROSBOTHAM	Date: 08/10/2026
Drawing: Figure 8	



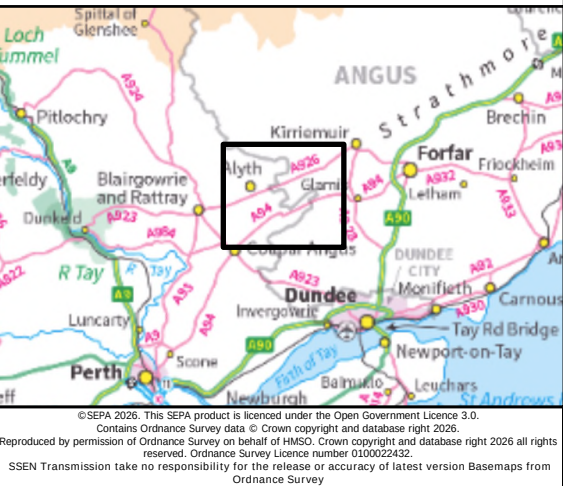
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Substation Sites

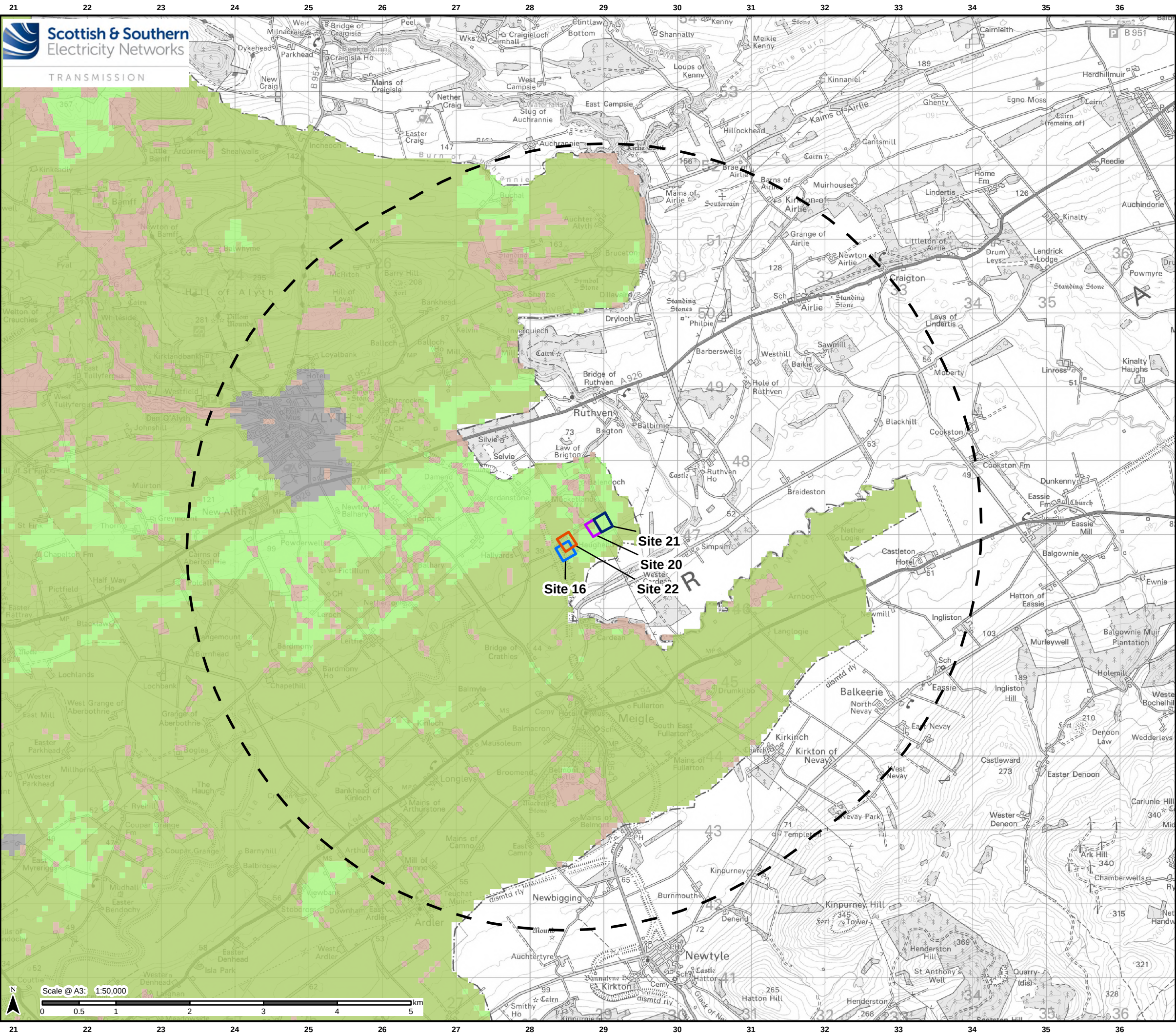
- Site 16
- Site 20
- Site 21
- Site 22
- 5km Study Area
- Surface Watercourse

Likelihood of Surface Water Flooding

- Medium
- Low
- High



Project No:	LT000639
Project:	Alyth Substation
Title:	Potential Site Area Information Sheet - Surface Water Flooding
Drawn by:	AROSBOTHAM
Date:	08/10/2026
Drawing:	Figure 9



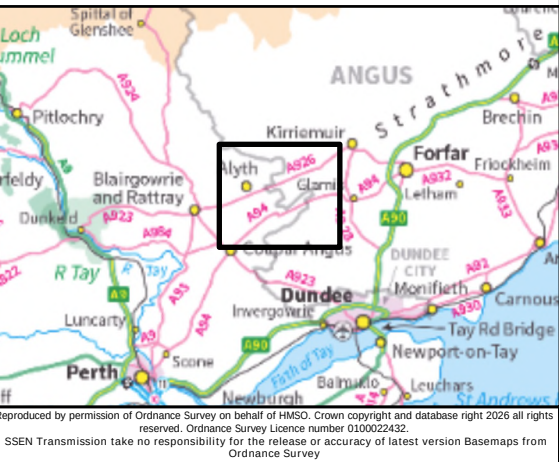
Legend

Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22
- 5km Study Area

Forest and Woodland Strategy

- Preferred
- Potential
- Existing
- Built or Water Body



Project No: LT000639

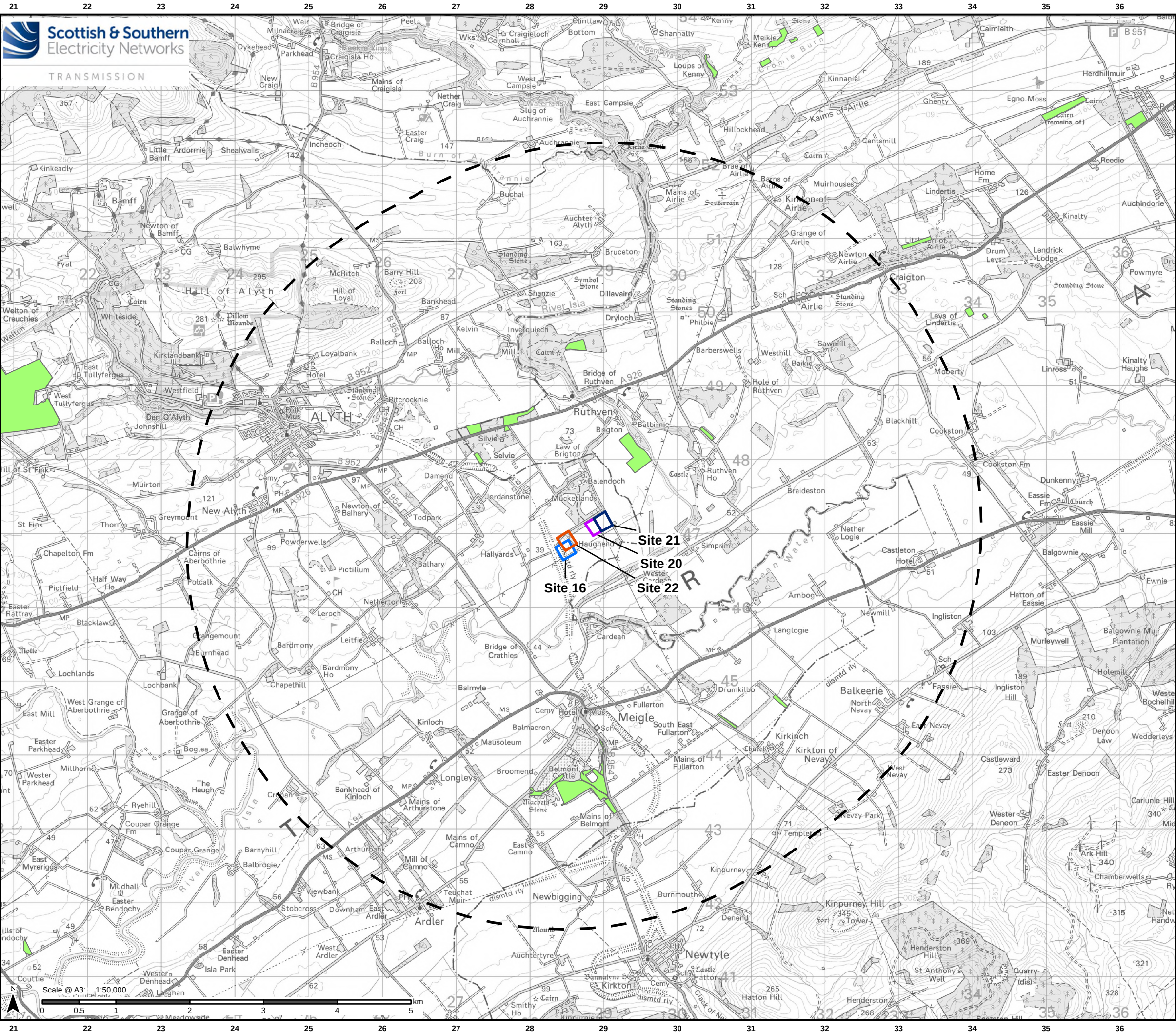
Project: Alyth Substation

Title:
Potential Site Area Information Sheet
Forest and Wood Strategy

Drawn by: AROSBOTHAM

Date: 08/10/2026

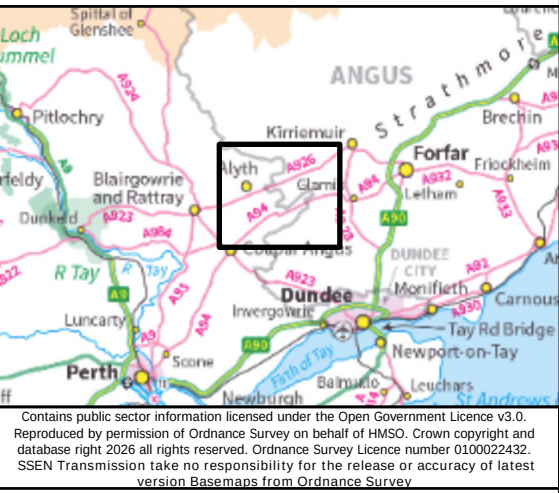
Drawing: Figure 10



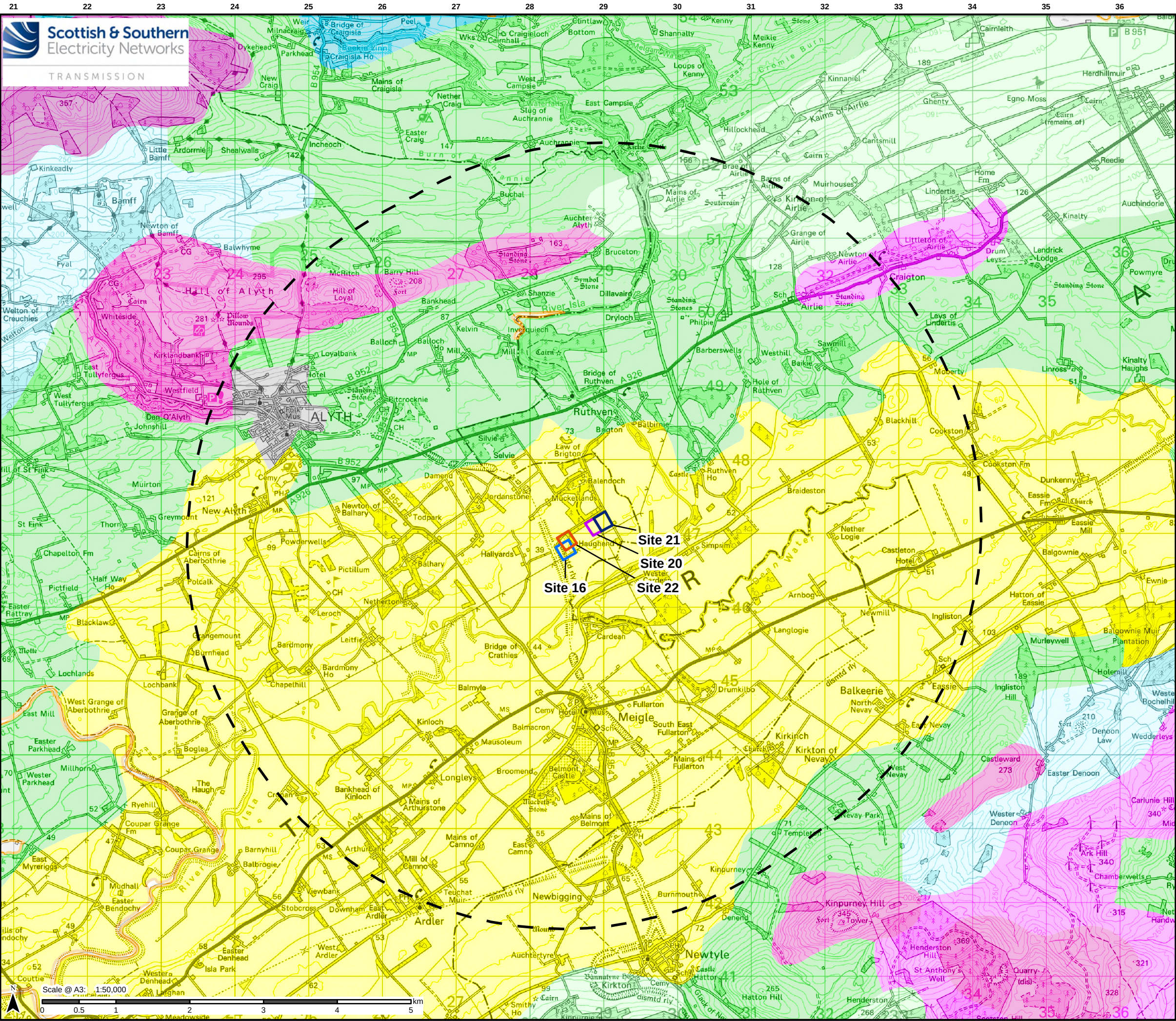
Legend

Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22
- 5km Study Area
- Scottish Forestry Grant Scheme (SFGS) Boundary



Project No:	LT000639
Project:	Alyth Substation
Title:	Potential Site Area Information Sheet Forest Ownership
Drawn by:	AROSBOTHAM
Date:	08/10/2026
Drawing:	Figure 11



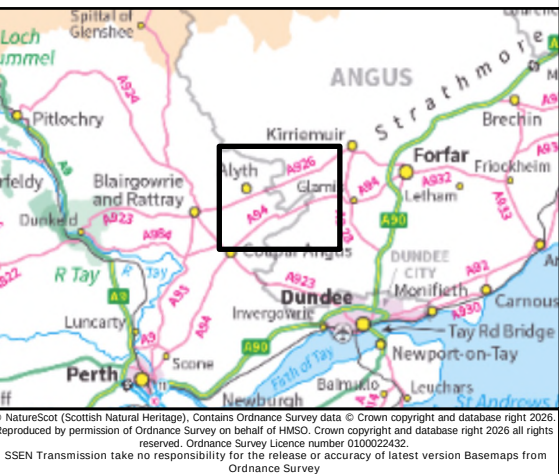
Legend

Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22
- 5km Study Area

Land Capability for Agriculture (LCA Classification)

- Class 2 - Land capable of producing a wide range of crops
- Class 3.1 - Land capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wider range. Short grass leys are common
- Class 3.2 - Land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common
- Class 4.1 - Land capable of producing a narrow range of crops, primarily grassland with short arable breaks of forage crops and cereal
- Class 4.2 - Lands capable of producing a narrow range of crops, primarily on grassland with short arable breaks of forage crops
- Class 5.1 - Lands capable of use as improved grassland. Few problems with pasture establishment and maintenance and potential high yields
- Class 5.2 - Land capable of use as improved grassland. Few problems with pasture establishment but may be difficult to maintain
- Class 5.3 - Land capable of use as improved grassland. Pasture deteriorates quickly
- Class 7 - Land of very limited agricultural value
- Built up Land
- Inland Water



Project No: LT000639

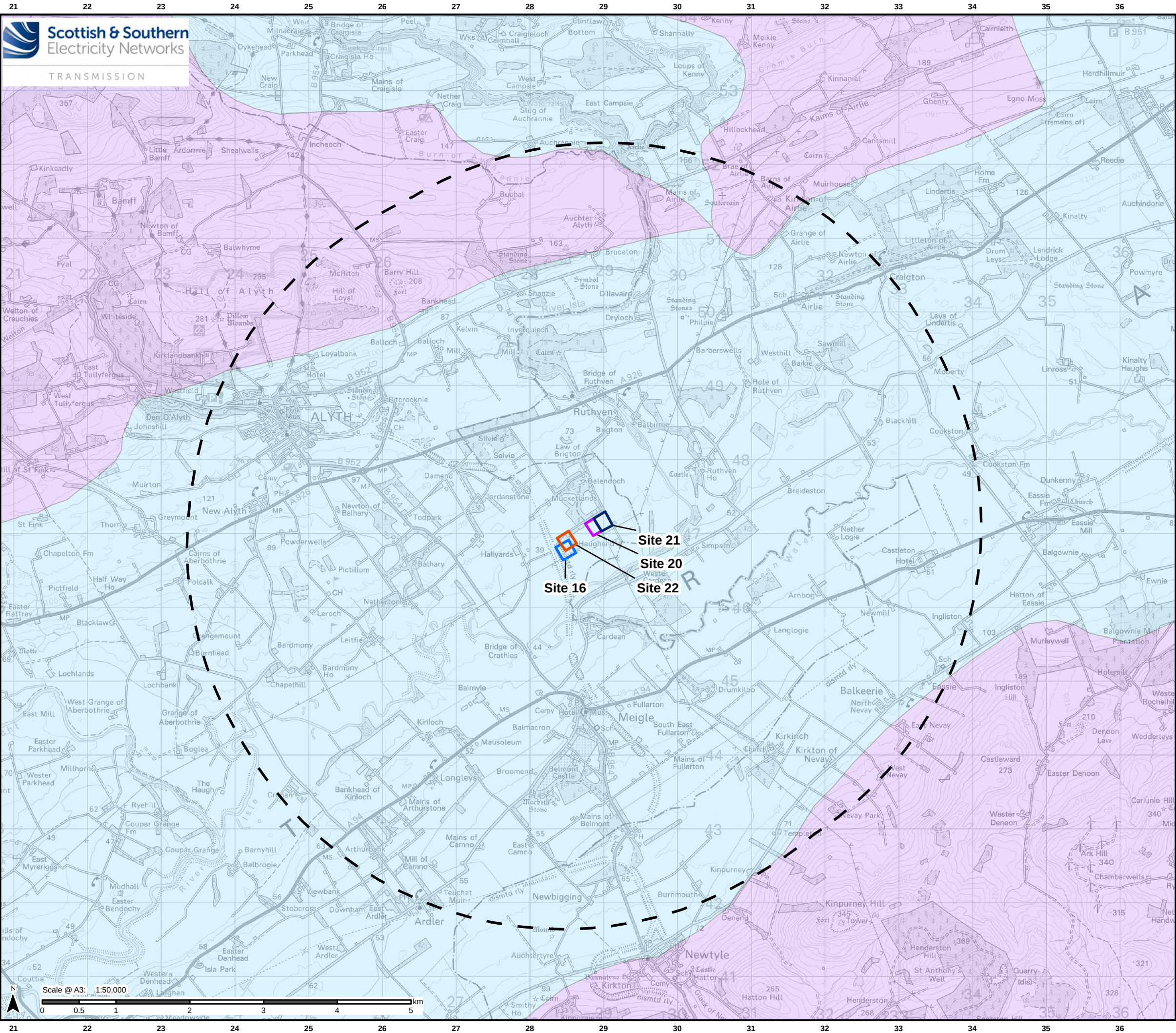
Project: Alyth Substation

Title:
Potential Site Area Information Sheet -
Land Capability for Agriculture

Drawn by: AROSBOTHAM

Date: 08/10/2026

Drawing: Figure 12



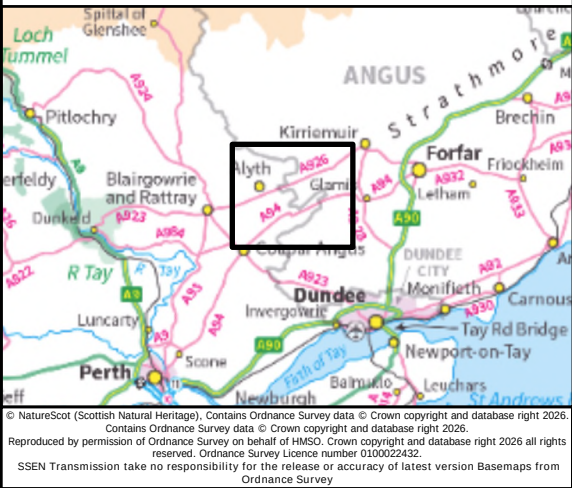
Legend

Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22
- 5km Study Area

Landscape Character Assessment

- Upland and Hills (Generally over 200m)
- Valleys/Straths/Glens/Voes



Project No: LT000639

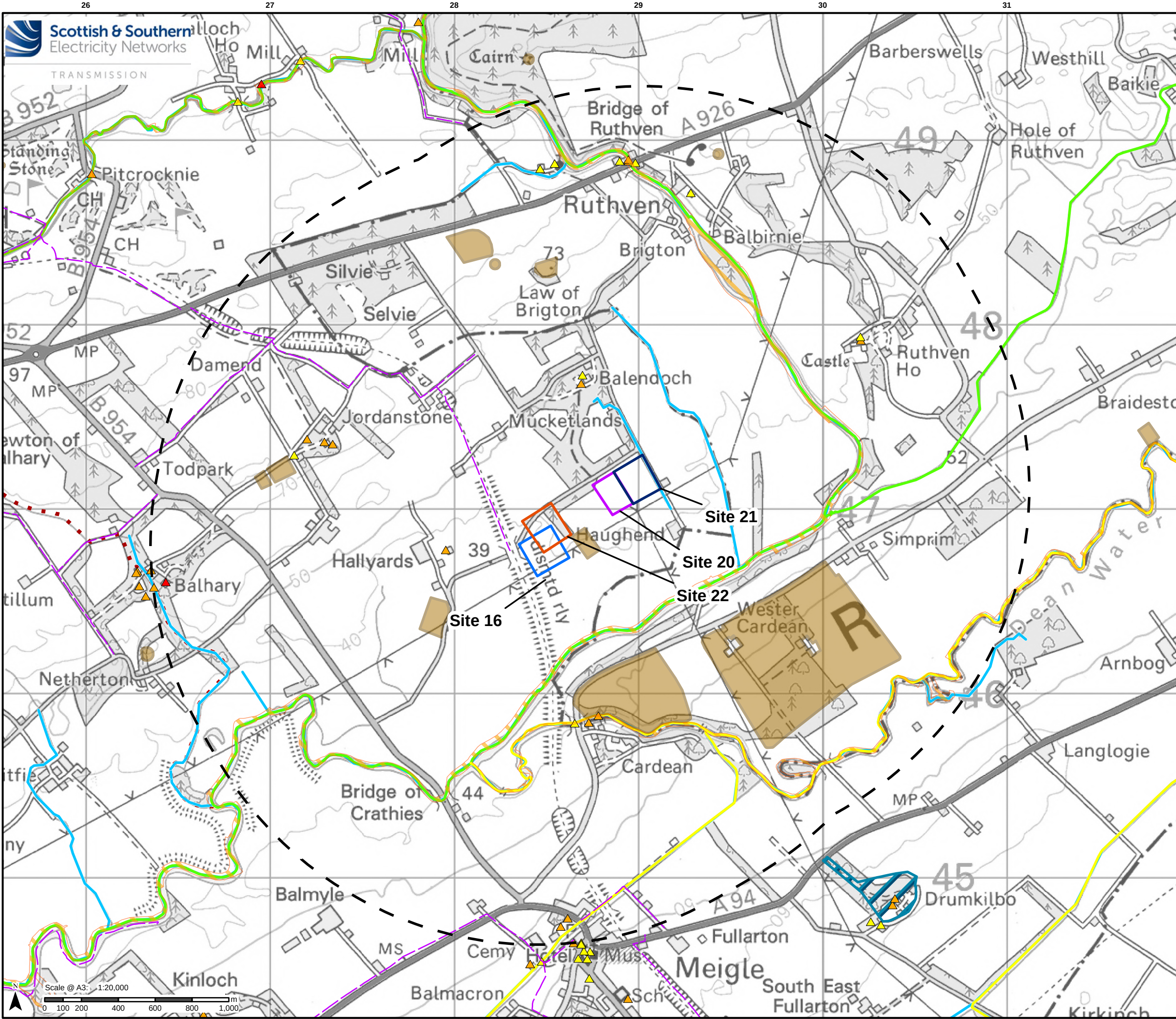
Project: Alyth Substation

Title:
Potential Site Area Information Sheet -
Landscape Character Types

Drawn by: AROSBOTHAM

Date: 08/10/2026

Drawing: Figure 13



Legend

Substation Sites

- Site 16
- Site 20
- Site 21
- Site 22
- 2 km Study Area

Environmental Constraints

- Core Paths

Designated Sites

- Special Area of Conservation (SAC)

Heritage Assets

Listed Building Classification

- A
- B
- C
- Scheduled Monument
- Garden or Designed Landscape

Water and Drainage

River - WFD Classification

- Good status/potential
- Moderate status/potential
- Surface Watercourse
- Rivers

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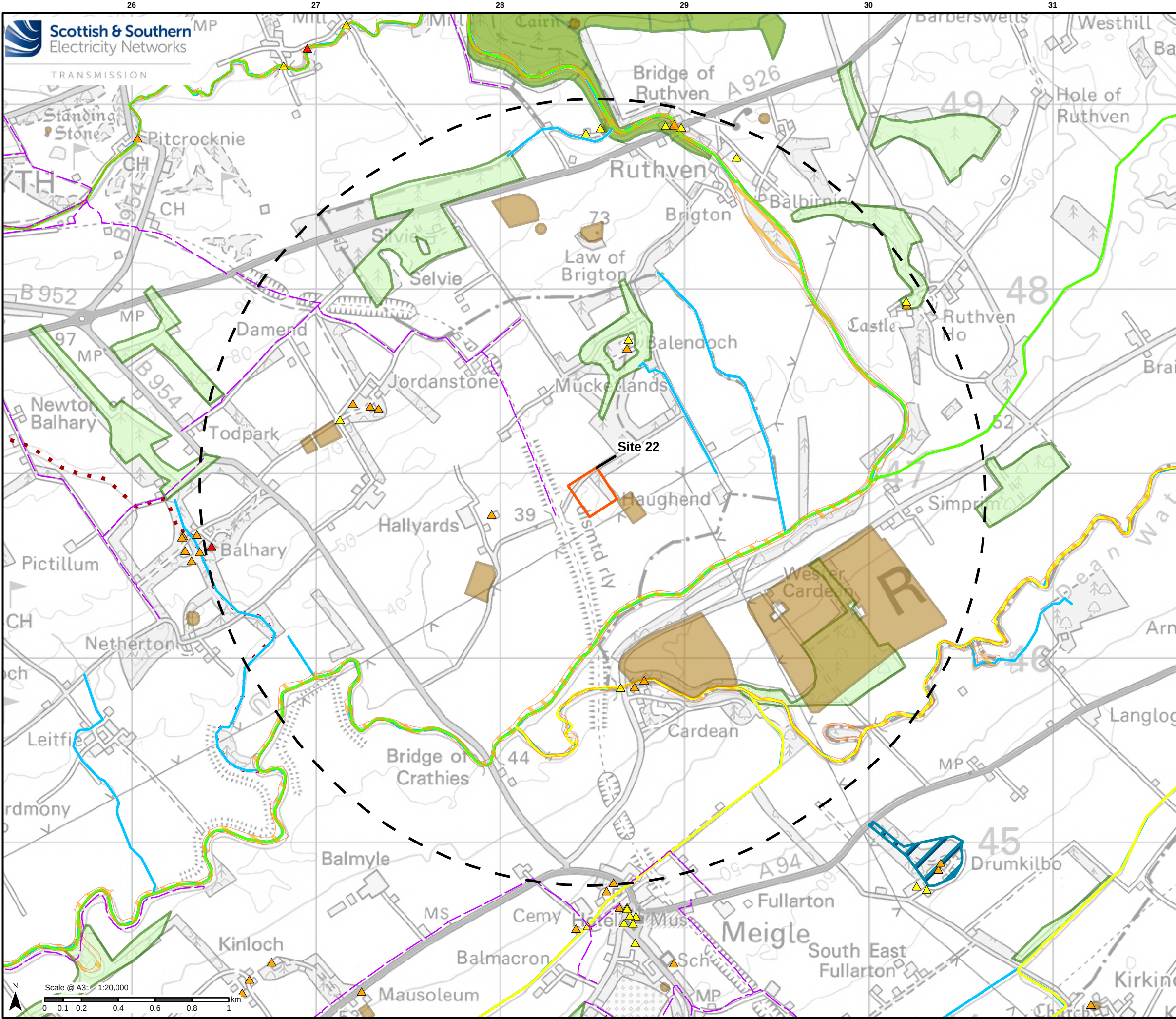
Project No: LT000639

Project: Alyth Substation

Title: Stage 2 Sites - Combined Environmental Constraints

Drawn by: AROSBOTHAM Date: 08/10/2026

Drawing: Figure 14



Legend

2km Study Area

Substation Sites

Environmental Constraints

Core Paths

Special Area of Conservation (SAC)

Ancient Woodland Inventory (AWI)

Ancient (of semi-natural origin)

Long-Established (of plantation origin)

Heritage Assets

Scheduled Monument

Garden or Designed Landscape

Listed Building Classification

A

B

C

Water and Drainage

Surface Watercourse

River - WFD Classification

Good status/potential

Moderate status/potential

Drinking Water Protected Areas

Rivers

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Project No: LT000639

Project: Alyth Substation

Title:

Site 22 - Combined Environmental Constraints

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Date: 24/09/2026

Drawing: Figure 15