Scottish & Southern Electricity Networks

Consultation Document – Substation Site Selection

Project: LT486 Fiddes 400kV Substation

REF: LT486

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Scottish & Southern Electricity Networks

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GLOSSARY

Term	Definition
Air Insulated Switchgear (AIS) Substation	An AIS substation is constructed with switchgear which relies on open air components, which can require large clearance areas for operation and safety, which takes up a larger area of land than Gas Insulated Switchgear (GIS).
Amenity	The natural environment, cultural heritage, landscape and visual quality. Also includes the impact of SSEN Transmission's works on communities, such as the effects of noise and disturbance from construction activities.
Ancient Woodland Inventory (AWI)	AWI is a provisional guide to the location of Ancient Woodland. It contains three main categories of woodland, all of which are likely to be of value for their biodiversity and cultural value. These include Ancient Woodland, Long-established woodlands of plantation origin (LEPO), and other woodlands.
Area of Search (Study Area)	A broad geographical area within which possible sites might be capable of identification within approximately 5km 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)	Biodiversity Net Gain (BNG) is an approach to development that aims to leave the natural environment in a measurably better state than it was pre-development. It focuses on the change in the biodiversity value of a site, comparing the pre and post construction biodiversity values to ensure a positive impact overall.
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.
Double circuit	A double circuit transmission line comprises of two independent circuits each made up of three sets of conductors (cables).
Environmental Impact Assessment (EIA)	Environmental Impact Assessment. A formal process codified by EU directive 2011/92/EU, and subsequently amended by Directive 2014/52/EU. The national regulations are set out in The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. The EIA process is set out in Regulation 4(1) of the regulations and includes the preparation of an EIA Report by the developer to systematically identify, predict, assess and report on the likely significant environmental impacts of a proposed project or development.
Engagement	The establishment of effective relationships with individuals or groups.
Electricity System Operator (ESO)	National Grid is the Electricity System Operator (ESO) for Great Britain. The ESO balances electricity supply and demand to ensure the electricity supply.
Gardens and Designed Landscapes (GDLs)	The Inventory of Gardens and Designed Landscapes lists those gardens or designed landscapes which are considered by a panel of experts to be of national importance.
Gas Insulated Switchgear (GIS) Substation	A GIS substation is constructed with switchgear with gaseous reliant components which allows operation and safety clearances to be reduced compared to an AIS substation.
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities.
Holford Rules (as modified)	Principles used to inform the routeing of overhead lines and siting of substations. Supplementary Notes for the Siting of Substations capture relevant aspect of the Holford Rules in SSEN's guidance document *Substation Site Selection Procedures for Voltages at or above 132V*.
Kilovolt (kV)	One thousand volts.
Landscape Character Type (LCT)	A distinct, recognisable and consistent pattern of elements in a landscape that differentiate the area from another.

Term	Definition
Listed Building	Building included on the list of buildings of special architectural or historic interest and afforded statutory protection under the 'Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997' and other planning legislation. Classified categories A – C(s).
Offshore Integrated Link	Offshore cable connection between the onshore network and offshore network being developed as part of the Coordinated Offshore Network. This is being developed as a result of the Holistic Network Design (HND) publication in summer of 2022 produced by National Grid Electricity System Operator (NGESO) to facilitate greater co-ordination and efficiency for offshore windfarms. In the autumn of 2022 Ofgem published their Asset Classification findings which in turn meant SSENT were tasked with delivering large parts of the Coordinated Offshore Network.
Overhead line (OHL)	An electric line installed above ground, usually supported by lattice steel structures or poles.
Plantation Woodland	Woodland of any age that obviously originated from planting.
RAG Rating	A Red, Amber, Green rating provided to allow a comparison between different options of the proposed OHL.
Red Line Boundary	This area should include all land necessary to carry out the Proposed Development.
Riparian Woodland	Woodland that grows along the banks of rivers or other watercourses.
Routeing	The work undertaken which leads to the selection of a proposed alignment, capable of being taken forward into the consenting process under Section 37 of the Electricity Act 1989.
Scheduled Monument	A monument which has been scheduled by the Scottish Ministers as being of national importance under the terms of the 'Ancient Monuments and Archaeological Areas Act 1979'.
Site of Special Scientific Interest (SSSI)	A designated area of national importance for natural heritage. The aim of the SSSI network is to maintain an adequate representation of all natural and semi-natural habitats and native species across Britain.
Special Protection Area (SPA)	A designated area to protect one or more rare, threatened or vulnerable bird species listed in Annex I of the Birds Directive, or certain regularly occurring migratory species.
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.
Sustainable Urban Drainage Systems (SUDS)	Drainage solutions that provide an alternative to the direct channelling of surface water through networks of pipes and sewers to nearby watercourses.
The National Grid	The electricity transmission network in the Great Britain.
UK Biodiversity Action Plan (UK BAP)	The UK BAP was published in 1994 after the Convention on Biological Diversity. It summarised the most threatened species and habitats in the UK and gave detailed plans for their recovery.
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.

PREFACE

This Consultation Document has been prepared by Land Use Consultants (LUC), on behalf of Scottish and Southern Electricity Networks Transmission (SSEN Transmission) to seek comments from all interested parties on the Preferred Site identified for a new 400kV substation near Fiddes in Aberdeenshire, north-east Scotland.

The proposed new Fiddes 400kV substation is part of a suite of projects collectively known as East Coast 400kV Phase 2. These projects comprise; the proposed new Kintore-Fiddes-Tealing 400kV Overhead Line (OHL) Connection and new proposed 400kV substations at Fiddes and Tealing. In addition, two of the existing 275kV overhead lines which connect the existing Tealing Substation with, respectively, the Alyth substation and the Westfield substation (near Glenrothes in Scottish Power Transmission's (SPT) Licence Area), require upgrades to enable them to operate at 400kV and to connect to the proposed new Tealing 400kV substation.

These proposals have been determined as critical to enable the delivery of the UK and Scottish Government's renewable energy targets. This Consultation Document is available online at the project website: https://www.ssen-transmission.co.uk/projects/project-map/fiddes-400kv-substation/.

Over the coming months SSEN Transmission will be engaging with Statutory Consultees and stakeholders to further understand constraints and identify potential opportunities. Public consultation events detailing the proposals described in this document will be held at the following times and locations:

2nd May 2023 (2-7pm) Skene – Milne Hall, Kirkton of Skene	9th May 2023 (2-7pm) Brechin - Brechin City Hall
3rd May 2023 (2-7pm) Peterculter – Ardoe House Hotel – Ogston Suite	10th May 2023 (2-7pm) Kirriemuir - Westmuir Hall, Kirriemuir
4th May 2023 (2-7pm) Laurencekirk – Dickson Hall Laurencekirk	11th May 2023 (2-7pm) Tealing – Tealing Village Hall, Tealing

A virtual event will be held on 17th May (4-6pm) – joining details will be available on the project website here: https://www.ssen-transmission.co.uk/projects/project-map/kintore-fiddes-tealing-400kv-ohl-connection/

Comments on this Consultation Document should be sent to:

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All comments are requested by **9th June 2023**.

EXECUTIVE SUMMARY

Scottish and Southern Electricity Networks Transmission (SSEN Transmission) operating under licence held by Scottish Hydro Electric Transmission plc, is proposing to establish a network of 400 kilovolt (kV) electricity transmission infrastructure across the north-east of Scotland. This is needed to provide greater capacity and flexibility for the transmission of electricity generated in the north of Scotland, in particular from the increasing number of offshore wind farms and to help meet the Scottish Government's energy and Net Zero targets.

A key part of the infrastructure upgrade is the construction of a new 400kV overhead transmission line (OHL) between the existing substation at Kintore (north west of Aberdeen) and a proposed new substation to be built near Tealing in Angus, just north of Dundee (the Kintore-Fiddes-Tealing 400kV OHL Connection project). The OHL would need connect to proposed new 400kV substations at Fiddes near Stonehaven in Aberdeenshire and at Tealing. These projects form part of the East Coast 400kV Phase 2 scheme which also involves upgrading the existing overhead lines from the existing Tealing Substation to Alyth and to Westfield (near Glenrothes) from their current 275kV capacity to 400kV.

This document sets out the findings of a comparative appraisal of alternative site options within which the proposed new 400kV substation at Fiddes could be developed. The approach to the identification and appraisal of substation site options has followed SSEN Transmission's Guidance 'Substation Site Selection Procedures for Voltages at or above 132kV guidance document'[1].

The appraisal process followed two stages. In the first stage, site options were identified within a defined Area of Search which provided feasible areas for the proposed Fiddes 400kV substation to be sited. Fourteen potential sites were identified based on analysis of areas of least constraint using tools such as Geographic Information Systems (GIS). A comparative analysis of these sites was undertaken focusing on their degree of constraint in terms of physical, access, environmental and technical issues and opportunities. From this process three potential substation sites (Sites 5A, 5B and 8B) were considered to be suitable for further appraisal.

The second stage involved more detailed consideration of the environmental, engineering and cost constraints of the three shortlisted sites. A series of criteria was used to structure this process, and the desk-based analysis of constraints was supported by initial site visits to the sites by relevant project team specialists.

There are relatively few factors differentiating among the three sites. The appraisal has identified that for Site 5A the presence of a flood prone watercourse through the Site significantly constrains it for substation development. Sites 5B and 8B offer advantages over 5A by avoiding the flooding issues albeit they are likely to be more visible to properties nearby. At Site 5B, there is a residential property within the Site and another close to the Site boundary. Site 8B is predicted to have potential for adverse impacts on a nearby scheduled monument. There is also a residential property close to the boundary. On balance Site 5B, is preferred in environmental terms. This preference is supported by the findings of the engineering and cost appraisals which identify that Site 5B has the least level of technical complexity and likely to be the lowest cost.

This Consultation Document invites comments from all stakeholders on the Preferred Site and summarises how the Preferred Site location has been identified. Moving forward, confirmation of the Preferred Site will be informed by this consultation exercise and through detailed surveys, which may identify as yet unknown engineering, environmental or land use constraints. Subject to the outcome of the consultation, a Proposed Site will be confirmed.

Whilst this Consultation Document has been prepared to seek comments in relation to the Preferred Substation Site at Fiddes, Consultation Documents for the combined consultation for the Kintore-Fiddes-Tealing 400kV OHL Connection project Corridor and Route can be found here: https://www.ssen-transmission.co.uk/projects/project-map/kintore-fiddes-tealing-400kv-ohl-connection/.

The Consultation Document for the Preferred Substation site at Tealing can be found here: https://www.ssen-transmission.co.uk/projects/project-map/tealing-400kv-substation/.

The findings of the appraisal of substation options presented in this document will be reviewed taking account of feedback from key stakeholders, and from the public consultation. Following the outcome of the combined consultation, SSEN Transmission will confirm the Proposed Substation sites at Tealing and Fiddes as well as the Proposed Corridor and

[1] SSEN Transmission (September 2022) Substation Site Selection Procedures for Voltages at or above 132kV. PR-NET-ENV-502.

Proposed Route for the 400kV OHL project. On identification of a Proposed Site, the requirement for an Environmental Impact Assessment (EIA) will be screened, and a planning application to seek consent to develop the substation will be submitted to Aberdeenshire Council.

All comments on the proposals are requested by **9th June 2023**. A Report on Consultation (RoC) will be published after the consultation period has ended, which will document the consultation responses received, how these responses have been considered, and the decisions made in light of these responses.

1. INTRODUCTION

1.1 Purpose of Document

This Substation Site Selection Consultation Document has been prepared by Land Use Consultants Ltd (LUC) on behalf of Scottish and Southern Electricity Networks Transmission (SSEN Transmission). SSEN Transmission, operating under licence held by Scottish Hydro Electric Transmission plc, owns, operates and develops the high voltage electricity transmission system in the north of Scotland and remote islands.

This Consultation Document invites comments from all interested parties on the Preferred Substation Site identified for a proposed new 400kV substation at Fiddes, in Aberdeenshire, to connect a proposed new overhead line (OHL) approximately 106km in length, between the new substation at Tealing and the existing Kintore Substation in Aberdeenshire. This new OHL, known as the Kintore-Fiddes-Tealing OHL Connection project, would also require a proposed new 400kV substation at Tealing, in Angus.

A location context plan for the proposed substation at Fiddes is shown in Figure 1.1.

This Consultation Document describes the substation Site options appraisal undertaken, the alternatives considered during the selection of substation Site options and the identification of the preferred substation Site at Fiddes. Comments are now sought from statutory authorities, key stakeholders, elected representatives and the public on the substation site selection process and the Preferred Site.

All feedback received in relation to the Preferred Substation Site will be reviewed and a Report on Consultation (RoC) will be produced that provides SSEN Transmission's response to the feedback received.

SSEN Transmission is also undertaking a combined Corridor and Route Consultation for the Kintore-Fiddes-Tealing 400 kV OHL Connection project, due to the accelerated delivery programme that is required to achieve the UK and Scottish Government 2030 targets. The feedback on the Preferred Corridor consultation exercise will be assessed independently of the fact that we have progressed to the routeing stage. If there are changes to either or both of the Preferred Corridor or the Preferred Route as a result of the consultation exercise, the substation site selection process will be reviewed.

Consultation Documents for the combined consultation for the Kintore-Fiddes-Tealing 400kV OHL Connection project Corridor and Route can be found here: https://www.ssen-transmission.co.uk/projects/project-map/kintore-fiddes-tealing-400kv-ohl-connection/.

The Consultation Document for the proposed new 400kV substation at Tealing can be found here: https://www.ssen-transmission.co.uk/projects/project-map/tealing-400kv-substation/.

1.2 Document Structure

This report is comprised of six sections as follows:

1. **Introduction** – sets out the purpose of the Consultation Document, document structure and next steps.
2. **The Proposals** - describes the need for the proposals, a description of the proposed substation design and technology solution and the typical construction methods.
3. **Site Selection Process** - sets out the site selection process and methodology that has been applied to date to derive a Preferred Substation Site.
4. **Stage One: Site Screening** - summarises the potential sites that have been considered for the substation.
5. **Stage Two: Detailed Site Appraisal** - summarises the key considerations of each potential site from an environmental, engineering and economic perspective, and provides a comparative appraisal of each site in order to select the Preferred Option.
6. **Consultation on the Proposals** - invites comments on the substation Site assessment process and identification of the Preferred Site.

1.3 Next Steps

- As part of the consultation exercise, comments are sought from statutory authorities, key stakeholders, elected representatives and members of the public on the Preferred Substation Site proposed in this report.
- In parallel, respondents are also being asked for their feedback on the Preferred Corridor and the Preferred Route for the Kintore – Fiddes – Tealing 400kV OHL Connection project and on the Preferred Substation Site at Tealing. Section 1.1 contains links to the respective project Consultation Documents.
- All comments are requested by **9th June 2023** and thereafter a separate Report on Consultation (RoC) will be produced for the Corridor, Route and Substation sites. Each RoC will document the consultation responses received and the decisions made in light of these responses. Each RoC will also confirm the proposed Corridor, Route and Substation sites.
- Following the completion of this consultation exercise SSEN Transmission will then develop a series of alignment options for the OHL including how these connect with the new substations, identify a preferred alignment (within the Preferred Route) and undertake consultation on the preferred alignment.
- Further detailed public consultation will also be carried out with respect to each substation site.

2. THE PROPOSALS

2.1 Need for the Project

Scottish and Southern Electricity Networks Transmission (SSEN Transmission) operating under licence held by Scottish Hydro Electric Transmission plc has a statutory duty under Schedule 9 of the Electricity Act to develop and maintain an efficient, co-ordinated and economical electrical transmission system in its licence area. Where there is a requirement to extend, upgrade or reinforce its transmission network, SSEN Transmission's aim is to provide an environmentally aware, technically feasible and economically viable solution which would cause the least disturbance to the environment and to people who use it.

In July 2022, National Grid, the Electricity System Operator (ESO), published the Pathway to 2030 Holistic Network Design (HND)[2], setting out the blueprint for the onshore and offshore electricity transmission network infrastructure required to enable the forecasted growth in renewable electricity across Great Britain, including the UK and Scottish Government's 2030 offshore wind targets of 50GW and 11GW.

For the north of Scotland, this confirms the need for a significant and strategic increase in the capacity of the onshore electricity transmission infrastructure to deliver 2030 targets and a pathway to net zero, several of which will require accelerated development and delivery to meet 2030 completion dates. The East Coast 400kV Phase 2 requires to be progressed accordingly. The need for these reinforcements has been further underlined within the recent British Energy Security Strategy[3]. This sets out the UK Government's plans to accelerate homegrown power for greater energy independence.

The extensive studies completed to inform the ESO's Pathway to 2030 HND confirmed the requirement to increase the power transfer capacity of the onshore corridor from Kintore to Tealing. This requires a 400kV connection between these sites to enable the significant power transfer capability needed to take power from onshore and large scale offshore renewable generation which is proposed to connect at onshore locations on the East Coast of Scotland before then being transported to areas of demand.

SSEN Transmission is proposing to establish a new 400kV overhead line (OHL) between Kintore, Fiddes and Tealing. This also requires two new 400kV substations to be constructed at Fiddes and Tealing to enable future connections and export routes to areas of demand. In addition, two of the existing 275kV overhead lines connecting the existing Tealing Substation with Alyth and Westfield (Glenrothes) substations respectively, require upgrades to enable operation at 400kV and to allow them to connect to the proposed new Tealing 400kV site.

The proposed Fiddes 400kV Substation forms part of the East Coast 400kV Phase 2 projects. The new substation is required to be built near the existing Fiddes 132kV substation, south of Stonehaven in Aberdeenshire (see Figure 1.1).

2.2 Substation Design

2.2.1 New Substation Proposals

The project comprises the construction of a new 400kV substation close to the existing 132kV substation at Fiddes. The works will involve:

- construction of a new outdoor, Air Insulated Switchgear (AIS), 400kV substation complete with 400kV double busbar arrangement;
- installation of two new super grid transformers (SGT) and two new grid transformers (GT);
- network stability equipment;
- new substation control buildings;
- possible connection to the existing Fiddes substation;
- new terminal towers to facilitate incoming 400kV connections from the new Kintore-Fiddes-Tealing OHL;

[2] National Grid ESO (July 2022). Pathway to 2030: A holistic network design to support offshore wind deployment for net zero. Available [online]: https://www.nationalgrideso.com/future-energy/the-pathway-2030-holistic-network-design.

[3] UK Government (April 2022). British Energy Security Strategy. Available [online]: https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy.

- space provision to allow for connection of future renewable energy generation projects; and
- reconfiguration of the existing 275kV OHL to enable the new 400kV OHL to connect to the new site.

Plate 2.1 shows the existing substation at Fiddes. The new substation will be broadly similar.

Plate 2.1 - Aerial Photograph of the Existing Fiddes Substation

2.2.2 Substation Design Requirements

The current design requires provision for a 19 bay[4] 400kV substation in the vicinity of the existing Fiddes 132kV substation[5]. For the purposes of undertaking the site selection process, it has been assumed that a footprint of approximately 700m x 700m[6] would be required for a 400kV AIS substation design[7].

Additional land take would also be required for landscaping and screening, Sustainable Urban Drainage Scheme (SUDs) and for habitat enhancement to achieve Biodiversity Net Gain (BNG)[8] at the site. The requirement for further land take will be considered once the Proposed Site has been confirmed. An additional area of approximately 200m x 80m would also be required for temporary welfare and laydown areas during construction, located in close proximity to the Site. These would be restored following construction.

2.2.3 Substation Connections and Tie-Ins

The following existing and proposed new infrastructure would require connection to the proposed new Fiddes 400kV Substation:

[4] A bay is a high voltage connection between an electrical circuit (power lines or transformers) and a busbar. Busbars are solid metal bars used to provide electrical connections in substations.

[5] The detailed design will be based on the proposed works under the East Coast 400 kV Phase 2 Design Requirement Document (DRD) and the updated Single Line Diagram (SLD) issued by SSEN Transmission System Planning and Investment team (TSP&I): Conceptual 2030 Design – Single Line Diagram.

[6] There is a requirement to accommodate a connection for a 2GW Offshore cable indicated at section 2.2.3, which would occupy just over half of the current proposed footprint, based on current design thinking.. Should the cable design requirements change, the space requirements would reduce significantly, reducing the overall footprint required.

[7] An AIS substation represents the largest area of land take that would potentially be required.

[8] https://www.ssen-transmission.co.uk/globalassets/documents/a-network-for-net-zero/supporting-evidence/our-approach-to-implementing-biodiversity-net-gain-.pdf

- The proposed new Tealing – Fiddes - Kintore 400 kV OHL Connection. Fiddes is required to be connected to both Tealing 400kV substation and Kintore 400kV substation. This requires the 400kV OHL to come in from Tealing and another OHL to come from Kintore.
- The 2GW Offshore Integrated Link will connect via underground cable to the 275kV side of the substation.

2.3 Construction Activities

The main construction elements associated with the Proposed Development are anticipated to include:

- enabling works (e.g. site clearance including diverting existing utilities, establishment of temporary construction compound(s), laydown areas, and any temporary / permanent access tracks);
- establishment of a new bell mouth and associated access tracks to the new substation from the public highway;
- substation platform construction including cut/fill ground works;
- installation of drainage and SUDSs;
- delivery of components and materials to site;
- construction of foundations for major plant items including transformers and buildings;
- installation of major plant items including transformers and buildings;
- commissioning of electrical plant items; and
- Removal of temporary works and site reinstatement.

Potential public road improvements (PRI), such as road widening, bridge reinforcements or installation of new junctions, may be required to provide suitable construction and maintenance access.

All construction activities would be undertaken in accordance with a Construction Environmental Management Plan (CEMP) which would define specific methods for environmental survey, monitoring and management throughout construction. A CEMP would be produced by the Principal Contractor and agreed with statutory stakeholders prior to the commencement of construction.

2.4 Project Construction Programme

All works described within this scope are programmed to commence in Spring 2026 to allow completion of construction and energisation of Fiddes 400kV substation by October 2030. A detailed construction programme will be developed as the project progresses.

3. SITE SELECTION PROCESS

3.1 Introduction

The approach to site selection has been informed by SSEN Transmission's *Substation Site Selection Procedures for Voltages at or above 132kV guidance document* [9] (hereafter referred to as SSEN Transmission's Substation Guidance). This guidance document considers the approach to identification and selection of new electricity transmission substation sites and also covers requirements to extend existing substations.

The guidance document sets out a consistent approach to the selection of substation sites by SSEN Transmission. This document helps SSEN Transmission to meet its obligations under Schedule 9 of the Electricity Act 1989, which requires transmission licence holders:

- to develop and maintain an efficient, coordinated and economical electricity transmission system in its licensed area;
- to 'have regard to the desirability of preserving the natural beauty, of conserving flora, fauna and geological and physiographical features of special interest and protecting sites, buildings and objects of architectural, historic or archaeological interest; and
- to do what they reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites buildings or objects.

The guidance develops a process which aims to balance these environmental considerations with technical and economic considerations throughout the site selection process. The guidance splits a project into the following key stages:

- Stage 1: Initial Site Screening; and
- Stage 2: Detailed Site Selection.

The project is currently at Stage 2 Detailed Site Selection, which seeks to identify a preferred 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.

3.2 Methodology

3.2.1 Area of Search

The extent of area of search (the study area), has been defined as the area within a 5km radius of the proposed connection point and the existing Fiddes Substation.

3.2.2 Baseline Conditions

A series of desk-based studies have been undertaken to identify potential constraints and opportunities within the study area. These have included:

- Identification of environmental designated sites utilising GIS datasets available including those via NatureScot Site Link[10];
- Identification of archaeological and cultural heritage statutory designations, available via Historic Environment Scotland (HES) Digital Download, and heritage assets recorded as of 'Regional Significance' and Non-Inventory Designed Landscapes (NIDLs) within Aberdeenshire Council's online Historic Environment Records (HER);
- Review of SEPA interactive Flood Risk Mapping[11];
- Review of information on the online NatureScot (2016) Carbon and Peatland Mapping[12];
- Review of the Aberdeenshire Local Development Plan (LDP) to identify further environmental constraints and opportunities, such as regional level designations or other locations important to the public[13];

[9] SSEN Transmission (September 2022) Substation Site Selection Procedures for Voltages at or above 132kV. PR-NET-ENV-502.
[10] https://sitelink.nature.scot/home
[11] https://map.sepa.org.uk/floodmaps
[12] https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map
[13] https://www.aberdeenshire.gov.uk/planning/plans-and-policies/archive-information/#ldp2017

- Review of Landscape Character Assessments[14] and landscape designations of relevance to the Study Area (including those identified by relevant local authorities);
- Review and extrapolation of Ordnance Survey (OS) mapping, OS Vectormap GIS data and other online GIS data sources to identify land use, terrain and elevation and slope, watercourses, water bodies, residential properties, settlements, roads and other built infrastructure such as wind farms;
- Identification of existing OHL transmission infrastructure, roads, gas pipelines[15] and railway lines within the study area;
- Identification of proposed developments from a review of the Aberdeenshire Council planning application portal[16]; and
- Review of other relevant information on soils, ground conditions and land use capability with reference to land capability for agriculture (LCA) mapping[17].

3.2.3 Site Option Identification and Selection Methods

High-Level Suitability Multi-Criteria Analysis (MCA) and Geographic Information System (GIS) tools were initially used to identify site options within the study area, in line with SSEN Transmission's Substation Guidance. Fourteen potential sites were identified initially for more detailed appraisal as part of the Stage 1 site screening phase. A comparative analysis of the Stage 1 sites was undertaken using the constraints information collated from the tools referenced above and in combination with initial site visits by the SSEN Transmission project team to verify conditions and constraints on the ground. This process informed which sites from the long list of options at Stage 1 should proceed to more detailed appraisal at Stage 2. A workshop-based approach was then used to review all relevant information and key constraints associated with each site option, to sift the sites, and the reasons for non-selection of the sifted out sites were then recorded.

3.2.4 Stage 2 Appraisal Method

A series of high-level site appraisals were carried out by experienced professionals qualified in the various specialist fields to consider, systematically, the extent to which the sifted Stage 2 site options were constrained in relation to the following criteria.

Environmental Criteria

- Natural Heritage – designations, protected species, habitats, ornithology, hydrology, geology and hydrogeology and Biodiversity Net Gain (BNG).
- Cultural Heritage – designations and cultural heritage assets.
- Landscape and Visual – designations, landscape character and visual amenity.
- Land Use – agriculture, woodland/forestry and recreation.
- Planning – Policy and proposals.

The appraisals were informed by feedback from early consultation with key statutory environmental consultees and from targeted site visits undertaken by relevant environmental specialists in the team. A detailed GIS database was also developed with environmental constraints layers to support the constraints analysis and site appraisals.

In assessing the natural heritage of each substation site, consideration has been given to the ecological designations present and the implications for the assessment of BNG. The relative number, density and proportion of habitats considered irreplaceable in BNG terms – such as internationally and nationally designated sites, and Ancient Woodland – has been considered and taken into account when assigning the Natural Heritage RAG ratings to each substation site.

Engineering Criteria

- Access and Connectivity – construction access, operation and maintenance, distance from existing circuits/networks, future development possibilities, interface with SSEN distribution and generation and DNO connection.

[14] NatureScot's 2019 national landscape character assessment of Scotland https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions

[15] https://www.nationalgas.com/land-and-assets/network-route-maps

[16] https://upa.aberdeenshire.gov.uk/online-applications/search.do?action=simple&searchType=Application

[17] https://soils.environment.gov.scot/maps/capability-maps/national-scale-land-capability-for-agriculture/

- Footprint Requirements – technology, adjacent land use and space availability.
- Hazards – unique and existing hazards.
- Ground Conditions – topography and geology.
- Environmental Conditions – elevation, salt pollution, flooding, carbon footprint, contaminated land and noise.

Economic Criteria

- Capital – construction cost.
- Operational – Maintenance and operational cost.

3.2.5 Comparative Appraisal

A Red-Amber-Green (RAG) rating has been applied to each topic area listed above drawing on the findings of the Stage 2 appraisal of key constraints for substation development at each site considered. This rating is based on a three-point scale drawn from the SSEN Transmission Substation Guidance as shown in Figure 3.1.

Figure 3.1 - RAG Ratings for Environmental, Engineering and Cost Appraisal

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

The identification of impact for each criteria considered has been informed by the team's understanding of the level of engineering and environmental constraint at each site and taking account of the potential effects of the project and mitigation measures which would routinely be employed in the design and construction and operation of substations.

The overall objective throughout the appraisal of options is to take full consideration of all environmental factors to minimise any potential adverse impacts on the environment whilst taking into account technical and cost considerations.

4. STAGE ONE: SITE SCREENING

4.1 Identification and Appraisal of Potential Sites

In line with the methodology presented above, fourteen site options were identified as illustrated in Figure 4.1. Site visits were carried out by the SSEN Transmission project team comprising representatives from Engineering, Consents & Environment, Project Management, Land Management ad Community Liaison which led to modifications of the original site options identified; these are denoted as 'A' or 'B' and shown on Figure 4.1.

Each of the options was considered in a workshop attended by the project team and supporting discipline specialists, to consider the extent to which each site was more or less constrained in comparison to others, to identify sites with fewest constraints which warranted more detailed appraisal at Stage 2. The constraints and opportunities were recorded.

The outcome of the Stage 1 appraisal is presented in Table 4.1.

Table 4.1 - Summary of Site Screening Appraisal

Initial Option	Site Comparison Notes	Proceed to Stage 2?
Option 1	The Site is at an elevated location; characterised by farmland, and a slight slope. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. Two National Grid high pressure gas pipelines which run down the east coast of Scotland from St. Fergus to the central belt cross the Site and represent a major constraint to development. In addition, any future requirement to provide an offshore underground cable connection would have to cross these existing gas pipelines and the A90 dual carriageway. The existing Kintore-Tealing 275kV OHL (XT1/XT2) passes immediately adjacent to the south east corner of the site. Two operational wind farms are located in close proximity to the Site: Clochna Hill Wind Farm is located to the south west and Auquhirie Wind Farm is located to the south east of the Site. Future OHL connections would be constrained by the presence of these nearby wind farms.	No The Site was discounted due to the presence of National Grid gas pipelines, which had not been identified at the time of the initial site identification.
Option 2	The Site is located on sloped terrain, characterised by farmland. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. The proposed access track crosses an existing arch bridge, which would require inspection to assess strength. The Site is in an elevated position, and likely highly visible from the A90 and visual receptors including from properties such as Fallside, Collieston and Clearymuir which are located to the east and south east of the Site. Two National Grid gas pipelines previously referred to cross the centre of the proposed Site. In addition, any requirement to provide an offshore underground cable connection would have to cross these existing gas pipelines and the A90 dual carriageway.	No The Site was discounted due to the presence of the gas pipelines which had not been identified at the time of the initial site identification.

Initial Option	Site Comparison Notes	Proceed to Stage 2?
	There is an area of woodland (Wood of Fallside) in the north east corner of the Site which would require felling and compensation.	
Option 3	The Site is located on gently sloping terrain and comprises agricultural land under arable use. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. Farm and residential properties are located at Nether Pitforthie 300m to the east and at Thriepland 50m to the north of the Site which would have close proximity open views and risk of disturbance (noise, construction, traffic). A National Grid gas pipeline, previously referred to, crosses the western area of the proposed Site. The Site has a number of field drains which connect to the nearby watercourse, Forthie Water located within 50m to the north west. The existing Kintore-Tealing 275kV (XT1/XT2) OHL and a 132kV OHL run in parallel and are located within 150m to the south east of the Site.	No The Site was discounted due to the presence of a National Grid gas pipeline, not previously identified.
Option 3A	Option 3A overlaps with the south western part of Site 3 and is orientated at 45 degrees to allow for more direct incoming OHL connections. Site 3A is located on flatter terrain than Site 3 and is more distant from sensitive residential receptors. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. A minor (C class) road is located 200m to the south-east of the Site, with residential properties at Nether Pitforthie (circa 360m to the east) and Bridgend (circa 180m south) also present. A National Grid gas pipeline, previously referred to, crosses the Site with a second which runs to the east of the Site, and which represent a key constraint to development of the substation. The Site comprises of open arable fields separated by a network of drainage ditches. An existing modified watercourse, the Bridgend Burn, is located in the south western corner of the Site. Existing 275kV (XT1/XT2) and 132kV OHLs are located to the south east of the Site.	No The Site was discounted due to the presence of National Grid gas pipelines.
Option 4	This Site is located on sloping terrain. There are some areas of plantation woodland in the north and south of the Site. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. The proposed access route crosses an existing pre-cast concrete bridge, which would require inspection to assess strength and suitability. Tight bends at	No The Site was discounted due to the presence of the nearby National Grid gas pipeline.

Initial Option	Site Comparison Notes	Proceed to Stage 2?
	the bridge may prove unsuitable for HGV or abnormal load access and would require further investigation. A National Grid gas pipeline is located to the south east side of the Site and represents a constraint to Site development. Gyratesmyre Farm is located 400m west of the Site and there is a property at Brenzieshill 250m east of the Site. The Site has a number of field drains which connect to the nearby watercourse, Forthie Water which is located immediately north of the Site. The Forthie Water has a high risk of fluvial flooding. There is a small area of woodland (broadleaved) located in the north area of the Site.	
Option 4A	Option 4A overlaps Site 4 and is located directly south of Option 4 on flat terrain. It is slightly further away from properties located to the north west and north east of the Site and the Forthie Water located to the north of the Site than Site 4. The Site is relatively flat requiring limited earthworks to create the required development platform. The Site comprises a number of open arable fields separated with drainage ditches. However, there are sensitive receptors located in close proximity to the Site including residential properties to the east, south east and west of the Site which would have close proximity views. A National Grid gas pipeline is located to the immediate east side of the Site and represents a constraint to Site development. The expected requirement to provide a future offshore underground cable connection would also have to cross a gas pipeline.	No The Site was discounted due to the presence of National Grid gas pipelines.
Option 5	The Site is located on gently sloping farm land. The Site comprises a number of open arable fields. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. There are residential properties within 100m of the Site boundary to the north and east (Nether Pitforthie and Upper Pitforthie respectively) which would have close proximity open views and risk of disturbance (noise, construction, traffic). The Bridgend Burn watercourse flows through the south western corner of the Site and has a high flood risk identified on SEPA Flood Maps. A National Grid gas pipeline is located along the western boundary and crosses into the north west corner of the Site There is a wind turbine present to the south of the Site. An existing 132kV OHL crosses the north west corner of the Site and the existing 275KV (XT1/XT2) OHL passes to the north west of the Site.	No The Site was discounted due to the presence of a gas pipeline.
Option 5A	Option 5A is located to the south of Option 5 and orientated at 45 degrees to reduce the proximity to existing OHL infrastructure. It is also more distant from residential properties than Site 5.	Yes The Site is relatively flat with good access. Existing

Initial Option	Site Comparison Notes	Proceed to Stage 2?
	Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. There are several individual and groups of properties which lie within 500m of the Site. In particular, Rowanwell House which is approximately 160m to the west of the Site, and Hareden 200m west. The Site is located on relatively flat terrain under arable production with slight slopes and undulations. There is an area of woodland (coniferous and broadleaved tree planting) located in the north west area of the Site. The Bridgend Burn watercourse runs through the north eastern section of the Site and a high-risk fluvial flood zone is identified on SEPA Flood Maps. There is a single wind turbine present to the south of the Site.	woodland may offer visual screening. While the Bridgend Burn represents a flood risk, this can be mitigated by diverting a section of the burn and creating flood storage capacity.
Option 5B	Option 5B overlaps with Site 5A and is located further south of Option 5A. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. The Site lies on flat terrain with limited slopes and undulations and is generally less proximate to properties than Options 5 and 5A although there are two residential properties, Rowanwell House which is within the Site and Hareden at the Site boundary, both in the north-west corner. In addition, several further individual and groups of residential properties lie within 500m. The Site more distant from the Bridgend Burn and the high-risk flood zone than Option 5A. However, there would still be some connectivity with the Bridgend Burn via the open field drains present onsite. Drainage considerations would need to include appropriate controls during construction and future SUDS design would need to mitigate against pollution potential. There is a single wind turbine located within the eastern part.	Yes The attributes are similar to Site 5A; the extent of the site defined as being at risk from flooding is smaller.
Option 6	Site 6 lies on relatively steep terrain and at an elevated position. There is no direct access track connecting the site. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. Access could be taken directly from the A90. The Site area includes a farm and associated residential property in its north east corner (Bruxie Hill). An area of plantation conifer woodland is located within the centre of the Site which would require removal and compensation.	No The Site was discounted due to its elevation position and high visibility, the fact that substantial earthworks would be required to create a development platform and because a new access track would need to be formed.
Option 7	This Site is located on sloping ground immediately south of, and partly overlapping the southern part of Site 4A. It is located close	No

Initial Option	Site Comparison Notes	Proceed to Stage 2?
	to a number of properties at Little Wards within 100m to the east and Wairds of Alpity approximately 220m south. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. The proposed access route crosses an existing pre-cast concrete bridge and the geometry of the access might prove a constraint for HGV or abnormal load access. The Site is crossed by a National Grid gas pipeline. The existing 275kV (XT1/XT2) OHL passes to the south east of the Site.	The Site was discounted due to the presence of a gas pipeline.
Option 8	This Site is located on sloping ground. There is a small coniferous plantation in the centre of the Site. Residential properties are located within 100m east of the Site boundary at Bloomfield and at Wairds of Alpity located approximately 450m to the west. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. The proposed access route crosses the pre-cast concrete bridge described above. The Site is crossed in its south eastern quadrant by a National Grid gas pipeline. The existing Kintore-Tealing 275kV (XT1/XT2) OHL clips the north west corner of the Site and an existing 132kV OHL passes through the south east area of the Site. There is a single wind turbine present to the immediate south of the Site.	No The Site was discounted due to the presence of a gas pipeline.
Option 8A	Site 8A overlaps and is located to the south east of Option 8. The Site is orientated at 45 degrees. The Site is generally flat with a very gradual landform comprising of open arable fields separated with drainage ditches. There is a small area of coniferous plantation woodland located in the far north of the Site. There are residential propertes located at Bloomfield within 100m of the northern boundary of the Site. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. The proposed access route crosses the pre-cast concrete bridge referred to above. The Site is crossed through its centre by the National Grid gas pipeline previously referred to. An existing 132kV OHL also passes through the north west area of the Site further constraining substation development. There is a single wind turbine present to the immediate west of the Site.	No The Site was discounted due to the presence of existing OHL infrastructure and a gas pipeline.

Initial Option	Site Comparison Notes	Proceed to Stage 2?
Option 8B	Option 8B is located south east of Option 8A, further away from the gas pipeline and OHL infrastructure. The Site is located at a relatively elevated location on gently sloped terrain which is under arable cultivation. Substantial earthworks would be required to achieve a level platform for the substation. A Scheduled Monument (Hillhead, long cairn) is located circa 450m west of the Site. Access could be taken directly from the A90. Existing access routes would need to be upgraded, improvement works would likely include road widening and bellmouth works. Residential properties to the north east (Nether Craighill, 300m distant) and west (Upper Craighill, 150m distant) of the Site may have open and relatively close proximity views due to lack of continuous tree cover or screening. There is a residential property, Upper Craighill close to the western boundary of the Site (approximately 150m) with other properties less than 300m to the south east. No flood risk is shown on SEPA flood maps within the proposed Site, however borehole logs indicate there is potential for a high groundwater table.	Yes The Site is free from major infrastructure. It is relatively distant from residential properties and is not recorded as vulnerable to flood risk. While the Site is elevated, and gently sloping, requiring earthworks, these are not considered sufficient constraints to discount it from further appraisal.

4.2 Site Options Proceeding to Stage 2 Appraisal

The sites considered to warrant further appraisal are:

- **Site Option 5A**: Land adjacent to Upper Pitforthie Farm (site centred at National Grid Reference (NGR) NO 813 783). The Site is located on relatively flat terrain. It comprises open arable farmland with a single wind turbine close by which would have to be removed to accommodate the new substation. The Site currently spans across Bridgend Burn which would require a diversion.
- **Site Option 5B**: Land to the north of Nether Craighill (site centred at NGR NO 810 780). The Site is located on relatively flat terrain. It comprises open arable farmland with a single wind turbine which would have to be removed to accommodate the new substation. The Site is situated away from Bridgend Burn.
- **Site Option 8B**: Land to the north of Gobbs Farm (site centred at NGR NO 804 770). The Site is located near Gobbs Farm on terrain which slopes uphill to the west towards Upper Craighill and the site of a Scheduled Monument at Hillhead. It comprises open arable farmland crossed by some minor drains.

5. STAGE TWO: DETAILED SITE SELECTION

5.1 Introduction

This section summarises the comparative appraisal of the three Site options taken forward from Stage 1 and the rationale for the selection of the Preferred Site.

The following figures accompany the appraisal.

- Figure 5.1: Landscape Constraints with Site Options
- Figure 5.2: Ecological Constraints with Site Options
- Figure 5.3: Cultural Heritage Constraints with Site Options
- Figure 5.4: Hydrology Constraints with Site Options
- Figure 5.5: Land Use Constraints with Site Options

5.2 Comparative Appraisal of Sites

A comparative appraisal of the site options has been undertaken following the approach described in Section 3. Table 5.1 is structured in accordance with the principal appraisal criteria set out in SSEN Transmission's Substation Guidance.

Table 5.1: Comparative Analysis of Substation Sites 5A, 5B and 8B

Topic	Site Option 5A	Site Option 5B	Site Option 8B
Natural Heritage	<u>Designations</u> There are no ecological designations within the boundaries or close to this Site. There are no nationally important designated sites within 5km. The nearest locally designated site is Arbuthnott Local Nature Conservation Site (LNCS), approximately 3.5km to the south. The substation Site is within approximately 20km of Montrose Basin Special Protection Area (SPA) and within 10km of Fowlsheugh SPA. <u>Habitats & Protected Species</u> The Bridgend Burn and associated tributaries have potential for use by otter and connect to the Forthie Water. The habitats on the Site have some potential for use by badger and red squirrel. The Site is comprised of agricultural land and nearby farmsteads. Blocks of woodland listed on the Ancient Woodland Inventory (AWI) are present in the surrounding area; however, the majority of these are designated as long established of plantation origin (LEPO). The closest block, Muirtown Wood, is LEPO and located over 2km north-east. Shelterbelts of trees are present within the site, and there is a small area noted on the Native Woodland Survey of Scotland (NWSS) to comprise native and regenerating deciduous woodland. <u>Ornithology</u> The substation Site has the potential to be used by the qualifying species of the SPAs identified above as it lies within the foraging distance for these species. There is potential for breeding birds including UK BAP species across the Site and potential for migratory geese to use the Site for foraging, including pink-footed geese and greylag geese associated with Montrose Basin SPA. In addition, the Site has potential for use by breeding herring gull associated with Fowlsheugh SPA. <u>Hydrology and Geology</u> Site 5A is located in an area of open agricultural fields and some plantation woodland with several drainage ditches intersecting through the Site, draining to the northwest. The Bridgend Burn runs through the north eastern part of the Site. SEPA flood maps show a high risk of fluvial flooding from the Bridgend Burn through the site. The flood risk area can be avoided by siting the substation on higher ground in the south away from the Burn. Scottish Water drawings indicate an abandoned covered Reservoir just south east of the Site, by Murraystone Hill. The Site is underlain by sedimentary bedrock of the Deep Conglomerate Formation with superficial geology comprising clay, silt and sand from the Ury Silts Formation. The BGS Hydrogeology Viewer (1:625,000 scale map) indicates that the Site is underlain by a low to moderately productive aquifer.	<u>Designations</u> There are no ecological designations within the boundaries or close to this Site. There are no nationally important designated sites within 5km. The nearest locally designated site is Arbuthnott LNCS, approximately 3km to the south. The substation Site is within approximately 20km of Montrose Basin Special Protection Area (SPA) and within 10km of Fowlsheugh SPA. <u>Habitats & Protected Species</u> Similar to 5A, the Site has potential for use by otter and badger. The Site is comprised of agricultural land and nearby farmsteads. Blocks of woodland listed on the AWI are present in the surrounding area; however, the majority of these areas are designated as LEPO. The closest block, Muirtown Wood, is LEPO and located over 2km north east. Shelterbelts of trees are present within the Site, and there is a small area noted on the NWSS to comprise native and regenerating deciduous woodland. <u>Ornithology</u> The substation Site has the potential to be used by the qualifying species of the SPAs identified above as it lies within the foraging distance for these species. There is potential for breeding birds including UK BAP species across the Site, and potential for migratory geese to use the Site for foraging, including pink-footed geese and greylag geese associated with Montrose Basin SPA. In addition, the Site has potential for use by breeding herring gull associated with Fowlsheugh SPA. <u>Hydrology and Geology</u> Site 5B lies in an area of open agricultural fields and some plantation woodland. The Bridgend Burn flows from south to north within 200m along the east and north boundary of the Site. SEPA Flood Maps indicate the north and east corners of the Site lie close to areas of indicated high fluvial flood risk (and a high risk area of pluvial flooding to the immediate south east). The flood risk area can be avoided by siting the substation on higher ground in the west away from the Bridgend Burn. Scottish Water drawings indicate an abandoned covered Reservoir to the immediate south east of the site, just west of Murraystone Hill. The Site is underlain by igneous bedrock of lava and andesites of the Montrose Volcanic Formation with superficial geology comprising gravel, sand, silt and clay associated with Alluvial Fan Deposits. The BGS Hydrogeology Viewer (1:625,000 scale map) indicates that the Site is underlain by a low to moderately productive aquifer. Reference to the NatureScot Carbon and Peatland 2016 map indicates the Site is underlain with mineral soils. <u>BNG</u> The Site does not contain any designated sites. It is dominated by heavily modified agricultural habitat types which are considered to be of limited	<u>Designations</u> Similar to Sites 5A and 5B there are no ecological designations within the boundaries or close to this Site. There are no nationally important designated sites within 5km. The nearest locally designated site is Arbuthnott LNCS, approximately 1.5km to the south. The substation Site is within approximately 20km of Montrose Basin Special Protection Area (SPA) and within 10km of Fowlsheugh SPA. <u>Habitats & Protected Species</u> The Bridgend Burn and associated tributaries have potential for use by otter as they connect to the Forthie Water. The habitats on the Site have potential for use by badger. The Site is comprised of agricultural land and nearby farmsteads. Blocks of woodland listed on the AWI are present in the surrounding area; however, the majority of these areas are designated as LEPO. The closest block, Plantation of Hillhead is LEPO and is located approximately 500m south west. A limited area of scrub and trees is present within the site. <u>Ornithology</u> The substation Site has the potential to be used by the qualifying species of the SPAs identified above as it lies within the foraging distance for these species. There is potential for breeding birds including UK BAP species across the site, and potential for migratory geese to use the Site for foraging, including pink-footed geese and greylag geese associated with Montrose Basin SPA. In addition, the Site has potential for use by breeding herring gull associated with Fowlsheugh SPA. <u>Hydrology and Geology</u> Site 8B lies in open agriculture fields. There are drainage ditches running throughout the Site. A pond/water feature drains east from higher ground downslope into the Site. SEPA Flood Maps show there is no risk of flooding from drainage ditches or pond features upslope of the site. The Site is underlain by igneous bedrock of lava and andesites of the Montrose Volcanic Formation with superficial geology comprising diamictons associated with the Mill of Forest Till Formation. The BGS Hydrogeology Viewer (1:625,000 scale map) indicates that the Site is underlain by a low to moderately productive aquifer. Reference to the NatureScot Carbon and Peatland 2016 map indicates the Site is underlain with mineral soils. <u>BNG</u> The Site does not contain any designated sites or notable areas of habitat for which there are publicly available data. The Site is dominated by heavily modified agricultural habitat types which are considered to be of limited ecological value. The scrub and trees in the south-east are likely to be of ecological value. In order to deliver BNG within the site, scrub and trees may require to be retained.

Topic	Site Option 5A	Site Option 5B	Site Option 8B
	Reference to the NatureScot Carbon and Peatland 2016 map indicates the Site is underlain with mineral soils. <u>BNG</u> The Site does not contain any designated sites. It is dominated by heavily modified agricultural habitat types which are considered to be of limited ecological value, although some areas of native trees are present. In order to deliver BNG within the site, trees may require to be retained.	ecological value, although some areas of native trees are present. In order to deliver BNG within the site, trees may require to be retained.	
Cultural Heritage	Within 5km of the substation Site boundary there are five Scheduled Monuments: • Montgoldrum, cairns & hut circle (SM 4754), 1km to the south south east. • Montgoldrum, cairn (SM 4820), 1.1km to the south east. • Bruxie Hill, long cairn (SM 4574), 2km to the north east (and not intervisible). • Hillhead, long cairn (SM 4534), 2km to the south west. • Blackwood, cairn (SM 4509), 3.1km to the north east. The closest Scheduled Monuments, Montgoldrum, cairns & hut circle and Montgoldrum cairn, are located in elevated positions standing in commercial forestry plantation which likely limits views from the monuments to the surrounding landscape. Six Category A Listed Building are located within 5km of the substation Site: • Castle of Fiddies (LB 6753) which lies circa 2.6km to the north east of the Site. • Arbuthnott House (LB 2880) and Arbuthnott House, North Bridge over Arbuthnott Burn, (LB 31), both located 3.6km to the south west. • Arbutnott Parish Kirk (LB 2876), 3.8km to the south west. • Allardice Castle (LB 2876) and Gate Piers (LB 2879), 4.3km to the south. Arbuthnott House, Arbuthnott North Bridge and Arbutnott Parish Kirk all form part of Arbuthnott House GDL. Two GDLs are located within 5 km of the substation search area. • Arbuthnott House GDL (GDL 16), 2.9km to the south west. Distant views to the Grampian Mountains in the west can be gained from the policies but views of the immediate surrounding landscape are restricted due to estate woodlands. • Glenbervie House GDL (GDL 194), 3.3km to the north west. Woodland edging the GDL limits views out to the surrounding landscape, and there are no significant views out except to the east across parkland. There are no Properties in Care (PIC), Inventory Historic Battlefields, or Conservation Areas on or within 5km of the substation Site. While not a designated feature, the childhood home of the author Lewis Grassic Gibbon (Bloomfield) lies some 630m south west of the Site.	The number of Scheduled Monuments, Listed Buildings, and GDLs within 5km from the substation Site boundary is the same as for Site Option 5A. The closest designated monuments to the substation Site are: Montgoldrum, cairns & hut circle (SM 4754) and Montgoldrum, cairn (SM 4820), both located c.820m to the south south east of the Site. Both Scheduled Monuments stand in elevated positions in commercial forestry plantation which likely limits views from the monuments to the surrounding landscape. The closest GDL, Arbuthnott House (GDL 16) lies 2.6km south west of the substation Site. Distant views to the Grampian Mountains in the west can be gained from the policies but views of the immediate surrounding landscape are restricted due to estate woodlands. There are no PIC, Inventory Historic Battlefields, or Conservation Areas on or within 5km of the Site. The property referred to under Site 5A, Bloomfield, lies approximately 320m west of the Site.	Within 5km of the substation Site boundary there are six Scheduled Monuments: • Hillhead, long cairn 320m SW of Upper Craighill (SM 4534), 450m to the west. • Montgoldrum, cairns & hut circle (SM 4754), 1.1km to the north east (and screened by woodland). • Montgoldrum, cairn 750m ENE of (SM 4820), 1.5km to the north east (and screened by woodland). • Bruxie Hill, long cairn (SM 4574), 3.6km top the north east. • Cairn of Arthurhouse (SM 3339), 4.3km to the south west. • Blackwood, Cairn (SM 4509), 4.4km to the north. The closest Scheduled Monument to the substation Site, Hillhead, Long Cairn (SM 4534), is a Neolithic burial cairn, which stands in an elevated position with long views in an arc from the north to the east. The proposed substation would have potential to adversely impact on its setting. Seven Category A Listed Buildings are located within 3km of the substation Site: • Arbuthnott House, North Bridge Over Arbuthnott Burn (LB 31), 1.6km to the south south west. • Arbuthnott House (LB 2880), 1.7km to the south south west. • Arbuthnott Parish Kirk (LB 2876), 2km to the south. • Allardice Castle (LB 2876) and Gate Piers (LB 2879), 3.1km to the south south east. • Castle of Fiddies (LB 6753) which lies 4.4km to the north east. • Old Bervie Bridge (LB 3570), 4.6km to the south east. The closest listed buildings (Arbuthnott House, Arbuthnott House North Bridge and Arbuthnott Parish Kirk) all form part of Arbuthnott GDL. These listed buildings are screened by woodland and unlikely to have views of the substation due to intervening topography. Arbuthnott House GDL (GDL 16) lies over 1.1km southwest of the Site. Distant views to the Grampian Mountains in the west can be gained from the policies but views of the immediate surrounding landscape are restricted due to estate woodlands. There are no PIC, Inventory Historic Battlefields, or Conservation Areas on or within 5km of the Site. Bloomfield lies approximately 700m north of the Site.
Landscape and Visual	<u>Designations</u> None of the sites is located in any nationally, regionally or locally designated landscapes. There are no Gardens and Designed Landscapes within or in close proximity to the Site (all are over 1km distant). <u>Landscape Character</u> The Site falls within the Landscape Character Area LCT 24 – Coastal Farmed Ridges and Hills Aberdeenshire. NatureScot's Landscape Character Assessment notes that this LCT is characterised by "*a large scale and open landscape of smoothly rolling ridges and shallow valleys*" consisting of "*fields of arable land and pasture*" with "*few hedges or dykes"*. Landform across the Site is virtually level with an elevation change of no more than 10m.	<u>Designations</u> None of the sites is located in any nationally, regionally or locally designated landscapes. There are no Gardens and Designed Landscapes within or in close proximity to the Site (all are over 1km distant). <u>Landscape Character</u> Landscape Character is the same as described for the adjacent Site 5A. The landform slopes across the Site with a high point in the south west corner and a low point in the north east corner near the Bridgend Burn. There is an elevation change of approximately 20m between these points. Landcover comprises arable fields and grazing land with a swathe of scrubby woodland through the centre of the Site following	<u>Designations</u> None of the sites is located in any nationally, regionally or locally designated landscapes. There are no Gardens and Designed Landscapes within or in close proximity to the Site (all are over 1km distant). <u>Landscape Character</u> Landscape Character is the same as described for the nearby Site 5A. The landform slopes across the Site from south west down to the north east. There is an elevation change of approximately 35m down this slope. Landcover is almost entirely arable fields of regular geometic pattern and few distinguishing features.

Topic	Site Option 5A	Site Option 5B	Site Option 8B
	Landcover comprises arable cultivation with three areas of scrubby woodland, one separating fields, one adjacent to the Bridgend Burn and an area in the south east corner following the line of a ditch. <u>Visual</u> Rowanwell House is approximately 160m to the west of the Site, and Hareden 200m west. Close proximity open views may be available from these properties between gaps in the block of coniferous tree planting in the western part of the site. Upper Pitforthie is approximately 390m to the north east of the Site. There will be close proximity views of the Site from the property curtilages however tree cover around the property may screen views. Little Barras Farm, Little Barras Cottage and adjacent residential properties lie some 500m to the north east of the Site with varying degrees of visibility due to a mix of open views and views contained by woodland and tree planting around the properties. Reisk Cottage and properties at Bloomfield lie some 430m and 630m respectively west of the Site, with open views from the properties and curtilages into the Site. Greenden and properties at Nether Craighill lie approximately 560m south and 750m south west respectively; again, both would have open views to the Site. Bridgend lies 580m north west of the Site, with open views to the Site. Properties at Nether Pitforthie lie some 600m to the north. There may be loss of some individual deciduous trees along the track through the Site, parts of the woodland within the south eastern part of the Site and parts of the block of coniferous tree planting in the western part of the Site.	the line of a ditch. A wind turbine is located at the eastern edge of the Site. <u>Visual</u> There may be loss of trees within the belt of woodland located within the eastern part of the Site. The property at Rowanwell House is located within the north west area of the Site and a property at Hareden is located at the Site boundary, also in the north-west corner. These properties would look directly into the Site, south and south-east. Greenden and properties at Nether Craighill are located approximately 240m to the south of the southern boundary of the Site. Properties at Craigarrie and Mosshead lie some 400m and 500m to the south and south east respectively. There would be open views from the properties and curtilages into the Site due to limited intervening features to screen views. Properties some 600m south at Montgoldrum may also have partly screened views to the Site. Further distant are Reisk Cottage and Bloomfield, approximately 260m west and 320m west respectively of the Site from which there would be open views. Upper Pitforthie and Little Barras Farm, Little Barras Cottage and adjacent residential properties are located some 530m and 650m respectively, to the north east of the Site, again affording open views to the Site. Bridgend, located some 600m to the north west of the Site would have some views partly screened by existing woodland.	<u>Visual</u> Upper Craighill is approximately 150m to the west of the Site. There will be open close proximity views of the Site from this property. Gobbs Farm and associated properties are located approximately 220m to the south-east of the Site. Views from the farm are likely to be screened by surrounding woodland however views may be likely from other parts of the farm curtilage in gaps between surrounding tree cover. Properties at Nether Craighill lie approximately 300m north east of the Site. It is likely that some open close proximity views will be available through gaps in surrounding trees. There are properties some 350m to the north east of the Site at Craigarrie where views would be partly screened by woodland and approximately 400m to the east at Burnies at Souter's Cottage where open views of the Site are predicted. Greenden lies some 740m north east of the Site, Bloomfield is approximately 700m to the north and properties at Montgoldrum are some 720m east. Open but more distant views from these locations would be expected across the Site.
Land Use	<u>Agriculture</u> The Site currently comprises arable land. Review of Land Capability for Agriculture (LCA) mapping indicates that the land can be estimated as 60% LCA 3.1 with areas of LCA 3.2 along the Bridgend Burn and through the area of woodland. <u>Woodland / Forestry</u> There are three areas of open scrub/sparse woodland on this site. <u>Recreation</u> There are no core paths, National Cycle Networks or Scottish Great Trails within or in close proximity to the Site. <u>Other Infrastructure</u> A wind turbine is located immediately outwith and to the south east of Site 5A.	<u>Agriculture</u> The Site currently comprises a mix of arable land and pasture with areas of open scrub and woodland. Review of LCA mapping indicates that the land can be estimated as 75% LCA 3.1, with areas of LCA 3.2 along the south eastern, southern and western parts. <u>Woodland/Forestry</u> Two areas of open scrub and woodland are present within the north west and south east parts of the Site. <u>Recreation</u> There are no core paths, National Cycle Networks or Scottish Great Trails within or in close proximity to the Site. <u>Other infrastructure</u> A wind turbine is located within the Site near to the eastern boundary.	<u>Agriculture</u> The Site is predominantly comprised of arable land with a small area of scrub along the eastern boundary. Review of LCA mapping indicates that the land can be estimated as 30% LCA 3.1, with the remainder mostly 3.2 and a small areas of class 5 along the southern boundary. The Class 3.2 land occupies the southwestern area, an area along the northern boundary and part of the area of scrub on the eastern boundary. <u>Woodland/Forestry</u> An area of woodland is located 500m south west from the Site at Plantation of Hillhead. <u>Recreation</u> There are no core paths, National Cycle Networks or Scottish Great Trails within or in close proximity to the Site.
Planning	<u>Policy and Proposals</u> The key national policy of relevance to the project is National Planning Framework 4 (NPF4) which was adopted in February 2023. Strategic Renewable Electricity Generation and Transmission Infrastructure is a National Development in NPF4 and considered to support the delivery of the spatial strategy for the North East of Scotland. The Site is not located within or close to allocations in the Aberdeenshire Local Development Plan 2017 (LDP). A planning application has been submitted (APP/2022/2676) for a battery energy storage system at Meetlaw, Fordoun, approximately 2km north of the Site. At the time of writing, there are no screening or scoping opinion requests, no Proposal of Application Notices and no planning applications of a scale greater than domestic units under determination identified on Aberdeenshire Council's planning portal on or within 5km of the Site.	<u>Policy and Proposals</u> The key national policy of relevance to the project is National Planning Framework 4 (NPF4) which was adopted in February 2023. Strategic Renewable Electricity Generation and Transmission Infrastructure is a National Development in NPF4 and considered to support the delivery of the spatial strategy for the North East of Scotland. The Site is not located within or close to allocations in the Aberdeenshire Local Development Plan 2017 (LDP). A planning application was consented in July 2022 for the erection of two dwelling houses at a site to the north of Nether Craighill to the southwest corner of the Site. A planning application has been submitted (APP/2022/2676) for a battery energy storage system at Meetlaw, Fordoun, approximately 2.5km north of the Site. At the time of writing, there are no screening or scoping opinion requests, no Proposal of Application Notices and no planning applications of a scale greater than domestic units under determination identified on Aberdeenshire Council's planning portal on or within 5km of the Site.	<u>Policy and Proposals</u> The key national policy of relevance to the project is National Planning Framework 4 (NPF4) which was adopted in February 2023. Strategic Renewable Electricity Generation and Transmission Infrastructure is a National Development in NPF4 and considered to support the delivery of the spatial strategy for the North East of Scotland. The Site is not located within or close to allocations in the Aberdeenshire Local Development Plan 2017 (LDP). A planning application (APP/2021/1945) was consented in October 2021 for alterations and extension to a redundant bothy to form a dwelling house on land near Upper Craighill to the west of Site 8B. A planning application was consented in July 2022 for the erection of two dwelling houses at a site to the north of Nether Craighill to the east of the Site. At the time of writing, there are no screening or scoping opinion requests, no Proposal of Application Notices and no planning applications of a scale greater than domestic units under determination identified on Aberdeenshire Council's planning portal on or within 5km of the Site.

Topic	Site Option 5A	Site Option 5B	Site Option 8B
Engineering	Access Existing access tracks are between 500m to 1km from well-maintained public roads. Egress from the Site particularly for construction traffic and delivery of abnormal loads may need some upgrade works to extend the bell mouth onto the A90; around 4km of access road would require improvements. Connectivity The Site is considered to have feasible connection and diversion options and is approximately 200m from the existing Kintore-Tealing 275kV (XT1-XT2) circuit. The existing 275kV OHL (XT1 and XT2), and a 132kV OHL need would to be diverted. The 132kV OHL would require to be under grounded for some of its length. Although the Site is located adjacent to a wind turbine, residential properties and farmland, space is available which is outwith existing wayleaves and has low risk to any existing assets. Footprint Requirements The Site footprint is considered sufficient to accommodate any technology type and the optimal site design can be accommodated, however, further consideration of the footprint will be required. Hazards There is an existing wind turbine located to the south east of the Site. The Bridgend Burn which flows through the Site in a north south direction may require to be diverted. No specific hazards that cannot be mitigated have been identified at this stage. Further information will be reviewed at the next stage to confirm the presence of any unique hazards. Ground Conditions Site 5A is located on existing farmland. No constraints have been identified in relation to ground conditions or underlying geology. Environmental Conditions The Site is approximately 100m above sea level. It is located more than 6km from the coast and salt pollution is not considered to be a key issue. SEPA Flood Maps show a risk of fluvial flooding from the Bridgend Burn which flows through the Site. At this early design stage all three Site options would have the same anticipated carbon footprint and it is unlikely that the design would require use of sulphur hexafluoride (SF6). No potentially contaminated land has been identified. The Site is close to several residential properties all within 500m – Rowanwell House, Hareden and Reisk Cottage (west), Little Barras Cottage and Upper Pitforthie (north east). These are all considered to be potential noise and amenity sensitive receptors.	Access Existing access tracks are between 500m to 1km from well-maintained public roads. Egress from the Site particularly for construction traffic and delivery of abnormal loads may need some upgrade works to extend the bell mouth onto the A90; around 4km of access road would require improvements. Connectivity The Site is considered to have feasible connection and diversion options and is approximately 200m from the existing 275kV (XT1-XT2) OHL circuit. The existing 275kV OHL (XT1 and XT2) and a 132kV OHL would need to be diverted. The 132kV OHL would require to be under grounded for some of its length. Although the Site is located adjacent to a wind turbine, residential properties and farmland, space is available which is outwith existing wayleaves and has low risk to any existing assets. Footprint Requirements The Site footprint is considered sufficient to accommodate any technology type and the optimal site design can be accommodated, however, further consideration of the footprint will be required. Hazards There is an existing wind turbine located within the Site. No specific hazards that cannot be mitigated have been identified at this stage. Further information will be reviewed at the next stage to confirm the presence of any unique hazards. Ground Conditions Site 5B is located on existing farmland. No constraints have been identified in relation to ground conditions or underlying geology. Environmental Conditions The Site is approximately 110m above sea level. It is located more than 6km from the coast and salt pollution is not considered to be a key issue. SEPA Flood Maps indicate the north east and south east corners of the Site lie very close to areas of indicated fluvial flood risk associated with the Bridgend Burn. At this early design stage all three Site options would have the same anticipated carbon footprint and it is unlikely that the design would require use of sulphur hexafluoride (SF6). No potentially contaminated land has been identified. There are two residential properties within the Site, Rowanwell House and Hareden. In addition, the following residential properties are within 400m – Reisk Cottage (north west), Bloomfield (west) Nether Craighill (south west) Greenden House (south), Little Barras Cottage and Upper Pitforthie (north east). These are all considered to be potential noise and amenity sensitive receptors.	Access Existing access tracks are between 500m to 1km from well-maintained public roads. Egress from the Site particularly for construction traffic and delivery of abnormal loads may need some upgrade works to extend the bell mouth onto the A90; around 4 to 4.5km of access road would require improvements. The proposed access route crosses an existing pre-cast concrete bridge, which would require inspection to assess strength and suitability. Connectivity The Site is considered to have feasible connection and diversion options and is approximately 200m from the existing 275 kV (XT1-XT2) OHL circuit. The existing 275kV OHL (XT1 and XT2) and a 132kV OHL need to be diverted. The 132kV OHL would require to be under grounded for some of its length. The Site lies away from existing farmland and housing and so there are no boundary edges which are constrained by unresolvable land uses (e.g., topography, infrastructure). Footprint Requirements The Site footprint is considered sufficient to accommodate any technology type and the optimal site design can be accommodated, however, further consideration of the footprint will be required. Hazards No specific hazards that cannot be mitigated have been identified at this stage. Further information to will be reviewed at the next stage to confirm the presence of any unique hazards. Ground Conditions The Site has steeper slopes than the other sites considered - from south to north (10-20% gradient). No constraints have been identified in relation to ground conditions or underlying geology. Borehole records indicate the Site is expected to have a high water table in lower lying areas. Environmental Conditions The Site is approximately 115m above sea level. It is located more than 6km from the coast and salt pollution is not considered to be a key issue. SEPA Flood Maps show no risk of flooding from drainage ditches or pond features upslope of the Site. At this early design stage all three Site options would have the same anticipated carbon footprint and it is unlikely that the design would require use of sulphur hexafluoride (SF6). No potentially contaminated land has been identified. The Site is very close to Upper Craighill (150m west) and close to Gobbs House (220m south east) which are considered to be potential noise and amenity sensitive receptors.
Cost	The Site is on relatively flat ground and is not expected to require extensive civils and groundworks in achieving a level platform. Site 5A would likely require a diversion to Bridgend Burn which would incur additional cost and complexity. The Site is located in relative proximity to a number of properties with the potential to increase land assembly costs. There is a wind turbine located adjacent to the proposed Site boundary which would have to be purchased and removed.	The works associated with establishing a level platform at Site 5B are expected to be the lowest compared to the others as it is situated on relatively flat terrain. There is a residential property on the Site and a second close to the Site boundary. It is likely that the properties would require to be purchased and demolished, increasing land assembly costs relative to the other Site options. There is a wind turbine located within the proposed Site boundary which would have to be purchased and removed.	Site 8B requires significant civil works to establish a level platform which would result in higher capital costs in comparison to the other two sites. There is a residential property very close to the Site which might require to be purchased and demolished. The Site is expected to have a high water table in some areas and may require ongoing flood management which will increase the maintenance burden and costs.

5.3 Comparative Appraisal of Substation Site Options

Table 5.2 below presents the findings of the RAG Ratings for the Site options. With reference to environmental criteria, Site 5A is located further from properties and settlements, although a greater part of the Site is more vulnerable to flood risk. Site 5B is preferred on the grounds that it has a reduced number of cultural heritage designations and assets, therefore reducing the possibility of adverse impacts on setting. There is a lower risk of flooding in comparison to the other sites. There are a number of properties within 500m of Site 5B including the childhood home of the author, Lewis Grassic Gibbon. There is one residential property within the Site (Rowanwell House), one property on the boundary of the Site (Hareden) and a wind turbine within the Site. Should Site 5B be proposed following this consultation, it is likely that the properties would require to be purchased and demolished and the wind turbine dismantled.

Site 8B is least preferred due to its proximity to designated cultural heritage assets, in particular, the Scheduled Monument at Hillhead Long Cairn. Should Site 8B be proposed, it is likely that an adjacent property (Upper Craighill) which lies some 150m west of the Site, would require to be purchased and demolished.

On balance it is considered that the implications of flood risk associated with Site 5A are of greater materiality in the comparative appraisal to the amenity and visibility constraints of Site 5B.

Site 8B is least preferred due to its proximity to designated cultural heritage assets. The amenity of an adjacent property would likely be impacted.

In engineering terms, Site 5B is the preferred option due to its minimal slope from south to north, lower flood risk and absence of shallow groundwater. Site 5B is considered to require limited ground works compared to the other site options. Further, OHL tie in requirements are more straightforward.

In cost terms, the works associated with establishing a level platform at Site 5B are expected to be the lowest compared to the others as it is situated on relatively flat terrain. Site 5A requires a diversion to Bridgend Burn and Site 8B requires significant civil works to establish a level platform. As a result, Site 5B is preferred from a cost perspective.

Overall the preferred Substation Site is Site 5B.

Table 5.2: Summary of RAG Rating

Category	Site 5A	Site 5B	Site 8B
Environmental / Consenting			
Natural Heritage:			
Designation	L	L	L
Protected Species	M	M	M
Habitats	L	L	L
Ornithology	M	M	M
Hydrology/Geology	H	M	M
Cultural Heritage:			
Designation	M	M	H
Cultural Heritage Assets	M	M	H
Landscape and Visual:			
Designation	L	L	L
Landscape Character	M	M	M
Visual	M	H	H
Land Use:			
Agriculture	M	M	M
Woodland/Forestry	L	L	L

Category	Site 5A	Site 5B	Site 8B
Recreation	L	L	L
Planning:			
Policy	L	L	L
Proposals	L	L	L
Engineering			
Access & Connectivity:			
Construction Access	M	M	M
Operation and Maintenance	L	L	L
Existing Circuits/Networks	L	L	L
Future Development Possibilities	M	M	L
Interface with SSEN Distribution and Generation	M	M	M
DNO Connection	L	L	L
Footprint Requirements:			
Technology	L	L	L
Adjacent Land Use	M	M	M
Space Availability	M	M	M
Hazards:			
Unique Hazards	M	M	M
Existing Hazards	L	L	L
Ground Conditions:			
Topography	L	L	H
Geology	L	L	L
Elevation	M	M	M
Environmental Conditions:			
Salt Pollution	M	M	M
Flooding	H	M	L
Carbon Footprint	L	L	L
Contaminated Land	L	L	L
Noise	H	M	M
Cost			
Capital	M	L	H
Operational	L	L	M

5.4 Rationale for Selection of the Preferred Site

As described in Table 5.1 and illustrated in Table 5.2, there are relatively few factors differentiating the three sites. The appraisal has identified that for Site 5A the presence of a flood prone watercourse through the Site significantly constrains it for development. Sites 5B and 8B offer advantages over 5A by avoiding the flooding issues albeit they potentially have greater impacts on amenity. Site 8B however is predicted to have potential for adverse impacts on a nearby Scheduled Monument and on balance Site 5B is preferred in environmental terms, noting that some properties

may require to be purchased and existing infrastructure removed. This preference is supported by the findings of the engineering and cost appraisals which identify that Site 5B has the least level of technical complexity and the lowest costs.

SSEN Transmission has identified Site option 5B, located to the north of Nether Craighill as the Preferred Substation Site. This Site accommodates the substation design and size and offers a degree of flexibility with regards to future renewable energy connections to the site

6. CONSULTATION ON THE PROPOSALS

SSEN Transmission places great importance on, and is committed to, consultation and engagement with all parties, or stakeholders, likely to have an interest in proposals for new projects such as this. Stakeholder consultation and engagement is an essential part of an effective development process.

6.1 Questions for Consideration by Consultees

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

- Has the need for the Project been explained adequately?
- Has the approach to select the substation site been explained adequately?
- Are there any factors, or environmental features, that you consider should be reconsidered as part of the site selection process?
- Do you agree that, on balance, Site 5B is the most appropriate for further consideration for a new substation at Fiddes?

6.2 Next Steps

Consultation events will be held as detailed in the preface of this document. The responses received from these consultation events, and those sought from statutory consultees and other key stakeholders, will inform further considerations, and the confirmation of the preferred to take forward to the next stage.

All comments are requested by **9th June 2023**. A Report on Consultation (RoC) will be published after the consultation period has ended, which will document the consultation responses received, and the decisions made in light of these responses.

Scottish & Southern Electricity Networks

TRANSMISSION

LUC

Area of search (5km radius from existing substation)

Project No:	LT486
Project:	Fiddes 400 kV Substation
Title:	Site Location
Drawn by:	HW
Date:	28/04/2023
Figure:	1.1

Scale @ A3: 1:250,000

0 1.5 3 6 9 12 15 km

N

350000m.E 360 370 380 390 400 410 420

810 800 790 780 770 760 750 750000m N

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

380 85

780000m N

380000m E

1
2
3
3A
4
4A
5
5A
5B
6
7
8
8A
8B

Scale @ A3: 1:40,000
0 0.25 0.5 1 1.5 2 2.5 km

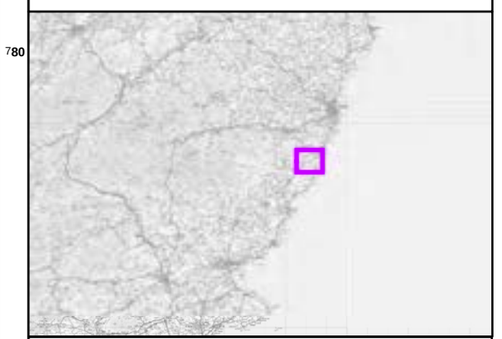
Area of search (5km radius from existing substation)

Substation Sites

Preferred option (larger size to accommodate updated design)

Other sites considered at stage 2

Other sites considered at stage 1



Project No: LT486

Project: Fiddes 400 kV Substation

Title:

Study Area

Drawn by: HW Date: 05/05/2023

Figure: 4.1

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

380

85

780000m N

380000m E

5A

5B

8B

Scale @ A3: 1:40,000

0 0.25 0.5 1 1.5 2 2.5 km

Area of search (5km radius from existing substation)

Substation Sites

Preferred option (larger size to accommodate updated design)

Other sites considered at stage 2

Landscape Designations

Special Landscape Area

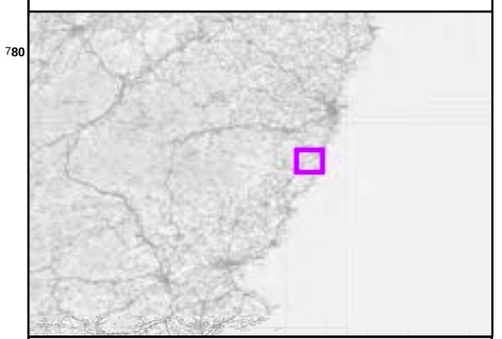
Landscape Character Assessment

11: Fragmented Rocky Coast

22: Broad Valley Lowlands - Aberdeenshire

24: Coastal Farmed Ridges and Hills - Aberdeenshire

29: Summits and Plateaux - Aberdeenshire



Project No: LT486

Project: Fiddes 400 kV Substation

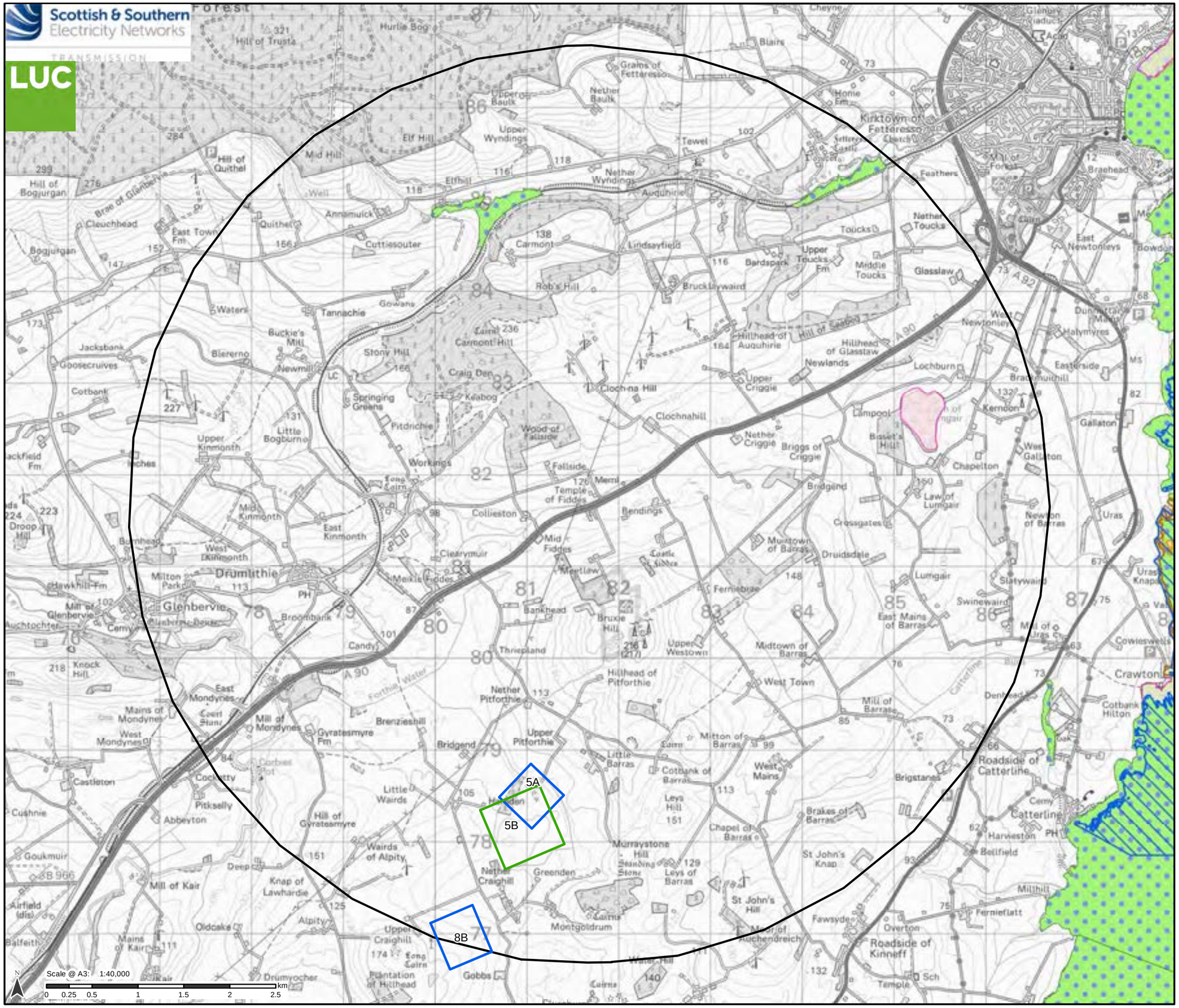
Title:

Landscape and Visual Constraints with Site Options

Drawn by: HW

Date: 05/05/2023

Figure: 5.1



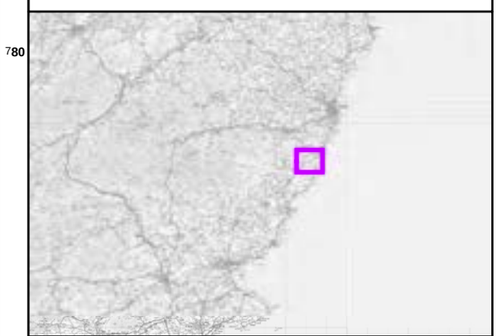
Area of search (5km radius from existing substation)

Substation Sites

- Preferred option (larger size to accommodate updated design)
- Other sites considered at stage 2

Ecological Constraints

- Special Protection Area
- Site of Special Scientific Interest
- Local Nature Conservation Site
- RSPB Important Bird Area
- RSPB Reserve



Project No: LT486

Project: Fiddes 400 kV Substation

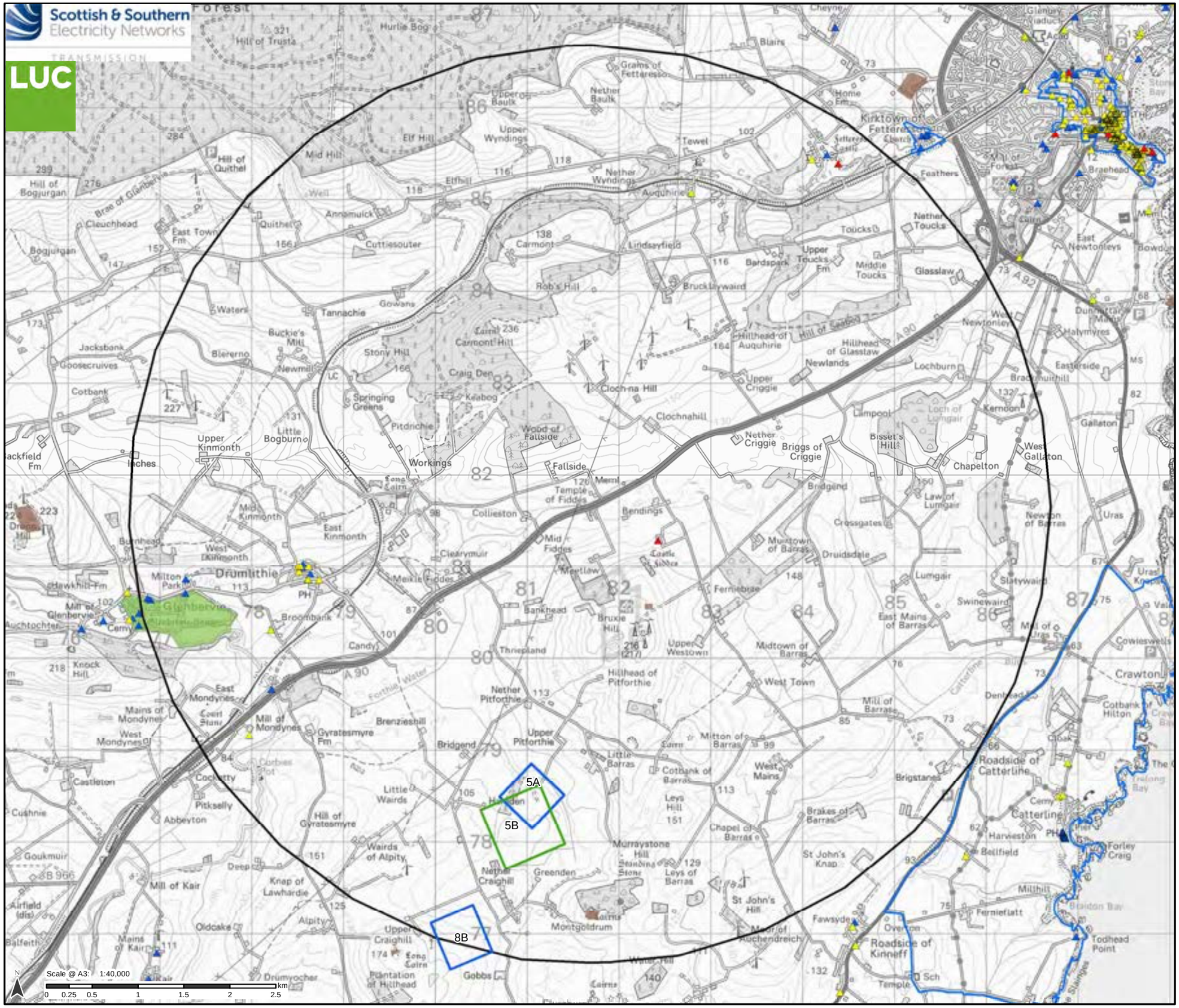
Title:

Ecological Constraints with Site Options

Drawn by: HW

Date: 05/05/2023

Figure: 5.2



Area of search (5km radius from existing substation)

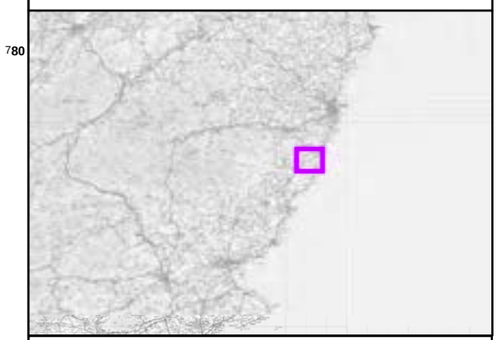
Substation Sites

- Preferred option (larger size to accommodate updated design)
- Other sites considered at stage 2

Cultural Heritage Constraints

Listed building

- A
- B
- C
- Conservation area
- Scheduled monument
- Garden and Designed Landscape



Project No: LT486

Project: Fiddes 400 kV Substation

Title:

Cultural Heritage Constraints with Site Options

Drawn by: HW Date: 05/05/2023

Figure: 5.3

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

380

85

780000m N

380000m E

5A

5B

8B

Scale @ A3: 1:40,000

0 0.25 0.5 1 1.5 2 2.5 km

Area of search (5km radius from existing substation)

Substation Sites

Preferred option (larger size to accommodate updated design)

Other sites considered at stage 2

Hydrology Constraints

Flood Risk Management - Surface High (10 year)

Flood Risk Management - Surface Medium (200 year)

Flood Risk Management - Surface Low (1000 year)

Flood Risk Management - Rivers High (10 year)

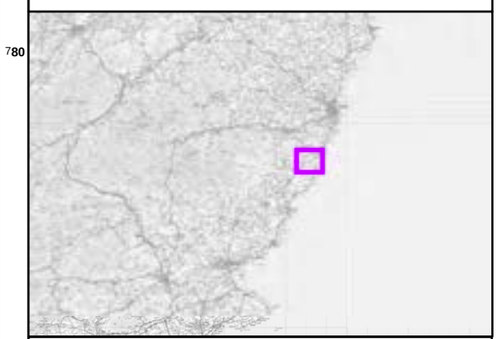
Flood Risk Management - Rivers Medium (200 year)

Flood Risk Management - Rivers Low (1000 year)

Surface Water Line

Surface Water Area

Main watercourses (Open Rivers)



Project No: LT486

Project: Fiddes 400 kV Substation

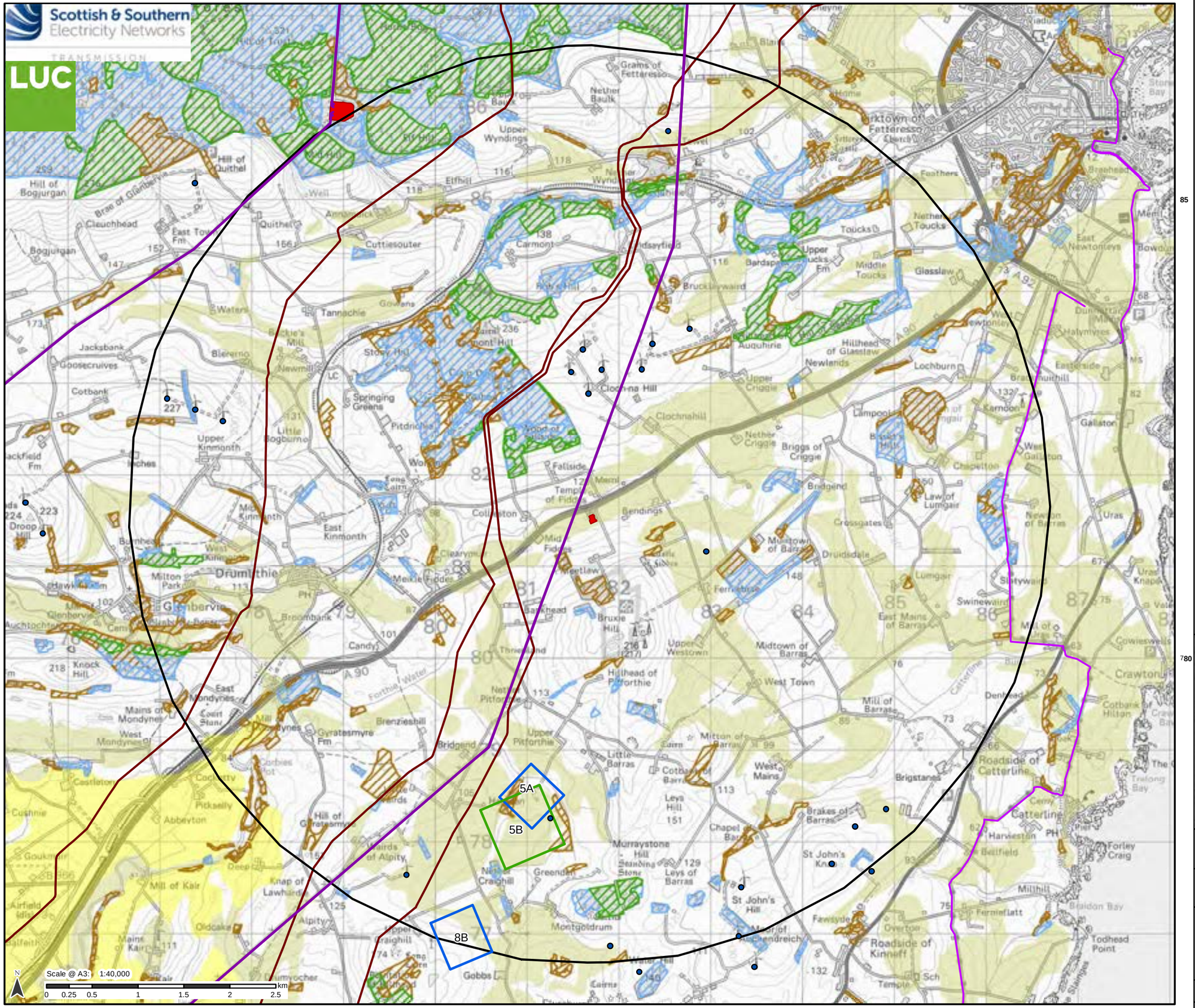
Title:

Hydrology Constraints with Site Options

Drawn by: HW

Date: 05/05/2023

Figure: 5.4



Area of search (5km radius from existing substation)

Substation Sites

Preferred option (larger size to accommodate updated design)

Other sites considered at stage 2

Land Use Constraints

Operational wind turbine

Existing substation site

Gas pipe

275 kV overhead line

National Cycle Network (NCN)

National Forest Inventory

Broadleaved; Mixed mainly broadleaved; Coppice; Coppice with standards; Young trees; Assumed woodland

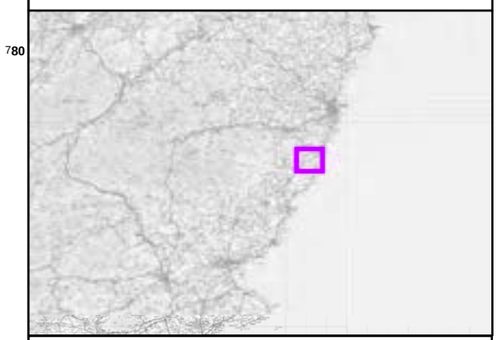
Conifer; Mixed mainly conifer

Other

Land Capability for Agriculture

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.



Project No: LT486

Project: Substation Site Selection - Fiddes

Title:

Land Use Constraints with Site Options

Drawn by: HW

Date: 05/05/2023

Figure: 5.5