Scottish & Southern Electricity Networks

TRANSMISSION

Consultation Document - Route Selection

Project : Kintore - Fiddes - Tealing 400 kV Overhead Line Connection

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CONTENTS

GLOSSARY

Term	Definition
Alignment	A centre line of an overhead line OHL, along with location of key angle structures.
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	In Scotland, Ancient Woodland are areas of woodland that have existed since 1750 and are relatively undisturbed by human development. They are considered irreplaceable and have complex biodiversity that have accumulated over hundreds of years.
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.
Birds of Conservation Concern (BoCC)	Birds of Conservation Concern (BoCC) provides the status of all regularly occurring birds in the UK, Channel Islands and Isle of Man. The current version is BoCC 5. Birds of highest conservation concern will appear on the Red List.
Class 1 and Class 2 Peatland	Class 1 – Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value. Class 2 – Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential.
Conductor	A metallic wire strung from structure to structure, to carry electric current.
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.
Corridor	A linear area which allows a continuous connection between the defined connection points. The corridor may vary in width along its length; in unconstrained areas it may be many kilometres wide.
Double circuit	A double circuit transmission line comprises of two independent circuits each made up of three sets of conductors (cables).
Drinking Water Protected Areas	The water in ditches, streams, lochs and possibly groundwater in these areas is protected and likely to be taken to Water Treatment works, where it is treated and provided to the public as drinking water.
Effect	The direct or indirect physical consequence(s) of the proposed corridor option on receptors, under each of the various topic headings.
Electricty 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.
Engagement	The establishment of effective relationships with individuals or groups.

Term	Definition
Environmental Impact Assessment (EIA)	A formal process set down in The Electricity Works (EIA) (Scotland) Regulations 2000 (as amended in 2008) used to systematically identify, predict and assess the likely significant environmental impacts of a proposed project or development.
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.
Ground Water Dependent Terrestrial Ecosystem (GWDTE)	Wetlands which critically depend on groundwater flows. They are safeguarded by the Water Framework Directive (WFD) and are sensitive to hydrological and ecological changes.
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities.
Heat Map	A graphical or map based output from a digital analysis of physical, technical and/or environmental constraints. Uses different colours to illustrate the relative degree of constraints.
Holford Rules	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 *Procedures for Routeing Overhead Lines and Underground Cables of 132kV and above*.
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.
Long-established woodlands of plantation origin (LEPO)	NatureScot category of the Ancient Woodland Inventory. Many of these plantation sites have developed semi-natural characteristics, especially the oldest ones, which may be as rich as Ancient Woodland.
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).
Local Nature Conservation Site (LNCS)	A non-stautory designation given by local authorities to areas of locally important nature and landscapes.
Local Nature Reserve	Areas of natural heritage that are locally important.
Micrositing	The process of positioning individual structures to avoid localised environmental or technical constraints.
Mitigation	Term used to indicate avoidance, remediation or alleviation of adverse impacts.
National Forestry Inventory (NFI)	A woodland data map covering all forest and woodland area over 0.5 hectare with a minimum of 20% canopy cover, or the potential to achieve it, and a minimum width of 20 metres.
National Scenic Area (NSA)	A national level designation applied to those landscapes considered to be of exceptional scenic value.
Network Options Assessment (NOA)	The National Grid's Network Options Assessment (NOA) provides their recommendation for which network reinforcement projects should receive investment, and when.
Overhead line (OHL)	An electric line installed above ground, usually supported by lattice steel towers or poles.
Plantation Woodland	Woodland of any age that obviously originated from planting.
Properties in Care (PiC)	A collection of monuments, which define significant aspects of Scotland's history, brought into care for their long term preservation and public benefit through the Ancient Monuments and Archaeological Areas Act 1979. They are managed by Historic Environment Scotland on behalf of Scottish Ministers.

Term	Definition
RAG Rating	A Red, Amber, Green rating provided to allow for a comparison between different options being appraised.
Ramsar Site	Wetlands of international importance that have been designated for containing representative, rare or unique wetland types or for their importance in conserving biological diversity.
Riparian Woodland	Natural home for plants and animals occurring in a thin strip of land bordering a stream or river.
Route	A linear area of approximately 1 km width (although this may be narrower/wider in specific locations in response to identified pinch points / constraints), which provides a continuous connection between defined connection points.
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.
Schedule 1 Species	Birds listed on the Schedule 1 of the Wildlife & Countryside Act 1981, of which it is an offence to intentionally or recklessly disturb at, on or near an 'active' nest.
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'.
Semi-natural Woodland	Woodland that does not obviously originate from planting. The distribution of species will generally reflect the variations in the site and the soil. Planted trees must account for less than 30% of the canopy composition
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.
Span	The section of overhead line between two structures.
Special Area of Conservation (SAC)	An area designated under the EC Habitats Directive to ensure that rare, endangered or vulnerable habitats or species of community interest are either maintained at or restored to a favourable conservation status.
Special Landscape Area (SLA)	Landscapes designated by The Highland Council which are considered to be of regional/local importance for their scenic qualities.
Special Protection Area (SPA)	An area designated under the Wild Birds Directive (Directive74/409/EEC) to protect important bird habitats. Implemented under the Wildlife and Countryside Act 1981.
Stakeholders	Organisations and individuals who can affect or are affected by SSEN Transmission works.
Study Area	The area within which the corridor, route and alignment study takes place.
Terminal Structure	A structure (tower or pole) required where the line terminates either at a substation or at the beginning and end of an underground cable section.
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.
Unexploded Ordnance (UXO)	Military ammunition or explosive device that has failed to function as intended.
Volts	The international unit of electric potential and electromotive force.
Wayleave	A voluntary agreement entered into between a landowner upon whose land an overhead line is to be constructed and SSEN Transmission
Wild Land Area (WLA)	Those areas comprising the greatest and most extensive areas of wild characteristics within Scotland.

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 Route** identified for a proposed new 400kV overhead line (OHL) approximately 106 km in length, to connect the existing Kintore Substation to a proposed new 400kV substation at Fiddes, in Aberdeenshire and to a proposed new 400kV substation at Tealing, in Angus.

The proposed OHL will enable future connections and export routes to areas of demand. In addition, two of the existing 275kV overhead lines which connect the existing Tealing Substation with Alyth and Westfield (near Glenrothes in Scottish Power Transmission (SPT) Licence Area) substations respectively, require upgrades to enable them to operate at 400kV and to connect to the proposed new Tealing 400kV substation.

These proposals, collectively known as East Coast 400kV Phase 2, 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/kintore-fiddes-tealing-400kv-ohl-connection/

Over the coming months SSEN Transmission will be actively 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 OHL would also connect to a proposed new substation at Fiddes near Stonehaven in Aberdeenshire. The OHL project, known as the Kintore – Fiddes – Tealing OHL Connection project, would involve construction of approximately 106 kilometres (km) of new overhead line.

Due to the accelerated delivery programme required to achieve the UK and Scottish Government 2030 targets, SSEN Transmission is undertaking a combined Corridor and Route consultation for the Kintore – Fiddes – Tealing 400kV OHL Connection project. Following the outcome of the combined consultation, SSEN Transmission will confirm the Proposed Corridor and Proposed Route for the OHL project, along with the Proposed Sites for the two new substations. Potential alignment options will then be explored within the Proposed Route, with further appraisal and consultation to be carried out in the coming months. On identification of a Proposed Alignment an application for consent under Section 37 of the Electricity Act 1989 will be submitted to the Scottish Government's Energy Consents Unit for the proposed OHL infrastructure.

This document sets out the key findings of a comparative appraisal of a series of alternative route options within which the new overhead line could be developed. The approach to the identification and appraisal of routes has followed SSEN Transmission's Guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132kV and above'[1].

The appraisal process followed two key stages. In the first stage an assessment was carried out to define a Preferred Corridor which defined a study area within which route options could be identified. The approach to identification and appraisal of corridor options leading to identification of a Preferred Corridor is the subject of a separate Corridor Selection Consultation document[2]. A digital tool was used to help identify route options in this study area which would enable connectivity between Kintore, Fiddes and Tealing by analysing a series of data sets on physical, technical and environmental constraints. This process identified several route options which were subdivided into six geographical sections (identified in this report as Sections A, B, C, D, E and F) to help manage the appraisal and reporting process.

The second stage of the appraisal involved more detailed consideration of the environmental, engineering and cost constraints of developing an OHL within each of these route options. A series of criteria were used to structure this process, and the desk-based analysis of constraints was supported by initial site visits to key parts of the study area by relevant project team specialists.

The appraisal identified constraints in all of the route options which were assessed. In summary, the principal findings of the appraisal in terms of key differences between the options considered in each route section are set out here and presented in more detail in the rest of this document.

- **Section A - Tealing to Fiddes** (Route options A1 and A1.1). Route A1 is likely to give rise to fewer conflicts with key characteristics of the landscape and as it avoids more settlements would be less visible overall. Route A1 is considered to have a marginally lower risk of technical constraints and impact for slope, requirement for changes of direction and minor road crossings and is the shorter of the two options for route length. Route A1 has the lowest anticipated cost option for both capital and maintenance criteria and would also require the construction of fewer new accesses.

  Overall there is little to distinguish between the route options in terms of environmental, technical and cost criteria but on balance, Route A1 is the marginally preferred option.

[1] SSEN Transmission (March 2018) Procedures for Routeing Overhead Lines of 132kV and above (updated in September 2020 to include underground cables of 132kV and above). PR-NET-ENV-501.

[2] https://www.ssen-transmission.co.uk/projects/project-map/kintore-fiddes-tealing-400kv-ohl-connection/

- **Section B - Forfar to Brechin** (Route options B1, B1.1, B1.2 and B1.3). Route B1 keeps the OHL furthest away from the designated archaeology associated with Caterthun Hillforts. The landscape preference is also for Route B1 as it is considered to better follow the topography, avoids sensitive wooded valleys and has the potential for use of upland areas to the west as a backdrop to help reduce its visibility in the landscape. There is no clear preference for Section B with respect to engineering criteria, and each route is considered to be comparable, however Route B1 has a marginally lower anticipated impact to residential and commercial properties. Cost is not considered to be a limiting factor for this Section and is considered comparable across all route options.

  On balance, Route B1 is the marginally preferred route with respect to environmental, technical and cost criteria.

- **Section C - Brechin to Laurencekirk** (Route options C1, C1.1, C1.2, C2 and C3). The main environmental differences between the options relate to designated sites, hydrology and flooding, cultural heritage and landscape. The presence of Sites of Special Scientific Interest (SSSI) within Route C3 would be difficult to avoid and constrain this option which also has wide floodplain crossings. Route C1 is preferred for cultural heritage in order to keep the OHL away from scheduled monuments at Caterthun Hillforts and generally has lower constraint than option C1.1. Route C1 also crosses lower lying landform than the other options reducing predicted long distance visibility of the OHL. Route C1 is the preferred route option on engineering criteria as it is the shortest in length and avoids major road and rail crossings. Route C1 also has the lowest predicted cost due to its shortest overall length and relatively good road access.

  On balance, Route C1 is the preferred route with respect to environmental, technical and cost criteria.

- **Section D - Laurencekirk to Fidde**. (Route options D1, D1.1, D1.2, D2, D2.1 and D3). From an environmental perspective, there is little to distinguish between the options with respect to ecological and ornithological constraint. Route D1 is considered preferable from a landscape and visual perspective as it offers large stretches of generally open low-lying land and is more distant from designated areas of landscape. Route D1 also keeps the OHL away from sensitive cultural heritage assets found in option D3. Route D1 would permit a more direct crossing of the A90 dual carriageway and East Coast Main Line railway and generally keeps the OHL away from larger concentrations of settlements. Although Route D3 has marginally the lowest risk of engineering constraints, Route D1 is marginally preferred technically due to a lower overall interface with residential and commercial properties. Cost is not considered to be a limiting factor for this Section and is comparable across all route options.

  On balance, Route D1 is the marginally preferred route with respect to environmental, technical and cost criteria.

- **Section E - Fiddes to River Dee** (Route option E1, E1.1 and E1.2). Routes E1 and E1.1 are closely matched in environmental terms with respect to the level of constraint from designated sites and potential for impacts on habitats, protected species and ornithology. Route E1.2 is least preferred in relation to hydrology and geology due to constraints associated with areas of peatland and wider river crossings. The level of cultural heritage constraint is greatest in Route E1.2 particularly in the northern section where there is a greater concentration of designated sites. Route E1 is preferred over E1.1 in visual terms and over E1.2 in relation to landscape constraints. From a technical perspective, there is little to distinguish between the options. Route E1 is the marginally preferred option on balance as it has the lowest level of identified constraint with respect to avoiding settlements and route length. Route E1 is the preferred option from a cost perspective as it is the lowest cost option.

  On balance, Route E1 is the preferred route with respect to environmental, technical and cost criteria.

- **Section F - River Dee to Kintore** (Route options F1, F1.1, F1.2, F2 and F2.1). Route F1 is the marginally preferred route for environmental criteria. Route options F1 and F1.1 are located adjacent to Loch of Skene SPA/SSSI/Ramsar site. The other route options are located slightly further (and west) of the Loch of Skene however they lie within the core foraging ranges of qualifying bird species for the loch. Routes F2 and F2.1 are also constrained by the presence of the Loch of Park SSSI at their southern end and areas of woodland which would be difficult to avoid. Route F1 is preferred over F2 and its deviation F2.1 in terms of cultural heritage and marginally for landscape. The cultural heritage position is complex and on balance the preference is for a route

to go east of the Dunecht House Garden and Designed Landscape (GDL). All routes have potential to impact on landscapes characterised by woodland and formally laid out estates particularly near Dunecht House. The eastern routes (F1 and F1.1) would also avoid the steep wooded terrain between Dunecht and Barmekin Hill and are generally less constrained by areas of woodland. All route options require a number of major crossings and the need to navigate existing infrastructure and settlements. Route F1 is considered to be marginally least constrained overall and therefore preferred on engineering criteria. Route F1 is the preferred option from a cost perspective as it is the lowest cost option.

On balance, Route F1 is the marginally preferred route with respect to environmental, technical and cost criteria.

The findings of the route options appraisal, which are presented in this Consultation Document, were appraised to derive a series of 'Red-Amber-Green' (RAG) scores for each of the criteria considered. Based on the analysis undertaken and the RAG scores, a Preferred Route has been identified for the OHL project. Route options A1, B1, C1, D1, E1 and F1 have been identified as forming the Preferred Route at this stage. This route represents the option with the lowest overall environmental and engineering constraint and is also the lowest cost option.

The findings of the appraisal of route options presented in this document will be reviewed taking account of feedback from key stakeholders and from the public consultation. It will also take account of feedback on the approach undertaken for the selection of the Preferred Corridor since any changes to the Preferred Corridor may require review of the route options and Preferred Route. Following the outcome of the combined consultation, SSEN Transmission will confirm the Proposed Corridor and Proposed Route for the OHL project, along with the Proposed Sites for the two new substations. Potential alignment options will then be explored within the Proposed Route, with further appraisal and consultation to be carried out in the coming months. On identification of a Proposed Alignment an application for consent under Section 37 of the Electricity Act 1989 will be submitted to the Scottish Government's Energy Consents Unit for the proposed OHL infrastructure.

Whilst this Consultation Document has been prepared to seek comments in relation to the Preferred Route, the Corridor Consultation Document can be found here: https://www.ssen-transmission.co.uk/projects/project-map/kintore-fiddes-tealing-400kv-ohl-connection/

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 Route 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 Route identified for a proposed new 400kV overhead line (OHL) approximately 106 km in length, to connect the existing Kintore Substation with a proposed new 400kV substation at Fiddes, in Aberdeenshire and continuing south to connect to a proposed new 400kV substation at Tealing, in Angus. A location plan is shown in Figure 1.1.

This Consultation Document describes the OHL route options identified, the options appraisal undertaken, the alternatives considered during the selection of route options and the identification of the Preferred Route. Comments are now sought from statutory authorities, key stakeholders, elected representatives and the public on the route selection process and the Preferred Route identified.

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

It is important to note that SSEN Transmission is undertaking a combined Corridor and Route Consultation for the Kintore-Fiddes-Tealing 400kV 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 the project has progressed to the routeing stage. If the corridor is changed as a result of the corridor consultation exercise, the route selection process may have to be revisited.

The Corridor Consultation Document can be found here: https://www.ssen-transmission.co.uk/projects/project-map/kintore-fiddes-tealing-400kv-ohl-connection/

SSEN Transmission is also consulting on the two proposed new 400kV substations at Fiddes and Tealing. Consultation Documents for these projects can be found here:

- New Fiddes 400kV Substation: https://www.ssen-transmission.co.uk/projects/project-map/fiddes-400kv-substation/
- New Tealing 400kV Substation: https://www.ssen-transmission.co.uk/projects/project-map/tealing-400kv-substation/

1.2 Document Structure

This report is comprised of seven sections as follows:

1. **Introduction** – setting out the purpose of the Consultation Document and document structure.
2. **The Proposals** – describes the need for the proposals, the alternatives considered, the proposed technology solution and outlines the typical construction methods.
3. **Route Selection Process** – sets out the route selection process and methodology that has been applied to date.
4. **Description of Routes** – describes the route options that have been identified.
5. **Comparative Appraisal of Routes** – analyses each route option against a series of environmental, technical and cost considerations to arrive at a preferred route.
6. **Selection of Preferred Route** – describes the preferred route identified and summarises the reasons for this.
7. **Consultation on the Proposals** – invites comments on the route assessment process and identification of preferred route.

The main body of this document is supported by a series of Figures which are included at the end of this document.

1.3 Next Steps

- As part of the consultation exercise, comments are sought from members of the public, statutory consultees and other key stakeholders on the Preferred Route option proposed in this report.
- In parallel, respondents are also being asked for their feedback on the Preferred Corridor and the Preferred Substation sites at Fiddes and 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, 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 The 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)[3], 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 significant and strategic increase in the capacity of the onshore electricity transmission infrastructure to deliver 2030 targets and a pathway to net zero. Identified elements of the network reinforcement to deliver this capacity require accelerated development and delivery to meet 2030 connection dates and 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[4]. 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 be connected to the proposed new Tealing 400kV site.

These proposals, collectively known as East Coast 400kV Phase 2, have been determined as critical to enable the delivery of the UK and Scottish Government's renewable energy targets.

2.2 Project Overview

To meet the required reinforcements of SSEN Transmission's onshore infrastructure, the construction of approximately 106 km of new 400kV double circuit OHL between Kintore and Tealing is required.

This project is intrinsically linked to the development of the two new 400kV substations proposed at Fiddes and Tealing, which are being progressed concurrently and form part of the OHL corridor and route selection. The new substations will be built in proximity to existing substations at Fiddes and Tealing . The substation site selection process for both Fiddes and Tealing is currently underway and will also be the subject of consultation.

2.3 Alternative Options Considered

In the initial identification of the requirement for this project, many onshore and offshore reinforcement options were assessed by the ESO in the HND study. The HND includes proposals to construct offshore transmission infrastructure and the onshore works essential to facilitate the connection of the initial 10GW of offshore wind generation and consequently the network needed to transport the electricity around the country. The ESO led on the offshore transmission network optioneering and design, exploring both radial and coordinated approaches for the connection of

[3] 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.

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

new offshore wind schemes, aiming to balance the needs of consumers, developers, communities and the environment. The East Coast 400kV Phase 2 was deemed to be required in addition to the proposed offshore cables from the Peterhead area to locations on the east coast of England. The HND identified the need to provide additional onshore capacity between Tealing and Kintore. There were limited alternative options identified that provided the required onshore capacity.

Reduced Build Alternative

Alternative SSEN Transmission option(s) considered include an alternative East Coast Onshore Phase 2 Reinforcement (TKU2). This did not include the upgrading of the existing Kintore – Tealing 275kV OHL route to 400kV or the new substation at Fiddes. TKU2 was not progressed as it did not provide the capacity required.

Onshore Underground Cable

Considering the onshore technology options currently available, limited to OHL or underground cable (UGC), and given the high voltage and relatively long distances to be covered by the connection, an OHL was favoured over a UGC solution, with the following key factors contributing to this conclusion:

- **Cost**: The cost of UGCs is approximately 4-6 times more expensive than an OHL option, therefore does not represent the best value for the consumer.
- **Community impact (including visual and noise):** UGCs are often considered to be favourable from a visual and noise perspective. However, long distance UGC solutions require additional reactive compensation equipment to maintain stability of the network (for high voltage alternating current (HVAC) cable connections) or converter stations to convert power from direct current (DC) to alternating current (AC) (for HVDC cable connections), creating potential additional sources of visual and noise impacts at points along the route.
- **Land Use:** To allow sufficient insulation and cable spacing for a 400kV UGC double circuit, a land width of approximately 50 m is required. Once reinstated, land-use restrictions may apply to this width to avoid risk of cable damage. In comparison, upon completion of the OHL, land use beneath towers could be returned to low growing vegetation or utilised for agricultural purposes, although an operational corridor is to be kept clear of trees to prevent the likelihood of tree strikes damaging the OHL resulting in a fault. The operational corridor for an OHL depends on the species of trees surrounding the line, but typically a total width of up to 80 m (40 m from centre) would be required.
- **Environment (land take):** For an OHL, the temporary and permanent impacts of the towers themselves are limited in extent due to the minor ground works required at the tower footings, with the maximum tower base being approximately 15m by 15m in area. The requirement for additional equipment to support a UGC solution, detailed above, creates additional land requirements in comparison to an OHL. There would also be potential for more significant impacts to geology, soils and sensitive habitats associated with a 50m construction width for cable installation.
- **Operation and maintenance:** The ease of access to identify and address faults for an OHL is a key benefit in comparison to a UGC option. An OHL also provides improved flexibility and ability to adapt to change if network requirements change in the future (e.g., new conductor technologies provide opportunities to increase capacity on the existing line without creating new routes).

2.4 Proposals Overview

The Proposed Development would comprise steel lattice towers. The typical height for the SSE400 tower suite is approximately 57m, with a maximum tower height of up to 68m.

The size of towers and span lengths[5] is generally dependent on three main factors: altitude; weather; and the topography of the route. Towers are typically closer together at high altitudes to withstand the effects of greater exposure to high winds, ice and other weather events. Higher towers may be required in certain locations to maintain the required ground clearance heights, such as at road, river and rail crossings.

[5] The span length is the distance between adjacent towers. This can vary depending on factors such as topography and climate.

The proposed steel lattice towers would support six conductor bundles (2 or 3 wires per bundle) on six cross-arms (three on each side) and an earth wire between the peaks. Typical tower designs can be seen in Plate 2.1 and Plate 2.2.

Plate 2.1 – Typical SSE400 steel lattice tower design

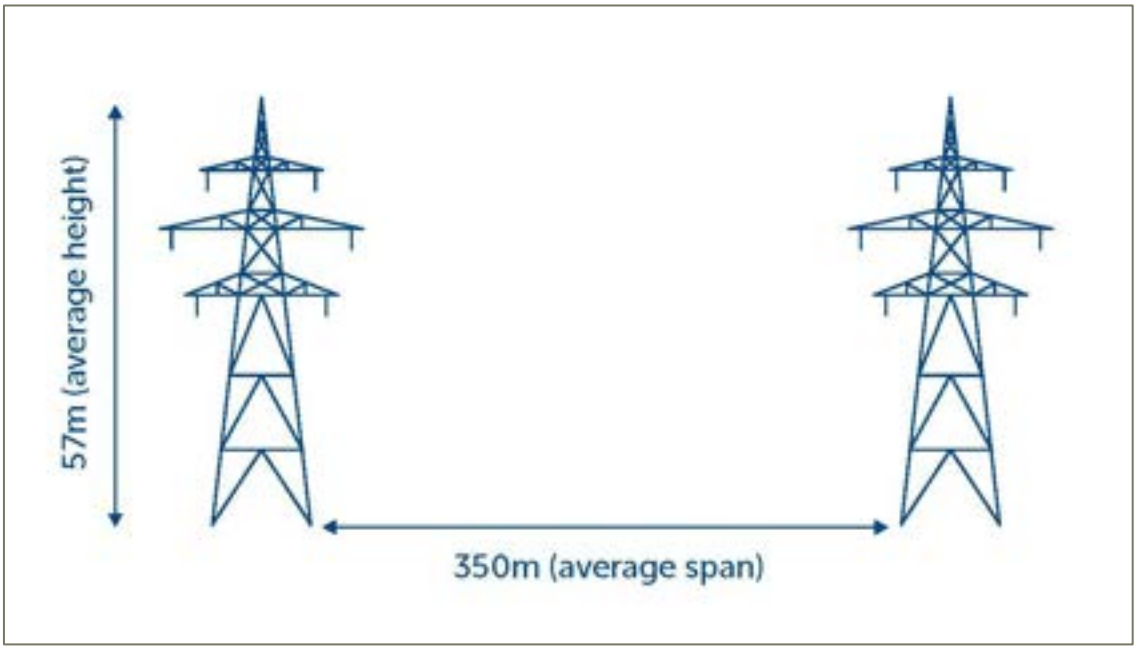

Plate 2.2 – Typical SSE400 steel lattice tower design (Schematic)

2.5 Construction Activities

The proposed Kintore – Fiddes - Tealing 400kV OHL Connection project will comprise the construction of approximately 106km of new 400kV double circuit OHL between the existing Kintore 400kV substation, the proposed new 400kV substation at Fiddes and the proposed new substation at Tealing.

To connect the proposed New Kintore - Fiddes - Tealing 400kV OHL within the substations at Kintore, Fiddes and Tealing, some of the existing OHLs around the substations may need to be diverted or undergrounded to enable the new 400kV OHL connections to be completed.

The main activities for the construction of the OHL are anticipated to include:

- Enabling works (e.g. forestry clearance, establishment of temporary construction compound(s), laydown areas, borrow pits, pulling positions and any temporary / permanent access tracks);
- delivery of components and materials to site;
- creation of tower working areas and excavation and construction of tower foundations;
- erection of towers;
- approximately 106 km of 400kV double circuit conductor stringing (including construction of temporary scaffolding);
- undergrounding of distribution overhead lines that cross or are in close proximity to the route;
- inspections and OHL commissioning; and
- removal of temporary works and site reinstatement.

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

2.6 Access

The routes over which construction access would be taken are still to be determined but will be taken from existing roads wherever possible to minimise the need to create new accesses. There may be a requirement for public road improvements such as road widening, bridge reinforcements or installations of new junctions (bellmouths) for construction traffic and compounds.

2.7 Programme

Subject to gaining the necessary consents, it is anticipated that construction of the proposed Kintore – Fiddes – Tealing OHL connection project would commence in 2026.

The project has a proposed energisation date of October 2030.

3. ROUTE SELECTION PROCESS

3.1 Guidance Document

The approach to route selection was informed by SSEN Transmission's Guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132kV and above'[6] (hereafter referred to as SSEN Transmission's Routeing Guidance). This Guidance broadens the basis for routeing decisions to reflect contemporary practice, and ensures environmental, technical and economic considerations are identified and appraised at each stage of the routeing process.

SSEN Transmission's Routeing Guidance sets out their approach to selecting a corridor, route or alignment for an OHL. This document helps SSEN Transmission to meet its obligations under Schedule 9 of the Electricity Act 1989, which requires transmission licence holders:

- to have a regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interests; and
- to do what they reasonably can to mitigate any effect that the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.

The guidance sets out a process which aims to balance these environmental considerations with technical and economic considerations throughout the route options process.

The guidance provides a number of stages for overhead line routeing as follows:

- Stage 0: Routeing strategy development;
- Stage 1: Corridor Selection;
- Stage 2: Route Selection;
- Stage 3: Alignment Selection; and
- Stage 4: Environmental Impact Assessment (EIA) and consenting.

The stages that are carried out can vary depending on the type, nature and size of a project and consultation can be carried out at each stage of the process.

This document provides the details of SSEN Transmission's appraisal of route options to inform consultation responses for Stage 2 Route Selection.

3.2 Methodology

3.2.1 Area of Search

The extent of the area of search for route options, ("the Study Area"), has primarily been defined by the selection of the Preferred Corridor (Corridor 1b and 2b) which was identified following the Stage 1: Corridor Selection appraisal, as illustrated in Figure 3.1.

Within the Preferred Corridor a series of route options have been identified and appraised through consideration of a Red, Amber, Green (RAG) rating which ranked potential environmental impacts on a higher, moderate or lower level. Baseline studies have been focussed within the Study Area, although consideration of potential receptors outside of this area (e.g. environmental designations, visual receptors or cultural heritage sites) has been undertaken and is referenced where relevant in this report.

3.2.2 Baseline Conditions

A series of desk-based studies have been undertaken to identify a broad range of potential constraints and opportunities within the Study Area, to inform routeing. This has involved the following activities:

- Identification of environmental designated sites and other constraints, utilising GIS datasets available including those via NatureScot Site Link[7];

[6] SSEN Transmission (March 2018) Procedures for Routeing Overhead Lines of 132kV and above (updated in September 2020 to include underground cables of 132kV and above). PR-NET-ENV-501.

[7] https://sitelink.nature.scot/home

- 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 Angus and Aberdeenshire Councils' online Historic Environment Records (HER);
- Review of online SEPA interactive Flood Risk Mapping[8];
- Review of online NatureScot (2016) Carbon and Peatland Mapping[9] to identify area of carbon and peatland classes (Class 1 to 5)[10];
- Review of relevant Local Development Plans in each Council area crossed by the routes to identify further environmental constraints and opportunities, such as regional level designations or other locations important to the public[11];
- Review of landscape character assessments of relevance to the Study Area[12];
- Review of landscape designations of relevance to the Study Area (using local authority reporting);
- Review of Ordnance Survey (OS) mapping (1:50,000 and 1:25,000 and online GIS data sources from OS OpenData) and aerial photography (where available) to identify other potential constraints such as settlement, properties, walking routes, cycling routes etc.;
- Extrapolation of OS Vectormap GIS data to identify further environmental constraint including locations of watercourses and waterbodies, roads classifications and degree of slope;
- Review of other local information through online and published media such as those including information on tourism sites and walking routes;
- Identification of existing OHL transmission infrastructure, roads, gas pipelines and railway lines within the Study Area;
- Identification of existing and proposed wind farm developments and other third-party infrastructure within the Study Area; and
- Review of existing terrain, soil and ground conditions.

Site walkover surveys were undertaken during February 2023 using publicly accessible areas and roads to review areas of potential constraint and verify route options across the Study Area. The following specialists undertook site visits from publicly accessible areas:

- archaeologists;
- landscape architects;
- ecologists and ornithologists; and
- members of the SSEN project team comprising OHL and substation engineers, land agents, consents and environment team, communities team and project managers.

[8] https://map.sepa.org.uk/floodmaps

[9] https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map

[10] Class 1 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.

Class 2 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential.

Class 3 - Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat.

Class 4 - Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils.

Class 5 - Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat.

[11] Aberdeenshire Council

https://storymaps.arcgis.com/stories/27f01f5e60544ece88580ca32dc4beb5https://storymaps.arcgis.com/stories/27f01f5e60544ece88580ca32dc4beb5 Angus Council https://www.angus.gov.uk/directories/document_category/development_plan

[12] 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

3.3 Route Options Identification and Selection Methods

3.3.1 Route Options Identification

Route options have been identified, each with a width of approximately 1km to allow for subsequent identification of alignments during the next stage of the process (Stage 3 Alignment Selection). There are minor variations in width where there are more opportunities to find OHL alignments at later stages of the project.

A digital routeing and alignment toolkit was initially used to help identify route options. The process for identifying route options within the Study Area used a combination of the following:

- The constraints were layered onto a map so they may be viewed as a composite 'heat map' and weightings and buffers applied depending on the sensitivity of the constraint, or opportunity. In addition to constraints, some data sets provide opportunities to OHL routeing in line with the Holford Rules[13], such as running parallel to existing OHLs or roads.
- The initial identified route options were refined by the project team including the input from an experienced environmental consultant and from SSEN Transmission OHL engineers to take into account topography, land cover and the Holford Rules (as incorporated within the SSEN Transmission Routeing Guidance), in order to maximise the potential for alignment options within the identified routes, and to amend them as necessary.
- The following proposed projects which are running in parallel with development of the OHL between Kintore and Tealing also need to be accommodated as they directly impact the route identification process due to the requirement to connect into them:
    - New Fiddes 400 kV Substation; and
    - New Tealing 400 kV Substation.
- Due to the length of the study area, the route options were divided into six sections (Sections A to F) to enable different routes to be selected and connect to one another; the section breaks were identified generally at locations where there was an opportunity to switch between route options.

3.3.2 Appraisal Method

Environmental Criteria

A series of route option appraisals (comprising desk-based review) were carried out by experienced professionally qualified individuals in the various specialist fields, to enable an informed combined opinion on the potential environmental effects of the route options drawing on key baseline constraints studies and survey information. Appraisal of options has involved systematic consideration against the following environmental topic areas:

- Natural Heritage - designations, protected species, habitats, ornithology, hydrology, geology and hydrogeology and consideration of Biodiversity Net Gain (BNG)).
- Cultural Heritage - designations and cultural heritage assets.
- People - settlements and visual effects.
- Landscape - designations and landscape character.
- Land Use - agriculture, forestry, recreation and infrastructure.

In assessing the Natural Heritage of each route option, consideration has been given to the ecological designations present and the implication 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 route option.

Technical Criteria

- Infrastructure Crossing - major crossings, minor roads.

[13] SSEN Transmission Procedures for Routeing Overhead Lines and Underground Cables of 132kV and above PR-NET-ENV-501 Rev 2 Annex 1 Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines with NGC 1992 and SHETL 2003 Notes

- Environmental Design - elevation, slope, unexploded ordnance (UXO), flooding.
- Ground Conditions – peatland.
- Construction and Maintenance - access, angle support.
- Proximity - windfarms, communication masts, urban areas, metallic pipes.
- Other Considerations - lengths.

Economic Criteria

- Capital – construction costs.
- Operational – inspections and maintenance costs.

3.3.3 Comparative Appraisal

A Red-Amber-Green (RAG) rating has been applied to each topic area within each route section, indicating potential constraints. This rating is based on a three point scale as follows:

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 RAG rating applied to each topic takes account of opportunities and standard working practices that, if implemented, could overcome the identified constraint. This will ensure the most likely outcome is identified as opposed to the 'worst case'. The table above defines the high level convention for assigning RAG ratings across the environmental, technical and cost disciplines, allowing comparison across a broad range of unrelated parameters.

3.3.4 **Identification of a Preferred Route**

A comparative appraisal has been carried out of the route options within each of the six geographical sections of the overall route to arrive at a Preferred Route. The overall objective throughout the appraisal of route options is to take full consideration of all environmental factors to minimise any potential adverse effects on the environment whilst taking into account technical and cost considerations.

3.3.5 **Identification of a Proposed Route**

Consultation is then undertaken seeking feedback on the Preferred Route. This Consultation Document is issued to statutory and non-statutory consultees, whilst the public will be consulted via a series of public events supported by a Consultation Booklet[14]. Both documents are publicly available at the link below:

https://www.ssen-transmission.co.uk/projects/project-map/kintore-fiddes-tealing-400kv-ohl-connection/

The consultation feedback and SSEN Transmission's response to the feedback will be collated, analysed and reported in a Report on Consultation (RoC) document which will be made publicly available. Its purpose is to record the stakeholder feedback received during the consultation process; explain how SSEN Transmission has responded, and how it has informed the selection of the Proposed Route and how it may be used to help inform project design. If the consultation responses do not result in any changes to the route, the reasons for this will be explained in the RoC.

[14] All consultation materials can be accessed at https://www.ssen-transmission.co.uk/projects/project-map/kintore-fiddes-tealing-400kv-ohl-connection/

4. DESCRIPTION OF ROUTES

4.1 Identification of Sections

Due to the length of the project, it has been necessary to break down the full route into six shorter sections to clearly describe, identify and assess route options. Section breaks are shown on Figure 1.1 and the rationale for these is described below.

The following sections have been identified (see Figures 4.1 to 4.6):

- Section A – Tealing to Forfar;
- Section B – Forfar to Brechin;
- Section C – Brechin to Laurencekirk;
- Section D – Laurencekirk to Fiddes;
- Section E – Fiddes to River Dee; and
- Section F – River Dee to Kintore.

4.2 Identification of Route Options

Within each of the sections listed above, route options have been identified based on determination of continuous sections of least constraint with approximately 1km widths to allow for subsequent identification of alignments during Stage 3 (alignment selection) of the project.

The route options have been developed to form a set of comparable routes which form a continuous connection from 'end to end' of each section. In some cases, this would be achieved through combinations of connecting options and the assumptions on these are set out in the rest of this section. Each route option is described below and presented on Figures 4.1 to 4.6 at the end of this document.

4.2.1 **Section A – Tealing to Forfar (Figure 4.1)**

Route A1 – This route option starts from the proposed Tealing 400kV Substation and passes to the east of Craigowl Hill towards Hayston Hill. The route continues in a northerly direction, to the east of Glamis and passing the village of Douglastown. The route joins Route B1 north of Ingliston. Route A1 forms a continuous route option from Tealing to Forfar.

Route A1.1 – This option is a deviation from the southern section of Option A1 starting at Balluderon Hill. The route passes between Auchterhouse Hill and Craigowl Hill, through Milton of Ogilvie and joining Route A1 at Nether Arniefoul. Route A1.1 is comprised from a combination of Option A1.1 and the northern section of Option A1.

4.2.2 **Section B – Forfar to Brechin (Figure 4.2)**

Route B1 – The route follows a north easterly course past Padanaram, Bogindollo and to the west of Hill of Finavon. The A90 dual carriageway passes through some of the route at Bogindollo. The route continues in a north easterly direction to Netherton, crossing the River South Esk and northwards to Findowrie where it joins Route C1. Route B1 forms a continuous route option from Forfar to Brechin.

Route B1.1 – This option is a westerly deviation of Route B1 starting at Haughs of Ballinshoe, following a north easterly direction through Woodside, Quarryhill, Baldoukie and joining with route options B1.2 and B1.3 at Hilton of Fern. Route B1.1 is comprised from a combination, south to north, of Option 1, Option B1.1 and the northern section of Option B1.2.

Route B1.2 – This option is a deviation of the northern part of Route B1 starting at West Mains of Finavon. The route passes in a northerly direction to Easter Balgillo and then north-eastwards through Hilton of Fern, North Woods and joining with Route C2 at Blackhall. Route B1.2 is comprised from the southern section of Option B1 then connecting with Option B1.2.

Route B1.3 – This option is a northerly deviation of Routes B1.2 and B1.3 starting at Hilton of Fern, passing through Mains of Balhall and Knowehead. The route passes Kirkton of Menmuir and joins Route C3. Route B1.3 is formed from a combination, south to north, of Option B1, Option B1.1 then connecting with Option B1.3.

4.2.3 **Section C – Brechin to Laurencekirk (Figure 4.3)**

Route C1 – The route follows a north easterly direction to the north of Little Brechin, through Inchbare, then crossing the West Water and River North Esk. It continues through Lady Jane's Plantation and past Haughead before joining Route D1 and D1.1. Route C1 forms a continuous route option from Brechin to Laurencekirk.

Route C1.1 – This option is a deviation of Route C1. It starts west of Inchbare and follows a north easterly direction. The River North Esk runs along the southern section of the route and is crossed by the A90 in the centre. It joins Route D3 east of Laurencekirk. Route C1.1 is comprised from the southern section of Option C1 then following Option C1.1.

Route C1.2 – This option is a deviation of Route C1. It starts at Luthermuir and proceeds north east to where it joins Route D2 at Blackiemuir. Route C1.2 is comprised from the southern section of Option C1 then following Option C1.2.

Route C2 – This is a small route section to the east of Balnamoon that connects B1.2 to C1 and C3. Route C2 is comprised of Option C2 at the southern end tying into Option C1.

Route C3 – This route follows a north easterly direction to the east of Edzell. It crosses the River North Esk and incorporates part of Edzell Woods and the former Edzell Airfield. It connects B1.3 to C1 at Moss side of Esslie. Route C3 forms a near continuous route option tying into the northern section of Option C1.

4.2.4 **Section D – Laurencekirk to Fiddes (Figure 4.4)**

Route D1 – The route runs in a north-easterly direction from Waulkmill to Hareden. There is a sharp bend in the centre of the route at Fordoun where the route crosses the A90. There is another sharp bend at Whiteriggs where the route returns to a north easterly direction until Pitkselly where the route runs east until Hareden (near Pitforthie) after which the option would connect to the proposed Fiddes 400kV substation. Route D1 forms a continuous route option from Laurencekirk to Fiddes.

Route D1.1 – This option is a deviation of Route D1 that runs northwest to the western side of D1 passing through Monboddo. This route crosses the A90 in the north of the route where it connects with Route D1 at Pitkselly. Route D1.1 forms a near continuous route option tying into the northern section of Option D1.

Route D1.2 – This option is a short deviation of the northern section of Route D1. It cuts off the bend in D1 at Pitkselly and instead runs northeast from Oldcake to Wairds of Alpity. Route D1.2 is predominantly formed of Option D1 with a connection near the north end into Option D1.2 and tying back in to Option D1.

Route D2 – This option runs northeast connecting Route C1.2 to Route D1 at Whiterigs following a course to the south of the equivalent section of D1. It crosses the A90 near Upper Powburn. Route D2 follows Option D2 in the southern part of the route then connects with Option D1 for its the northern part.

Route D2.1 – This is a short route section that runs north connecting route D2 and D1 at Pittarrow. Route D2.1 initially follows Option D2 then by means of Option 2.1 crosses over to Option D1.

Route D3 – This route runs to the east of the A90 and Laurencekirk. It follows a northeastly course connecting C1.1 to D2 near Upper Powburn. Route D3 follows the course of Option D3 in the southern section then connects with Option D2 before joining the northern section of Option D1.

4.2.5 **Section E – Fiddes to River Dee (Figure 4.5)**

Route E1 – This route extends out of the proposed Fiddes 400kV substation. It crosses the A90 near Fiddes and runs north from Pitforthie through Rickarton, crossing the A957 road and continuing north to Craiglug, where it joins F1. Route E1 forms a continuous route option from Fiddes to the River Dee.

Route E1.1 – This option is a deviation of Route E1 which passes around the west of the southern section of E1. The route starts west of Pitforthie where it crosses the A90 in a north-west direction towards Drumlithie. The route turns at Buckie's Mill and continues in a northeast direction until it joins Route E1 at Nether Baulk. Route E1.1 follows Option E1.1 in the southern section and connects with Option E1 for the remainder of the route.

Route E1.2 – This option is a deviation of route E1 which passes around the west of the northern section of E1. The route starts at Bank Hill and proceeds northwest through areas of Durris Forest. The route meets F2 at Nether Park. Route E1.2

is comprised of Option E1 in its southern section before connecting with the more westerly course of Option E1.2 to form the northern part of the route.

4.2.6 **Section F – River Dee to Kintore (Figure 4.6)**

Route F1 – This route proceeds in a north easterly direction from route E1. It crosses the River Dee at Drumoak Church and continues past Cairnie to finish at the existing Kintore Substation. The route passes to the west of Peterculter and Westhill and to the east of Loch of Skene. Route F1 forms a continuous route option from the River Dee to Kintore.

Route F1.1 – This option is a deviation of Route F1. The route starts at Mid Anguston and continues north over the Leuchar Burn before re-joining route F1 at Springhill. Route F1.1 comprises of Option F1 in the south, connecting with Option F1.1 in the central section and rejoining Option F1 for the northern section.

Route F1.2 – This option runs east to west from North Eddieston to East Finnercy joining Route F1.2 and F2. Route F1.2 comprises a combination, from south to north, of Option F1, Option F1.1 connecting to Option F1.2 and then following Option F2 for its northern section.

Route F2 – This option starts at the River Dee and proceeds north to the existing Kintore Substation. The route passes to the west of Drumoak, through Echt and then between Dunecht and Old Kinnernie before reaching Kintore substation. Route F2 comprises a near continuous route option tying into the northern section of Option F1 at its northern end.

Route F2.1 – This option is a deviation of F2 that follows a northwesterly course to the west of the southern section of F2. The route starts at Lochside and re-joins F2 north of Echt at Barmekin Hill. Route F2.1 is comprised of Option F2.1 in its southern half before connecting with Option F2 for the northern section, ending on a short section of Option F1.

4.2.7 Routes Not Taken Forward

Prior to the environmental, technical and economic appraisals of the route options shown on Figure 1.1, some additional route options were considered at the initial route selection stage but not taken forward for options appraisal. These are described below.

A previous route which deviated westwards from what is currently B1.1 was located in close proximity to the Brown and White Caterthun Hill Forts Scheduled Monuments to the south west of Edzell. This was not progressed to appraisal based on the potential for significant adverse impacts on the setting of this group of nationally important designated sites and the associated likely consenting challenges. There were two routes in Section C that were a continuation of this route (which was previously named Route B1). When B1 was not progressed due to its likely impact on the Caterthun Hill Forts, the previously named route options C1 and C1.1 were also not progressed as they were no longer able to be used without a connection from Route B1. The previous C1 and C1.1 were options initially considered as there is relatively low population density in that region.

A route previously named F1.1.1 in Section F, which was a deviation from what is currently named F2 routed to the east of F2 to avoid a substantial area of woodland at Westhill. However, the deviation required to be routed very close to Drum Castle including its surrounding Garden and Designed Landscape (GDL) which was predicted to have potential for significant adverse impacts on setting of this important cultural heritage site and was discounted due to the anticipated challenges for consenting.

A route previously named F1, which could be considered as a deviation from what is currently named F2, was routed to the west of Barmekin Hill Fort and was intended to run parallel to the existing Fetteresso - Kintore 275kV OHL. However, after a site visit, this route was discounted due to challenging terrain on the western side of the hill which would result in a costly and challenging construction and likely lead to the OHL tower structures being very prominent in the landscape. Barmekin of Echt Hill Fort is a designated scheduled monument located at the top of this hill and the proximity of a new OHL alongside the existing transmission line was considered to give rise to potentially significant adverse landscape, visual and cultural heritage setting impacts which could cause consenting challenges. Additionally, there are a number of properties and an operational quarry which would be in close proximity to the proposed new OHL in this area.

5. COMPARATIVE APPRAISAL OF ROUTES

5.1 Introduction

This chapter provides a summary of the key considerations of each route option in Sections A to F from an environmental, engineering and economic perspective, and provides a summary which presents the findings of the comparative appraisal of each route section. This will then inform selection of an overall Preferred Route. The following figures accompany the text in this section and illustrate potential environmental baseline constraints identified under each key topic considered.

- Figures 5.1 a to f* Constraints for Study Area Section A
- Figures 5.2 a to f Constraints for Study Area Section B
- Figures 5.3 a to f Constraints for Study Area Section C
- Figures 5.4 a to f Constraints for Study Area Section D
- Figures 5.5 a to f Constraints for Study Area Section E
- Figures 5.6 a to f Constraints for Study Area Section F

*The figures for each Study Area are presented as: (a) Landscape constraints; (b) Ecology constraints; (c) Cultural Heritage constraints; (d) Hydrology constraints; and (e) Land Use Constraints.

5.2 Study Area Section A – Tealing to Forfar

Table 5.1 presents a summary of the main considerations and findings of the comparative appraisal of route options A1 and A1.1 in Section A. The table identifies the topics discussed in SSEN Transmission's Routeing Guidance.

Table 5.1 – Summary of Comparative Appraisal for Section A

Topic	Route A1	Route A1.1
Natural Heritage	<u>Designations</u> The River Tay SAC is crossed by the route in two locations and the route includes a number of woodlands listed on the Ancient Woodland Inventory (AWI), all of which are classed as long established plantation origin (LEPO) sites. <u>Habitats, Protected Species and Ornithology</u> A review of aerial imagery suggests that Route A1 supports upland habitats where it passes Ironside Hill, Finlarg Hill and Hayston Hill, including heathland which may be underlain by peat; available mapping does not indicate deep deposits of peat[15] and no data is available on superficial geology[16]. Although these habitats appear to be significantly modified by historic or current land use practices, they may be of conservation interest. Wider habitats within the route include those associated with intensive agriculture and are likely to be of limited ecological importance. The route may support protected species populations and contain habitats that have the potential to support populations of Schedule 1 birds, which receive special protection under the Wildlife & Countryside Act 1981, and bird species that are red-listed in the schedule of Birds of Conservation Concern (BoCC). The route overlaps with the core foraging ranges of qualifying features (pink-footed and/or greylag geese) of the following SPAs: The Loch of Kinnordy SPA (5.7km to the north-west – this is also an RSPB	<u>Designations</u> There are no statutory or non-statutory designated sites within Route A1.1 although it is within approximately 150m of Auchterhouse Hill SSSI. It crosses the River Tay SAC as part of Option A1. There are no woodlands listed on the AWI within the route option. <u>Habitats, Protected Species and Ornithology</u> An initial review of aerial imagery suggests that, like Route A1, habitat assemblages where Route A1.1 passes Ironside Hill, Finlarg Hill and Hayston Hill are likely to include upland habitats which may be underlain by peat. Although these habitats appear to have been significantly modified, they may be of conservation interest. The route is likely to support a similar range of protected species assemblages, Schedule 1 birds and red-listed BoCC as Route A1. The route does not coincide directly with any SPA. However, the route does overlap with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the following SPAs: The Loch of Kinnordy SPA (5.7km to the north-west at its closest as part of A1); Lintrathen Loch SPA (12.6km to the north and west as part of A1), the Outer Firth of Forth and St. Andrews Bay complex SPA (10km south-east of the route) and the Firth of Tay and Eden SPA which is just over 12km at its closest point to the south. As such, the route has the potential to affect the foraging of the goose populations of the Firth of Tay and Eden SPA, Loch of Kinnordy SPA and the Loch of Lintrathen SPA as well as the waterfowl assemblage of the Outer Firth of Forth and St. Andrews Bay complex SPA.

[15] NatureScot (2016) Carbon and Peatland 2016 map. Available at: https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/. {Accessed April 2023}.

[16] BGS (no date) BGS Geology Viewer. Available at: https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/. {Accessed April 2023}.

Topic	Route A1	Route A1.1
	reserve); Lintrathen Loch SPA (at 12.6km to the north-west); the Outer Firth of Forth and St. Andrews Bay complex SPA (8km south east of the route) and the Firth of Tay and Eden SPA which is just over 10km at its closest point to the south. Route A1 has the potential to affect foraging of the goose populations of the Firth of Tay and Eden SPA, Loch of Kinnordy SPA and the Loch of Lintrathen SPA as well as the waterfowl assemblage of the Outer Firth of Forth and St. Andrews Bay complex SPA. Hydrology, Geology and Hydrogeology At the northernmost extent, the route crosses the Dean Water where it joins route B1. The estimated 200-year floodplain here is significant in places, up to approximately 550m wide. The predicted floodplain of the Dean Water is wider at the western side of the route compared to the eastern side. There are very small, localised areas of soils containing some peat (Class 5 peatland indicated by the NatureScot Carbon and Peatland mapping (2016)), but these can be avoided. BNG The route supports a single internationally designated site; this is a riverine SAC which can be easily crossed to satisfy the requirements of a BNG assessment. The route is dominated by heavily modified agricultural habitat types which are considered to be of limited ecological value. However, extents of upland habitats are present which, although modified, may include habitats of conservation interest. In order to deliver BNG within the route, careful siting of the alignment would likely be required.	Hydrology, Geology and Hydrogeology At the northernmost extent of the route, it crosses the Dean Water where it joins route B1. The estimated 200-year floodplain here is significant in extent in places, up to approximately 550m wide. The predicted floodplain of the Dean Water is wider at the western side of the route compared to the eastern side. There are very small, localised areas of soils containing some peat (Class 4 and 5 peatland indicated by the NatureScot Carbon and Peatland mapping (2016)), but these can be avoided. BNG The route does not support any designated sites, although it does not offer an alternative to crossing the riverine SAC in the north of Route A1. The route is similarly dominated by heavily modified agricultural habitat types considered to be of limited ecological value, and also contains extents of modified upland habitats which may be of conservation interest. As is the case for Route A1, in order to deliver BNG within the route, careful siting of the alignment would be required.

Topic	Route A1	Route A1.1
Cultural Heritage	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the Route Option, and no part of the route crosses any Inventory Garden and Designed Landscape (GDL), Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 4 Scheduled Monuments; and • 30 Listed Buildings (1 x A Listed; 13 x B Listed, and 16 x C Listed). In addition, there are two assets within the route option recorded in the HER as being 'Regionally Significant'. These are: Wyton Wood cropmark site (ring ditch) (NO33NE0023) and South Balluderon Farm (NO33NE0037), which is also a Listed Building, both present to the south of Newlandhead. There are no Non Inventory Designed Landscapes (NIDLs) within the Route Option. The majority of the Listed Buildings are clustered between Douglastown and Kirkton, along with one Scheduled Monument, Kirkton Homestead Moat (SM 6070). These can be readily avoided during the alignment design stage. Two of the Scheduled Monuments, Balkemback Cottages Stone Circle (SM 2868) and Arniefoul Cairn (SM 389) stand in elevated positions and have wide open views out to the surrounding landscape, which form an important element of their settings. Views out from, and to, these monuments, including potential intervisibility between Arniefoul Cairn (SM 389) and a contemporary burial cairn at Carnuie Hill (SM 6449) to the WSW (and outside the route option), are	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the Route Option, and no part of the route crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 4 Scheduled Monuments; and • 37 Listed Buildings (1 x A Listed; 14 x B Listed, and 22 x C Listed). In addition, there are two assets within the route option recorded in the HER as being 'Regionally Significant'. These are: Wyton Wood cropmark site (ring ditch) (NO33NE0023) and South Balluderon Farm (NO33NE0037), which is also a Listed Building, both present to the south of Newlandhead. There are no NIDLs within the Route Option. The majority of the Listed Buildings are clustered between Douglastown and Kirkton, along with one Scheduled Monument, Kirkton Homestead Moat (SM 6070). These can readily be avoided during the alignment design stage. Two of the Scheduled Monuments, Balkemback Cottages Stone Circle (SM 2868) and Arniefoul Cairn (SM 389) stand in elevated positions and have wide open views out to the surrounding landscape, which form an important element of their settings. Views out from, and to, these monuments, including potential intervisibility between Arniefoul Cairn (SM 389) and a contemporary burial cairn at Carnuie Hill (SM 6449) to the WSW (and outside the route option), are important and will be key considerations during the alignment design stage. Glamis Castle GDL (GDL 189) and associated listed buildings (including Category A Listed Glamis Castle (LB 17701), is present c.1.3 km to the north of the route option. This GDL is considered to be a 'work of art' and there are extensive views out of the GDL to the surrounding area. The potential impact of the proposed development on

Topic	Route A1	Route A1.1
	important and will be key considerations during the alignment design stage. Glamis Castle GDL (GDL 189) and associated listed buildings (including Category A Listed Glamis Castle (LB 11701), is located c.1.3 km to the north of the route option. This GDL is considered to be a 'work of art' and there are extensive views out of the GDL to the surrounding area. The potential impact of the proposed development on the setting of the GDL, including views from and into the GDL, will be a key consideration during the alignment design stage.	the setting of the GDL, including views from and into the GDL, will be a key consideration during the alignment design stage.
People	<u>Settlements</u> The route avoids the main settlements of Tealing, Glamis and Forfar. North of Tealing, the route would need to pass a number of properties north of the substation location. The route includes the small settlement of Douglastown, and a number of properties at Jericho south of the A94. <u>Visual</u> The route crosses high ground, including the summit of Ironside Hill (356 m AOD) and Finlarg Hill (336 m AOD), where the OHL could be highly visible. The route allows flexibility to avoid the summits, and should be kept to the lower western slopes of these hills. The route could give rise to visual impacts as it crosses the A928 in an upland section. The route could give rise to visual impacts as it crosses the high ground of Hayston Hill –passing between Hayston Hill and Hunters Hill would be preferred as it would be better screened.	<u>Settlements</u> The route avoids the main settlements of Tealing, Glamis and Forfar. The route includes the small settlement of Douglastown. North of Tealing, the route would need to pass a number of properties north of the substation location. The route passes several properties in Glen Ogilvie, including the small settlement of Milton of Ogilvie. The route includes the small settlement of Douglastown, and a number of properties at Jericho south of the A94. <u>Visual</u> The route passes north-west between two prominent hills: Craigowl Hill (455 m AOD); and Balkello Hill (385 m AOD). The OHL would be visible at close range from accessible mixed woodland at Balkello and a promoted viewpoint at Balkello Hill. The route could give rise to visual impacts as it crosses the A928 on the approach to Milton of Ogilvie. The route could give rise to visual impacts as it crosses the high ground of Hayston Hill – therefore passing between Hayston Hill and Hunters Hill would be preferred as it would be better screened.

Topic	Route A1	Route A1.1
	The route could give rise to visual impacts to road users as it crosses the A94, though this is a fast route and views will be fleeting.	The route could give rise to visual impacts to road users as it crosses the A94, though this is a fast route and views will be fleeting.
Landscape	Designations No interaction with any national or local landscape designations. Landscape Character The route passes mainly through the Lowland Hill Ranges LCT. The route is also located within the southern part of Strathmore. The route crosses the lower eastern hill slopes of Craigowl Hill, following the grain of the topography. It crosses open large-scale upland as far as Hayston Hill, while offering flexibility to avoid the summits (e.g. Ironside Hill). Beyond Hayston Hill the remainder of the route is on lower lying farmland of the Broad Valley Lowland LCT, where the OHL could be accommodated by the large scale of the landscape.	Designations No interaction with any national or local landscape designations. Landscape Character The route passes mainly through the Lowland Hill Ranges LCT. The route is also located within the southern part of Strathmore. The route crosses the steep southern scarp of the prominent Balkello Hill, at odds with the grain of the topography. It then passes into the smaller-scale farmed upland valley of Glen Ogilvie where it would respond to topography but may be at odds with the smaller-scale landscape. Beyond Hayston Hill the remainder of the route is on lower lying farmland of the Broad Valley Lowland LCT, where the OHL could be accommodated by the large scale of the landscape.
Land Use	Agriculture The lower lying agricultural land of the northern section of the route is characterised by soils with Land Capability for Agriculture (LCA) in Class 2 and Class 3.1. The higher ground in the southern section comprises soils generally in Class 4 and 5. Forestry There are small areas of mixed woodland located to the north of Route A1 around Jericho and south of Jericho. Recreation	Agriculture The agricultural land within A1.1 comprises soils with Land Capability for Agriculture (LCA) in Classes 4, 5 and 6. The land of the northern section of the route within A1 is characterised by soils with Land Capability for Agriculture (LCA) in Class 2 and Class 3.1. Forestry There is a small area of Estate woodland (mixed mainly broadleaved) recorded at the southern end of the route option at Balkello Hill. Balkello Woodland is located directly south of the route option which comprises several walking trails through the woodland. Recreation

Topic	Route A1	Route A1.1
	There are several core paths which pass through the route, one core path is located within the central part of the route between Upper Hayston and Jericho.	There is a core path which passes through the southern edge of the route at North Balluderon towards Balkerro Hill. Another core path passes through the eastern part of the route from Dryburn towards Gallow Hill.
Technical Constraints	<u>All Relevant Criteria</u> The existing Alyth – Tealing 275kV OHL is located within the route option however this line would be diverted into the new Tealing substation when the new build 400kV line is tied in. The route would cross the A94 and A928 roads and two other minor roads. The elevation of the route rises above 200m (10-15% of the route), with the maximum altitude being 327m. Route A1 passes through a distance of 897m of slopes ranging between 20 to 40 degrees. The maximum slope on Route A1 is 29 degrees. The route passes through a floodplain at Dean Water spanning approximately 620m which would require at least one structure to be situated within the floodplain. A total of five angle (tower) structures are required on Route A1. There are two wind turbines located within the southern area of the route, located south of Balkemback Cottages. Two consented wind farms (Frawney and Govals Farm) are located to the east of the route. The layout for Govals Farm Wind Farm which is located to the east of Hayston Hill has turbines located directly on the eastern edge of the route.	<u>All Relevant Criteria</u> The existing Alyth – Tealing 275kV OHL is located within the route option, however this line would be diverted into the new Tealing substation when the new build 400kV line is tied in. The route would cross the A94 and A928 roads and four other minor roads. The elevation of the route rises above 200m (10-15% of the route) with the maximum altitude being 362m. Route A1.1 passes through a smaller distance (743m) of slopes ranging between 20 to 40 degrees. The maximum slope on Route A1.1 is 39 degrees. The route passes through a floodplain at Dean Water spanning approximately 620m which would require at least one structure to be situated withing the floodplain. A total of seven angle structures are required on Route A1.1, more than required for Route A1 due to routeing around Craigowl Hill. Ark Hill is an existing operational wind farm located to the west of Route A1.1. An application to extend the wind farm (Ark Hill 2) has been submitted and is pending determination. One of the turbines in the proposed Ark Hill 2 scheme is located directly on the western edge of the route. The route crosses and runs in parallel to National Grid pipe network. Route A1.1 is approx. 2km longer compared to the corresponding section of Route A1 as Route A1.1 routes around the west side of Craigowl Hill.

Topic	Route A1	Route A1.1
	Route A1 passes along the front of a tall communication mast situated South of Gallow Hill. The route crosses and runs in parallel to the National Grid pipe network. Route A1 is approximately 2km shorter than A1.1 as it takes a more direct north to south direction through this section.	
Cost Considerations	<u>Capital and Operational Cost</u> Route A1 is considered the lowest cost option. It is approximately 2km shorter than Route A1.1 and travels through a small section of woodland which would require to be felled and compensated. Both routes have similar requirements for OHL distribution diversions and major crossings. Route A1 has closer links to existing public highways and so it is considered that the requirement for the construction of new access will be less than that required for Route A1.1. Both route options traverse through higher altitudes and challenging terrain which would increase the construction and maintenance requirements. Route A1 can be mitigated with respect to challenging terrain by routing in the valleys and plateaux compared to Route A1.1. This would also reduce the maintenance costs and requirements for Route A1 compared to A1.1.	<u>Capital and Operational Cost</u> Route A1.1 is approximately 10% more than the cost of A1. Route A1.1 is approximately 2km longer than Route A1 and travels through a small section of woodland which would require to be felled and compensated. Both routes have similar requirements for OHL distribution diversions and major crossings. The requirement for the construction of new access will be greater for this route compared to that required for Route A1. Both route options traverse through higher altitudes and challenging terrain which would increase the construction and maintenance requirements and this is expected to be greater for Route A1.1.

5.2.1 Section Summary

Other than Route A1 having a slightly greater number of cultural heritage designations considered to be at risk of impact than Route A1.1, and slightly greater occurrence of natural heritage designations, there is little to distinguish between the two route options from an environmental perspective. Both route options would need to cross the Dean Water, at the same location, and have a similar level of hydrological constraint.

Route A1 is likely to give rise to fewer conflicts with key characteristics of the landscape, and overall is considered to fit better with the grain of the landscape, so is preferred over Route A1.1 in terms of landscape. Route A1 avoids more of the settlements present in the area, and is likely to be less visible in the landscape, so is preferred over A1.1 in relation to impacts on people.

On balance Route A1 is preferred, having regard to the environmental criteria.

Table 5.2a – Environmental RAG Rating Table for Section A of the OHL Route

Route	RAG Impact Rating - Environmental														
	Natural Heritage					Cultural Heritage		People			Landscape		Land Use		
	Designations	Protected Species	Habitats	Geology, Hydrology and Hydrogeology	Ornithology	Designations	Cultural Heritage Assets	Settlements	Visual	Physical Effects	Designations	Character	Agriculture	Forestry	Recreation
A1	M	L	M	M	M	M	M	L	M	L	L	M	L	L	L
A1.1	L	L	M	M	M	M	M	L	M	L	L	H	L	L	L

The majority of the constraints identified within the preferred route option could be avoided and where this is not possible it is considered that significant adverse impacts could be mitigated by careful design, micro-siting and the implementation of good practice construction techniques. Further survey work would be required to inform an appropriate alignment and minimise environmental effects where possible.

From a technical perspective, based upon on the considerations and RAG ratings applied, Route A1 is considered to have a lower risk of technical constraints and impact and is preferred with respect to fewer minor road crossings, slope, angle supports and overall route length. Route A1.1 has additional challenges including those related to the need to cross steeper slopes and a larger number of minor road crossings.

Table 5.2b – Engineering RAG Rating Table for Section A of the OHL Route

Route	RAG Impact Rating – Engineering													
	Major Crossings	Minor Roads	Elevation	Slope	UXO	Flooding	Peatland	Access	Angle Supports	Windfarms	Communication Masts	Urban Areas	Metallic Pipes	Lengths
A1	H	L	M	L	L	M	L	L	L	L	M	L	M	L
A1.1	H	M	M	M	L	M	L	L	M	L	L	L	M	M

For the economic appraisal, both route options have been allocated a Lower constraint RAG rating (most preferred). Route A1 is the preferred option as it has the lowest anticipated cost option for both capital and maintenance criteria. Route A1 would also require less construction for new access.

Table 5.2c – Economic RAG Rating Table for Section A of the OHL route

Route	RAG Impact Rating – Cost	
	Capital	Operational
A1	L	L
A1.1	L	L

5.3 Study Area Section B Forfar to Brechin

Table 5.3 below presents a summary of the considerations and findings of the comparative appraisal of route options B1, B1.1, B1.2 and B1.3 in Section B.

Table 5.3 – Summary of Comparative Appraisal for Section B

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
Natural Heritage	Designations The route crosses the River South Esk SAC near Netherton, with the river also flowing along much of the length of the route. The route includes several woodlands listed on the AWI, the majority of which are LEPO. As limited extent of Ancient Woodland is present in the north of the route to the west of Brechin, it should be possible, through the alignment design process, to avoid the woodlands listed on the AWI. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are almost exclusively those associated with intensive agricultural land management practices and are likely to be of limited ecological importance. Protected species assemblages may be present within the route and the route contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed	Designations Route B1.1 crosses the River South Esk SAC in two locations, to the west and north-east of Tannadice. The route supports woodlands listed on the AWI, the majority of which are LEPO; with limited extents of Ancient Woodland on the eastern boundary of the route near Tanndice. Many of the LEPO woodlands are small and isolated, allowing the alignment design process to avoid them, however one LEPO (Roughmont Wood) at the northern end of the route is relatively larger and creates a pinch point at which some tree felling would be required in areas of LEPO, resulting in habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to Route B1. The route is likely to support a similar range of protected species assemblages, Schedule 1 birds and red-listed BoCC as Route B1. Route B1.1 does not coincide directly with any SPA but it does overlap with the core foraging ranges of qualifying features (pink-	Designations Route B1.2 crosses the River South Esk SAC in three locations, to the west and north of Finavon. The route supports several woodlands listed on the AWI, all of which are LEPO. A pinch point is created by an area of LEPO (Duns Wood) north of Careston. In addition, there are LEPO woodlands which almost span the route near Oathlaw and Finavon. As such, careful alignment design would be required to avoid a direct impact through tree felling, habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route B1. The route is likely to support a similar range of protected species assemblages, Schedule 1 birds and red-listed BoCC as Route B1. Route B1.2 does not coincide	Designations There are no designated sites within option B1.3 although the River South Esk SAC would be crossed as part of B1.1. The route supports a small number of woodlands listed on the AWI, all of which are LEPO. One area of LEPO straddles the boundary between Route B1.2 and Route B1.3 (Duns Wood) and spans the southern edge of this route; however this is a narrow feature and aerial imagery indicates that some of the site is no longer wooded; as such, it will be possible to design an alignment which minimises the requirement for felling. However, some felling would be required in areas of LEPO, resulting in habitat loss and fragmentation. Habitats, Protected Species and Ornithology

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
	in BoCC[17]. Route B1 does not coincide directly with any SPA but it does overlap with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the following SPAs: The Loch of Kinnordy SPA (4.8km to the west at its closest); Lintrathen Loch SPA (13km to the west); Montrose Basin SPA (Dun's Dish SSSI 7.5km to the east) and the Firth of Tay and Eden SPA which is just over 18.75km at its closest point to the south. As such, Route B1 may affect foraging of the qualifying features of the Firth of Tay and Eden SPA, Montrose Basin SPA, Loch of Kinnordy SPA and the Loch of Lintrathen SPA. Hydrology, Geology and Hydrogeology The southern part of Route B1 crosses the Dean Water floodplain, which is widest on its west side and shortest on its east side. The route skirts to the south side of the River South Esk floodplain until it eventually reaches a point near the settlement of Netherton where it crosses the River South Esk. At this point the river's floodplain is estimated to measure up to 1km in width. There are	footed and/or greylag geese; 15-20km) of the following SPAs: The Loch of Kinnordy SPA (4.8km to the west); Lintrathen Loch SPA (at 13km to the west), Montrose Basin SPA (Dun's Dish SSSI 8.5km to the east) and the Firth of Tay and Eden SPA which is just over 18.75km at its closest point to the south. As such, Route B1.1 may affect foraging of the SPA qualifying features of the Montrose Basin SPA, Loch of Kinnordy SPA and the Loch of Lintrathen SPA. Hydrology, Geology and Hydrogeology The southern part of Route B1.1 crosses the Dean Water floodplain, which is widest on its west side and narrowest on its east side. The route crosses the River South Esk at a point where the estimated 200-year floodplain varies from between approximately 200-800m in width. Careful selection of the crossing point here could reduce the necessary span of the crossing. There are small areas of soils containing some peat (Class 4 and 5 soils indicated by NatureScot (2016) mapping) in the west of the route close to the Dean Water, and a very small area at the east side of the route, west of Brechin.	directly with any SPA but it does overlap with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the following SPAs: The Loch of Kinnordy SPA (4.8km to the west at its closest to Route B1); Lintrathen Loch SPA (13km to the west) , Montrose Basin SPA (Dun's Dish SSSI to 7.5 km to the east) and the Firth of Tay and Eden SPA just over 18.75km at its closest point to the south as part of route B1. As such, Route B1.2 may affect foraging of the qualifying features of Montrose Basin SPA, Loch of Kinnordy SPA, the Firth of Tay and Eden SPA and the Loch of Lintrathen SPA. Hydrology, Geology and Hydrogeology The southern part of Route B1.2 crosses the Dean Water floodplain, which is widest on its west side and narrowest on its east side. The route crosses the River South Esk at a point where the estimated 200-year floodplain	Aerial imagery suggests that habitats within the route are similar to those in Route B1. The route is likely to support a similar range of protected species assemblages Schedule 1 birds, and bird species that are red-listed in BoCC as Route B1. Route B1.3 does not coincide directly with any SPA but overlaps with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the following SPAs: The Loch of Kinnordy SPA (7.8km to the west); Lintrathen Loch SPA (13 km to the west) and Montrose Basin SPA (Dun's Dish SSSI to 10.2km to the east with the main basin area 13.2km to the east). In addition, the Firth of Tay and Eden SPA is just over 18.75km at its closest point to the south as part of route B1. As such, Route B1.3 may affect foraging of the SPA qualifying features of Montrose Basin SPA, Loch of Kinnordy SPA,

[17] Birds which receive special protection under the Wildlife & Countryside Act 1981

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
	some ‘islands’ within the wider floodplain, just west of Netherton, that are estimated to be free of flooding and may aid in spanning the watercourse. There are small, local areas of soils containing some peat (Class 4 and 5 soils indicated by NatureScot (2016) mapping) in the west of the route close to the Dean Water. BNG The route supports a single internationally designated site; this is a riverine SAC which can be easily crossed by the alignment. In addition, it should be possible to avoid the small area of Ancient Woodland which is considered to be an irreplaceable habitat in BNG assessment. The route is dominated by heavily modified agricultural habitat types which are likely to be of limited ecological value. As such, it should be possible to deliver BNG within the route.	BNG Like Route B1, the route supports a single riverine SAC which can be easily crossed and it should be possible to avoid the small areas of Ancient Woodland; these features therefore pose limited risk to the BNG assessment. The route is dominated by similar habitat types likely to be of limited ecological value. As such, it should be possible to deliver BNG within the route.	extends up to approximately 600m across the floodplain near Finavon. Shorter crossing locations within this route are up to approximately 350 m wide across the River South Esk floodplain at their shortest point. There are small areas of soils containing some peat (Class 4 and 5 soils indicated by NatureScot (2016) mapping) in the west of the route close to the Dean Water. BNG Like Route B1, the route supports a single riverine SAC which can be easily crossed and the route is dominated by habitat types likely to be of limited ecological value. Areas of LEPO woodland will be more challenging to avoid, and some felling may be required, although these habitats are not considered to be irreplaceable in the BNG assessment. As such, it should be possible to deliver BNG within the route.	the Firth of Tay and Eden SPA and the Loch of Lintrathen SPA. Hydrology, Geology and Hydrogeology The southern part of the route crosses the Dean Water floodplain, which is widest on its west side and narrowest on its east side. The route crosses the River South Esk at a point where the estimated floodplain extends up to approximately 600m across the floodplain near Finavon. Shorter crossing locations within this route are up to approximately 350m across the River South Esk at their shortest point. There are small areas of soils containing some peat (Class 4 and 5 soils indicated by NatureScot (2016) mapping) in the west of the route close to the Dean Water. BNG Like Route B1, the route supports a single riverine SAC which can be easily crossed and the route is dominated by habitat types likely to be of limited ecological value. If

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
				this route is selected in combination with Route B1.1, some felling of LEPO woodland would be required; as noted, these habitats are not considered to be irreplaceable. As such, it should be possible to deliver BNG within the route.
Cultural Heritage	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the route, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 3 Scheduled Monuments; and • 12 Listed Buildings (10 x B Listed, and 2 x C Listed). There are no NIDLs, or assets recorded as 'Regionally Significant' in the HER within the Route Option. The scheduled monuments and the majority of the listed buildings are along the periphery of the Route Option and are unlikely to represent appreciable constraints.	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the Route Option, and no part of the route crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 6 Scheduled Monuments; and • 12 Listed Buildings (10 x B Listed, and 2 x C Listed). There are no NIDLs, or assets recorded as 'Regionally Significant' in the HER within the Route Option. The majority of the Scheduled Monuments are along to the periphery of the Route Option and are unlikely to represent appreciable constraints. There is a slight pinch point at Battledykes Roman Camp (SM 2308) where the route	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 2 Scheduled Monuments; and • 15 Listed Buildings (14 x B Listed, and 1 x C Listed). The route option intersects Tannadyce House NIDL (NO45NE0057) and could potentially interrupt the association between Category B Listed, Tannadyce House (LB 18629) and its Category B Listed Lodge (LB 17727).	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 6 Scheduled Monuments; and • 15 Listed Buildings (10 x B Listed, and 5 x C Listed). There are no NIDLs, or assets recorded as 'Regionally Significant' in the HER within the Route Option. There is a slight pinch point at Battledykes Roman Camp (SM 2308) where the route option clips the north edge of the Scheduled

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
	Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets, are key elements of their settings and these will be a key consideration during the alignment design stage. These include: • Scheduled Monuments, Battledykes Roman Camp (SM 2308) and Battledykes, Cairn (SM 7234), to the north of the route option, and Finavon, Fort (SM 139), to the south. The relationship and views between Battledykes Roman Camp and other contemporary assets in the surrounding area will be a key consideration. • Category A Listed Careston Castle (LB 4656), to the north of the route option. • Category C Listed Finavon Castle (LB 17722) just outside and on the north boundary of the route option. The Scheduled Monument, and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069) lies c.3.5 km north of the route option. These are two of the	option clips the north edge of the Scheduled Area. The Scheduled Monument must be avoided during the alignment design stage. One Scheduled Monument, Law of Baldoukie, Barrow (SM 6314) stands towards the centre of the Route Option. Wide views from the prehistoric site are likely a key element of its setting. Views to and from the barrow site will be a key consideration during the alignment design stage. A small cluster of Scheduled Monuments, Vayne Castle (SM4015), Vayne Standing Stone (SM 135), and Law of Windsor Cairn (SM 3375) stand on south facing slopes above the Vayne Water. Views to the south from the Scheduled Monuments, and their relationship to the Noran Water, are likely key aspect of their setting and will be key consideration during the alignment stage. Within the wider landscape surrounding the Route Option there are a number of Listed Buildings where views out from, and to, the buildings, are key elements of their settings and will be key consideration during the alignment design stage. This includesthe Category A Listed Careston Castle (LB 4656), to the south of the route option.	There is one asset recorded as 'Regionally Significant' in the HER within the Route Option, a cropmark site (Finavon Roman Temporary Camp (NO45NE0021)) which is just clipped by the southern boundary of the route option. One Scheduled Monument, Law of Windsor, Cairn (SM 3375), stands towards the centre of the route option. Wide views from the prehistoric burial cairn are likely a key element of its setting. Views to and from the cairn will be a key consideration during the alignment design stage. Both Vayne Standing Stone (SM 135), and Law of Windsor Cairn (SM 3375) stand on south facing slopes above the Vayne Water. Views to the south from the Scheduled Monuments, and their relationship to the Noran Water, are likely key aspect of their setting and will be key consideration during the alignment stage.	Area. The Scheduled Monument must be avoided during the alignment design stage. One Scheduled Monument, Law of Baldoukie, Barrow (SM 6314) stands towards the centre of the Route Option. Wide views from the prehistoric site are likely a key element of its setting. Views to and from the barrow site will be a key consideration during the alignment design stage. The majority of the listed buildings are along the periphery of the Route Option and are unlikely to represent appreciable constraints. A small cluster of Scheduled Monuments, Vayne Castle (SM4015), Vayne Standing Stone (SM 135), and Law of Windsor Cairn (SM 3375) stand on south facing slopes above the Vayne Water. Views to the south from the Scheduled Monuments, and their relationship to Noran Water, are likely key aspect of their setting and will be key consideration during the alignment stage.

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
	most impressive Iron Age forts in Scotland and are nationally renowned visitor sites. Views out from these monuments, and between them are important and will be a key consideration during the alignment stage.	The Scheduled Monument and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069) lies c.2.5 km north of the route option. These are two of the most impressive Iron Age forts in Scotland and are nationally renowned visitor sites. Views out from these monuments, and between, them are important and will be a key consideration during the alignment stage.	Within the wider landscape surrounding the Route Option there are a number of Listed Buildings where views out from, and to, the buildings, are key elements of their settings and will be key consideration during the alignment design stage. These include: • Category A Listed Careston Castle (LB 4656), to the east of the route option. • Category C Listed Finavon Castle (LB 17722), just outside and on the south boundary of the route option. The Scheduled Monument and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069), lies c.2.5 km north of the route option. These are two of the most impressive Iron Age forts in Scotland and are nationally renowned visitor sites. Views out from these monuments, and between, them are important and will be a key consideration during the alignment stage.	Within the wider landscape surrounding the Route Option there are a number of Listed Buildings where views out from, and to, the buildings, are key elements of their settings and will be key consideration during the alignment design stage. This includesthe Category A Listed Careston Castle (LB 4656), to the south of the route option. The Scheduled Monument and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069) lies c.1 km north of the route option. These are two of the most impressive Iron Age forts in Scotland and are nationally renowned visitor sites. Views out from these monuments, and between them, are important and will be a key consideration during the alignment stage.

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
People	Settlements The route avoids Forfar, the main settlement. There are properties in the farmland throughout the route, though flexibility to avoid very close proximity. There is a pinch point between Finavon Castle (a Category C listed building) and Finavon Hill, where there may be visual impacts on residential views from Finavon Castle and residential properties at Bogardo. Visual The route follows the A90 for around 6km, and the OHL would have visual impacts on road users, although these are not highly sensitive receptors. The route crosses the A90 and passes over high ground to the north. Visual impacts may occur if the OHL were prominent on the skyline in views from the road.	Settlements The route avoids Forfar, the main settlement. There are properties in the farmland throughout the route, although there is flexibility to avoid very close proximity. Residential properties at Justinhaugh and Craigeassie contribute to a pinch point where the route crosses the South Esk. Visual There are a small number of core paths within the route, but few other visual receptors. Route B1.1, being further north than B1, may be more visible from the higher ground to the north.	Settlements The route avoids Forfar, the main settlement. There are properties in the farmland throughout the route, although there is flexibility to avoid very close proximity. This route would largely avoid proximity to Finavon Castle. Between Oathlaw, Milton of Finavon and Finavon there are numerous residential properties where visual impacts could occur. There are fewer dwellings in the northern section of this route, north of the Noran Water. Visual There are a small number of core paths within the route, but few other visual receptors. Route B1.2, being further north than B1, may be more visible from the higher ground to the north. Route B1.2 crosses a high point (131m) near Hilton of Fern, where an OHL may be visible in the wider landscape.	Settlements The route avoids Forfar, the main settlement. There are properties in the farmland throughout the route, although there is flexibility to avoid very close proximity. Residential properties at Justinhaugh and Craigeassie contribute to a pinch point where the route crosses the South Esk. An OHL within this route would likely impact on views from a number of dwellings along the foothills near Kirkton of Menmuir. Visual There are a small number of core paths within the route, but few other visual receptors. Route B1.3, being the most northerly of the routes, may be most visible from the higher ground to the north.

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
Landscape	Designations No interaction with any national or local landscape designations. Landscape Character Route B1 runs mainly through the Broad Valley Lowlands LCT, but the southern edge is within the Foothills LCT. The route is also located within the central part of Strathmore. Route B1 runs through open farmland where the OHL could be accommodated within the large scale of this open and broad valley landscape. It follows an existing communication corridor (the A90) for around 6km. There is a pinch point between Finavon Castle and Finavon Hill, where the OHL would pass through a number of distinctive shelterbelts and policy woodlands around the Castle. The Foothills LCT to the south would serve as a backdrop to the OHL, reducing its impact on landscape character. Route B1 passes over a low but distinct ridge near Craigend of Careston. A prominent belt of native mixed trees	Designations No interaction with any national or local landscape designations. Landscape Character Route B1.1 runs entirely through the Broad Valley Lowlands LCT, across more undulating farmland. The route is also located within the central part of Strathmore. There is characteristic native woodland along watercourses, that could be impacted by OHL. Deciduous woodland along the B957 could be affected due to a pinch point between properties at Justinhaugh Bridge. The undulating farmland is generally of large scale that may accommodate OHL, though there is narrower and more complex landform around the River South Esk and Noran Water where impacts on landscape character may occur.	Designations No interaction with any national or local landscape designations. Landscape Character Route B1 runs mainly through the Broad Valley Lowlands LCT, but the southern edge is within the Foothills LCT, south of the A90. The route is also located within the central part of Strathmore. Route B1 runs through open farmland where OHL could be accommodated within the large scale of this open and broad valley landscape. It follows an existing communication corridor (the A90) for around 6km. There is narrower and more complex landform around the River South Esk and Noran Water where impacts on landscape character may occur. There is characteristic native woodland along watercourses, that could be impacted by OHL. Several belts of mixed woodland around the South Esk crossing	Designations No interaction with any national or local landscape designations. Landscape Character Route B1.1 runs entirely through the Broad Valley Lowlands LCT, across more undulating farmland. The route is also located within the central part of Strathmore. There is characteristic native woodland along watercourses, that could be impacted by OHL. Deciduous woodland along the B957 could be affected due to a pinch point between properties at Justinhaugh Bridge. The undulating farmland is generally of large scale that may accommodate OHL, though there is narrower and more complex landform around the River South Esk and Noran Water where impacts on landscape character may occur.

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
	extends along the minor road that runs along the top of the ridge. This tree belt, which narrows to a row of trees, is clearly visible from the A90, and occupies the width of the route. The OHL would impact on this distinctive feature.		could be affected due to a pinch point between properties.	
Land Use	Agriculture Around 70% of land in Route B1 is Class 2 (capable of producing a wide range of crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry There are small areas and linear features of mixed woodland as listed on the National Forestry Inventory (NFI) throughout Route B1 around Bogindollo and Finavon Castle. Recreation A core path is located at the southern end of the route and passing into Route A1 between Haughs of Cossans and Nether Drumgley.	Agriculture Over 80% of land in Route B1.1 is Class 2 (capable of producing a wide range of crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry There are small areas and linear features of mixed woodland as listed on the NFI throughout Route B1.1 including an area near Wellford, Duns Wood and Weirs Wood which also covers the area where options B1.1, B1.2 and B1.3 intersect. Recreation A core path passes through and along part of the eastern edge of the route at Broom.	Agriculture Around 50% of land in Route B1.2 is Class 2 (capable of producing a wide range of crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry There are small areas of mixed woodland as listed on the NFI that cover significant areas across Route B1.2 such as Duns Wood, Muirton Wood, an area west of Finavon and an area east of Oathlaw. Recreation There are no core paths located within the route option.	Agriculture Over 90% of land in Route B1.3 is Class 2 (capable of producing a wide range of crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry Duns Wood is a large area of mixed woodland as listed on the NFI which spans the width of the route in the south. Recreation There are no core paths located within the route option.
Technical Considerations	All Relevant Criteria	All Relevant Criteria	All Relevant Criteria	All Relevant Criteria

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
	Route B1 would require 13 angle towers including those needed for crossing of the A90 dual carriageway. The route has the lowest potential to impact on residential and commercial properties. Route B1 passes through a floodplain at the River South Esk spanning approximately 820m which would require at least one structure to be situated within the floodplain. Route B1 interacts with a communication mast situated on Finavon Hill, the mast is approximately 740m south of the route centreline. Another mast situated at Darnside is approximately 190m south of the route centreline. All routes in Section B interact with metallic pipelines and all routes cross or route parallel to the National Grid pipeline network. Route B1 runs parallel to Shell and INEOS pipelines for circa 3.1km. Route lengths in section B are very similar. Route B1 has the longest route length at approximately 21.5km.	Route B1.1 has the least number of angle towers (11). All routes in Section B interact with metallic pipelines and all routes cross or route parallel to National Grid pipeline network and Shell and INEOS pipe lines. Route lengths in section B are very similar. Route B1.1 has the shortest route length at approximately 20.6km.	Route B1.2 has a high number of angle towers (18) associated with the need to avoid a number of constraints present including residential and commercial properties and gas pipelines. All routes in Section B interact with metallic pipelines and all routes cross or route parallel to National Grid pipeline network.	Route B1.3 has a high number of angle towers (15) associated with a number of constraints present in the route including residential and commercial properties and gas pipelines. There is a consented turbine (Dunswood) located within the route at Milton of Balhall. All routes in Section B interact with metallic pipelines and all routes cross or route parallel to National Grid pipeline network. Route B1.3 runs parallel to Shell and INEOS pipes for circa 3.1km. Route lengths in section B are very similar.
Cost Considerations	Capital and Operational Cost	Capital and Operational Cost	Capital and Operational Cost	Capital and Operational Cost

Topic	Route B1	Route B1.1	Route B1.2	Route B1.3
	Route B1 is approximately 5% more costly than the lowest cost option (B1.1). Route B1 requires two crossings of the A90 dual carriageway which would require scaffolding or road closures during construction. There are a similar number of gas pipeline crossings across each route although B1 would likely require more extensive mitigation than the other route options due to its interaction with the pipelines. There is a good existing public highway network but it is considered likely that new access track construction would be required across all route options. There are no features on any specific route that would drive higher operational costs.	Route B1.1 represents the lowest cost option. Route B1.1 passes through more forestry areas than B1 and B1.2 which would require additional felling and compensation. There are predicted to be more minor road crossings for B1.1 and B1.3 which would require closures. There are a similar number of gas pipeline crossings across each route. There is a good existing public highway network but it is considered likely that new access track construction would be required across all route options.	Route B1.2 is approximately 5% more costly than the lowest cost option (B1.1). There is no more than 1km difference in length between all routes. Routes B1 and B1.2 traverse similar extents of forestry. All routes have similar Distribution diversion requirements. There are a similar number of gas pipeline crossings across each route. There is a good existing public highway network but it is considered likely that new access track construction would be required across all route options.	Route B1.3 is approximately 5% more costly than the lowest cost option (B1.1). Route B1.1 has the lowest cost option, however routes B1, B1.2 and B1.3 are estimated to be approximately 5% of the lowest cost option. There is no more than 1km difference in length between all routes. Routes B1.1 and B1.3 pass through more forestry areas which would require additional felling and compensation. There are likely more minor road crossings for B1.1 and B1.3 which will require closures. There are a similar number of gas pipeline crossings across each route. There is a good existing public highway network but it is considered likely that new access track construction would be required across all route options.

5.3.1 Section Summary

There is little to distinguish between the route options in Section B for most environmental considerations. For many of the issues a slight preference is expressed for a different route. Routes B1.1 and B1.3 are more constrained by areas of woodland, some of which would likely require to be felled. There are small, localised areas of soils containing some peat indicated at the southwest of all route options which can be avoided. Route B1.2 has the largest number of watercourse crossings, however all routes potentially cross over wide estimated floodplains of the Dean Water and River South Esk (which is a designated Special Area of Conservation (SAC)), depending on exact siting within routes. Route B1.1 is slightly preferable in this respect as it has the narrowest floodplain width at the River South Esk crossing in comparison to the other route options.

The cultural heritage preference is to keep the OHL away from the Caterthun Hillforts Scheduled Monument and Property in Care (PiC), indicating that Route B1 is preferable on balance over the other routes that run closer and given the preference to enter Section C away from (south of) the Caterthun Hillforts. Route B1.3 is the least preferred due to the proximity to the scheduled Caterthun Hillforts, where it is considered that the impact on the setting of the Hillforts would be the highest.

Route B1 follows topography and makes use of the low Foothills LCT as a backdrop which would help to reduce landscape and visual impacts particularly when viewed from east of the OHL in more densely populated areas. Other routes cross more undulating topography that would be more sensitive, with potential for impacts on characteristic riverside woodland. There are some pinch points and potential impacts on views for Route B1, but this remains the landscape and visual preference overall.

On balance Route B1 is preferred having regard to the environmental criteria.

Table 5.4a – Environmental RAG Rating Table for Section B of the OHL route

Route	RAG Impact Rating - Environmental														
	Natural Heritage					Cultural Heritage		People			Landscape		Land Use		
	Designations	Protected Species	Habitats	Geology, Hydrology and Hydrogeology	Ornithology	Designations	Cultural Heritage Assets	Settlements	Visual	Physical Effects	Designations	Character	Agriculture	Forestry	Recreation
B1	M	L	L	M	M	M	L	L	M	L	L	M	M	L	L
B1.1	M	L	L	M	M	L	L	L	M	L	L	M	M	M	M
B1.2	M	L	L	M	M	M	M	L	M	L	L	M	M	M	M
B1.3	M	L	L	M	M	M	L	L	M	L	L	M	M	L	M

The majority of the constraints identified within the preferred route option could be avoided and where this is not possible mitigated by careful design, micro-siting and the implementation of good practice construction techniques. Further survey work would be required to inform an appropriate alignment and minimise environmental effects where possible.

From a technical perspective, and based upon the RAG ratings applied no clear preference on engineering grounds has been identified with no significant issues that could not be technically resolved based on current information. However, from a technical perspective Route B1 is considered on balance to be the preferred route due to the lower anticipated impact to residential and commercial properties.

Table 5.4b – Engineering RAG Rating Table for Section B of the OHL route

Route	RAG Impact Rating - Engineering													
	Major Crossings	Minor Roads	Elevation	Slope	UXO	Flooding	Peatland	Access	Angle Supports	Windfarms	Communication Masts	Urban Areas	Metallic Pipes	Lengths
B1	L	M	L	L	L	M	L	L	M	L	H	L	M	M
B1.1	L	M	L	L	L	L	L	L	L	L	L	L	M	L
B1.2	L	M	L	L	L	L	L	L	M	L	L	L	M	M
B1.3	L	L	L	L	L	L	L	L	M	L	L	L	M	M

For the economic appraisal, all route options have been allocated a Lower constraint RAG rating (most preferred). From a cost perspective, although B1 is the highest rated cost option, it is approximately 5% of the lowest anticipated (for Route B1.1) and there are no specific constraints on any of the route options that would drive higher operational costs.

Therefore, as cost is not considered to be limiting for this section, route B1 is preferred taking account of environmental and technical appraisals.

Table 5.4c – Economic RAG Rating Table for Section B of the OHL route

Route	RAG Impact Rating – Cost	
	Capital	Operational
B1	L	L
B1.1	L	L
B1.2	L	L
B1.3	L	L

5.4 Study Area Section C – Brechin to Laurencekirk

Table 5.5 below presents a summary of the main considerations and findings of the comparative appraisal of route options C1, C1.1, C1.2, C2 and C3 in Section C.

Table 5.5 – Summary of Comparative Appraisal for Section C

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
Natural Heritage	Designations Route C1 does not support any designated sites, however it abuts the southern edge of the River North Esk and West Water Palaeochannels SSSI, to the south of Edzell. The route supports several woodlands listed on the AWI, all of which are LEPO. Two LEPO sites, at Northgate and Nether Belliehill, effectively span the route; alignment without direct impact would be challenging and any OHL alignment would likely result in a direct impact to the woodland through tree felling, habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are almost exclusively those associated with intensive agricultural land management practices and are likely to be of limited ecological importance.	Designations Route C1.1 does not support any designated sites. Similar to Route C1, the route supports several woodlands listed on the AWI, all of which are LEPO. One LEPO site, at Hatton, effectively spans the route, although aerial imagery indicates some areas of this site are no longer wooded; however, alignment without direct impact would be challenging and any OHL alignment would likely result in a direct impact to the woodland through tree felling, habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route C1. Protected species assemblages are likely to be similar to Route C1.	Designations Route C1.2 does not support any designated sites. The route supports several woodlands listed on the AWI, all of which are LEPO. Two LEPO sites span the width of the route at Luthermuir meaning any OHL alignment in this route would result in a direct impact to the woodland through tree felling, habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route C1. Protected species assemblages are likely to be similar to Route C1. Route C1.2 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in	Designations Route C2 does not support any designated sites. The route supports two blocks of woodland listed on the AWI, both of which are LEPO. The LEPO at Gungeon effectively spans the route, meaning any OHL alignment in this route would result in a direct impact to the woodland through tree felling, habitat loss and fragmentation. Careful design, targeting areas where the tree cover is narrower would reduce the number of trees that would need to be felled should this route be taken forward. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route C1. Protected species assemblages are likely to be similar to Route C1.	Designations The North Esk and West Water Palaeochannels (geological) SSSI and GCR spans the width of the route at Edzell. Eslie Moss SSSI occupies a significant area at the northern edge of the route, however this could be avoided during alignment design. The route supports several woodlands listed on the AWI, all of which are LEPO. One LEPO woodland (Edzell Wood) creates a pinch point at which, should an OHL alignment proceed through this location, careful alignment design would be required to avoid a direct impact through tree felling, habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route C1.

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	Protected species assemblages may be present within the route. Route C1 contains habitats that have the potential to support populations of Schedule 1 birds[18], and bird species that are red-listed in BoCC. Route C1 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 5.8km to the east of the Route. As such, Route C1 may affect foraging of the qualifying features of Montrose Basin SPA. <u>Hydrology, Geology and Hydrogeology</u> Route C1 crosses a wide section of floodplain, up to approximately 600m, of the West Water north of Inchbare but this can be avoided if the crossing is sited in the north of	Route C1.1 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route C1.1 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 4.5km to the east. As such, Route C1.1 may affect foraging of the qualifying features of Montrose Basin SPA. <u>Hydrology, Geology and Hydrogeology</u> Route C1.1 follows the line of the West Water and River North Esk along sections in which both watercourses are estimated to have wide floodplain areas. An OHL alignment within this section would need to follow the extreme north or south extent	BoCC. Route C1.2 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 5.8km to the east as part of Route C1. As such, Route C1.2 may affect foraging of the SPA qualifying features of Montrose Basin SPA. <u>Hydrology, Geology and Hydrogeology</u> Route C1.2 follows the West Water floodplain area closely where the floodplain is indicated up to 600m wide in places; however if the alignment at the crossing is sited in the north, the floodplain can be crossed at its narrowest point. The Luther Water flows along the south side of the east extent of the route near Laurencekirk. The Luther Water floodplain here is	Route C2 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route C2 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 5.8km to the east as part of Route C1. As such, Route C2 may affect foraging of the qualifying features of Montrose Basin SPA. <u>Hydrology, Geology and Hydrogeology</u> Route C2 crosses the West Water and then the River North Esk, at sections in which both the watercourses have wide floodplain areas, predicted by SEPA maps to be over 350 m. Selection of this route is inadvisable in hydrology terms, unless the alignment chosen	Protected species assemblages are likely to be similar to Route C1. Route C3 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. The Route also coincides with higher levels of wader sensitive habitat (and related high relative abundance) as predicted by the British Trust for Ornithology (BTO) modelled data. Route C3 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 7km to the east of the Route and Loch of Kinnordy SPA some 19.5km to the south and west of the Route. As such, Route C3 may affect foraging of the qualifying features of Montrose Basin

[18] Birds which receive special protection under the Wildlife & Countryside Act 1981

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	the route. It also crosses the smaller Dowrie Burn and Black Burn in the east extent northwest of Laurencekirk but this does not constrain the route as the estimated floodplains are very narrow along both watercourses. No areas of peat are indicated to be present on this route based on NatureScot (2016) mapping. BNG The route does not support any designated sites. It is dominated by heavily modified agricultural habitat types which are likely to be of limited ecological value. Areas of LEPO are not considered to be irreplaceable in the BNG assessment. As such, it should be possible to deliver BNG within the route.	of the route in order to avoid the major floodplain areas and cross the watercourses at narrower sections of estimated floodplain. No areas of peat are indicated on this route by NatureScot (2016) mapping. BNG The route is very similar to Route C1, with no features identified at this stage which pose a major risk to the BNG assessment. As such, it should be possible to deliver BNG within the route.	approximately 175m at its widest and can be avoided. No areas of peat are indicated on this route by NatureScot (2016) Mapping. BNG The route is very similar to Route C1, with no features identified at this stage which pose a major risk to the BNG assessment. As such, it should be possible to deliver BNG within the route.	within the route runs along the extreme north of the route in order to avoid the major floodplain areas and cross the watercourses at narrower sections of estimated floodplain. No areas of peat are indicated on this route by NatureScot (2016) Mapping. BNG The route is very similar to Route C1, with no features identified at this stage which pose a risk to the BNG assessment. As such, it should be possible to deliver BNG within the route.	SPA and potentially of Loch of Kinnordy SPA birds. Hydrology, Geology and Hydrogeology Route C3 crosses the West Water and the River North Esk where the predicted floodplains are narrow. There are local wide sections of floodplain from the Black Burn just east of the Edzell Woods village. Some sections of floodplain here are estimated at up to 600m wide, with other narrower sections approximately 200m wide, which can be avoided. Route C3 also crosses the smaller Dowrie Burn and Black Burn in the east extent northwest of Laurencekirk but this does not constrain this route as the estimated floodplains are narrow along both watercourses. There is a small area of soils containing some peat (Class 5 soils) east of Edzell Woods village which can be avoided.

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
					BNG The route supports two nationally designated sites. It would not be possible to avoid direct impacts on one of these sites; however, this is a geological SSSI which would not affect the BNG assessment. The route is dominated by similar habitat types which are likely to be of limited ecological value. As such, it should be possible to deliver BNG within the route.
Cultural Heritage	Designations and Cultural Heritage Assets There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 5 Scheduled Monuments; and	Designations and Cultural Heritage Assets There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 7 Scheduled Monuments; and	Designations and Cultural Heritage Assets There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 5 Scheduled Monuments; and	Designations and Cultural Heritage Assets There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 7 Scheduled Monuments; and	Designations and Cultural Heritage Assets There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 5 Scheduled Monuments; and

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	• 3 Listed Buildings (2 x B listed and 1 x C Listed). In addition, there are two assets recorded as 'Regionally Significant' in the HER within the route option, both are cropmark sites. There are no NIDLs within the Route Option. There is a pinch point to the north of Inchbare where there are a number of Scheduled Monuments (crop mark sites) present. The Scheduled Monument must be avoided during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and designed landscapes where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include:	• 17 Listed Buildings (3 x A Listed, 10 x B Listed, and 4 x C Listed). There is one NIDL, Stracathro House, Stracathro House (NO66NW0187), remains of a 19th century designed landscape, present to the east of Inchbare. In addition, there are five assets recorded as 'Regionally Significant' in the HER within the route option. The majority of these are cropmark sites. There is a pinch point to the north of Inchbare where there are a number of Scheduled Monuments (crop mark sites) present. The Scheduled Monument must be avoided during the alignment design stage. Capo Plantation Barrow (SM 4444) (currently in forestry plantation) the barrow appears to have been constructed in reference to the River North Esk to the south and its relationship to the river is likely	• 3 Listed Buildings (2 x B listed and 1 x C Listed). In addition, there are two assets recorded as 'Regionally Significant' in the HER within the route option, both are cropmark sites. There are no NIDLs within the Route Option. There is a pinch point to the north of Inchbare where there are a number of Scheduled Monuments (crop mark sites) present. The Scheduled Monument must be avoided during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and designed landscapes where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include:	• 17 Listed Buildings (3 x A Listed, 10 x B Listed, and 4 x C Listed). There is one NIDL, Stracathro House, Stracathro House (NO66NW0187), remains of a 19th century designed landscape, present to the east of Inchbare. In addition, there are five assets recorded as 'Regionally Significant' in the HER within the route option. The majority of these are cropmark sites. There is a pinch point to the north of Inchbare where there are a number of Scheduled Monuments (crop mark sites) present. The Scheduled Monument must be avoided during the alignment design stage. Capo Plantation Barrow (SM 4444) (currently in forestry plantation) the barrow appears to have been constructed in reference to the River North Esk to the south and its relationship to the river is likely	• 3 Listed Buildings (2 x B listed and 1 x C Listed). In addition, there are two assets recorded as 'Regionally Significant' in the HER within the route option, both are cropmark sites. There are no NIDLs within the Route Option. There is a pinch point to the north of Inchbare where there are a number of Scheduled Monuments (crop mark sites) present. The Scheduled Monument must be avoided during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and designed landscapes where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include:

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	• Scheduled Monument, Gallows Knap, Barrow (SM 6366) (currently in forestry plantation), north of the route option. • Scheduled Monuments, Capo Plantation, Long Barrow (SM 4444) and Witch Hillock, Burial Cairn (SM 4823) (currently in forestry plantation), south of the route option. • Fasque House GDL (GDL 178) and associated Listed Buildings, to the north of the route option. • Stracathro NIDL (NO66NW0187) and Listed Buildings, to the south of the route option. The Scheduled Monument, and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069) lies c.3.5km north of the route option. These are two of the most impressive Iron Age forts in Scotland and are nationally	to be a key aspect of its setting and this will be a key consideration during the alignment design stage. Category A Listed, Stracathro House (LB 17803) and its associated Stracathro NIDL (NO66NW0187), are both present just at the southern edge of the route option. Views to the northwest from the House and NIDL are likely key aspects of their settings and will be a key consideration during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments where views out from, and to the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, Witch Hillock, burial mound and stone setting	• Scheduled Monument, Gallows Knap, Barrow (SM 6366) (currently in forestry plantation), north of the route option. • Scheduled Monuments, Capo Plantation, Long Barrow (SM 4444) and Witch Hillock, Burial Cairn (SM 4823) (currently in forestry plantation), south of the route option. • Fasque House GDL (GDL 178) and associated Listed Buildings, to the north of the route option. • Stracathro NIDL (NO66NW0187) and Listed Buildings, to the south of the route option. The Scheduled Monument, and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069) lies c.3.5km north of the route option. These are two of the most impressive Iron Age forts in Scotland and are nationally	to be a key aspect of its setting and this will be a key consideration during the alignment design stage. Category A Listed, Stracathro House (LB 17803) and its associated Stracathro NIDL (NO66NW0187), are both present just at the southern edge of the route option. Views to the northwest from the House and NIDL are likely key aspects of their settings and will be a key consideration during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments where views out from, and to the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, Witch Hillock, burial mound and stone setting	• Scheduled Monument, Gallows Knap, Barrow (SM 6366) (currently in forestry plantation), north of the route option. • Scheduled Monuments, Capo Plantation, Long Barrow (SM 4444) and Witch Hillock, Burial Cairn (SM 4823) (currently in forestry plantation), south of the route option. • Fasque House GDL (GDL 178) and associated Listed Buildings, to the north of the route option. • Stracathro NIDL (NO66NW0187) and Listed Buildings, to the south of the route option. The Scheduled Monument, and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069) lies c.3.5km north of the route option. These are two of the most impressive Iron Age forts in Scotland and are nationally

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	renowned visitor sites. Views out from these monuments, and between, them are important and will be a key consideration during the alignment stage.	(SM 4823) and Gallows Knap, Barrow (SM 6366) (both currently in forestry plantation), north of the route option. • Scheduled Monument, Tower of Johnston Cairn and Tower (SM 6435), south of the route option. The Scheduled Monument and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069) lies c.3.5km north of the route option. These are two of the most impressive Iron Age forts in Scotland and are nationally renowned visitor sites. Views out from these monuments, and between, them are important and will be a key consideration during the alignment stage.	renowned visitor sites. Views out from these monuments, and between, them are important and will be a key consideration during the alignment stage.	(SM 4823) and Gallows Knap, Barrow (SM 6366) (both currently in forestry plantation), north of the route option. • Scheduled Monument, Tower of Johnston Cairn and Tower (SM 6435), south of the route option. The Scheduled Monument, and Historic Environment Scotland Property in Care (PiC), The Brown and White Caterthuns Hillforts (SM 90069) lies c.3.5km north of the route option. These are two of the most impressive Iron Age forts in Scotland and are nationally renowned visitor sites. Views out from these monuments, and between, them are important and will be a key consideration during the alignment stage.	renowned visitor sites. Views out from these monuments, and between, them are important and will be a key consideration during the alignment stage.
People	<u>Settlements</u> This route is relatively sparsely settled however the OHL within this route would be visible in	<u>Settlements</u> This route is relatively sparsely settled however the OHL within this route would be visible in	<u>Settlements</u> This route would follow either route C1 or C3 and from Belliehill and Tigerton to	<u>Settlements</u> Within the southern section of this route around Belliehill, there are a few scattered	<u>Settlements</u> This section is relatively sparsely settled however the OHL is likely to be visible in

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	close proximity views from a number of residential properties that form pinch points. These pinch points properties include those at the southern end of the route between West Muir and Langhaugh, properties at Nether Belliehill and Mill of Balrownie, and properties around Inchbare and Westside. Visual There will be views of the OHL from a number of roads that pass through the route however these views will be fleeting when experienced by vehicle users. In wider views across the study area, intervisibility will be reduced due to the lower lying landform of the route and lack of hill summits which will reduce the potential of the OHL being visible in longer distance views.	close proximity views from a number of residential properties along the route, including properties immediately north-west of North Water Bridge and properties at Hatton and Mains of Newton. Visual There is the potential for visual cumulative effects as the OHL would be close to the existing OHL that defines the south edge of this route option, resulting in an increased number of vertical man-made elements within the landscape that would be visible to surrounding visual receptors including residents, road users and recreational users. In wider views across the study area, intervisibility will be reduced due to the lower lying landform of the route and lack of hill summits which will reduced the potential of the OHL being visible in longer distance views.	Sauchieburn. From here route C1.2 turns east and passes between Pitgarvie Wood to the west and Denlethen Wood to the east. This section is relatively open and offers flexibility for routeing the OHL however there is a pinch point between residential properties at Mill of Thornton and Mill of Barnes which will require careful consideration as these properties are likely to have close proximity views of the OHL. Further north-east, there is a second narrower pinch point between properties at Blackiemuir and Thornton Castle where the OHL would be visible in close proximity views from these properties. This constraint will also require careful consideration. Views of the OHL from Thornton Castle however are likely to be filtered by surrounding mixed policy woodland that is located outside but adjacent to the corridor.	properties that form a pinch point as the OHL is likely to be visible in close proximity views from most of these properties. At Balrownie, the route joins either route C1 or C3 and would have the same opportunities and constraints as these routes for the remainder of route C2. Visual There will be views of the OHL from a number of roads that pass through the route however these views will be fleeting when experienced by vehicle users. In wider views across the study area, intervisibility will be reduced due to the lower lying landform of the route and lack of hill summits which will reduce the potential of the OHL being visible in longer distance views.	close proximity views from a number of scattered residential properties along the route. Visual The southern end of this route crosses over elevated ground in comparison to alternative routes in Section C, which would increase visibility of the OHL from the wider landscape.

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
			Visual There will be views of the OHL from a number of roads in the route however these views will be fleeting when experienced by vehicle users. In wider views across the area, intervisibility will be reduced due to the lower lying landform of the route and lack of hill summits which will reduce the potential of the OHL being visible in longer distance views.		
Landscape	Designations No interaction with any national or local landscape designations. Landscape Character This route is located within the Broad Valley Lowlands – Tayside LCT and the Broad Valley Lowlands – Aberdeenshire LCT. The route is also located within the central part of Strathmore. Generally this route runs through open farmland and	Designations No interaction with any national or local landscape designations. Landscape Character The majority of this route is located within the Broad Valley Lowlands – Aberdeenshire LCT. The route is also located within the central part of Strathmore. This route follows C1 through the pinch points caused by pockets and belts of mixed	Designations No interaction with any national or local landscape designations. Landscape Character This route is located within the Broad Valley Lowlands – Aberdeenshire LCT. The route is also located within the central part of Strathmore. This route generally follows the grain of the landscape and offers flexibility to avoid features that contribute to	Designations No interaction with any national or local landscape designations. Landscape Character This route is located within the Broad Valley Lowlands – Tayside LCT. The route is also located within the central part of Strathmore. The southern end of this route crosses mixed woodland at Keepers Wood and Belliehill Wood at the southern end of	Designations No interaction with any national or local landscape designations. Landscape Character This route is located within the Broad Valley Lowlands – Tayside LCT and the Broad Valley Lowlands – Aberdeenshire LCT. The route is also located within the central part of Strathmore. The route crosses Edzell Wood, comprising commercial

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	follows the grain of the landscape. There is a pinch point near Little Brechin caused by pockets of mixed woodland which contribute to local landscape character. Therefore there is potential for effects on mixed woodland as a landscape feature from felling. There may be possibility to cross through an area of recently cleared or windblown trees to reduce the loss of mixed woodland in this area. The route passes across belts of woodland which would require some felling. A pinch point is created by the settlements at Inchbare and Auchenreoch, and the West Water. East of the River North Esk, the route passes through commercial plantations and more open farmland with flexibility for routeing.	woodland near Little Brechin and at Inchbare. These areas of woodland contribute to local landscape character. The section of the route between Inchbare and Northwater Bridge route follows the sensitive river valley landscape of the River North Esk. The North Esk and the A90, as well as properties in the area, would likely constrain much of this route. There is also the potential for cumulative effects on landscape character as the OHL would be close to the existing OHL that defines the south edge of this route option, resulting in an increased infrastructural influence on landscape character.	landscape character including pockets of deciduous or mixed woodland.	the section which are features that contribute to local landscape character. As such, careful consideration will be required to minimise tree loss as far as possible. Where the route joins either route C1 or C3 at Balrownie it would have the same opportunities and constraints as these routes for the remainder of Route C2.	forestry plantation, located to the south of Edzell. Beyond Edzell, a belt of deciduous woodland along the River North Esk extends across the entire width of the route, forming a constraint as deciduous woodland is considered to be a landscape feature that contributes to local landscape character. Careful consideration to reduce woodland loss as far as possible will be required.
Land Use	<u>Agriculture</u> Around 60% of land in Route C1 is Class 2 (capable of producing a wide range of	<u>Agriculture</u> Around 80% of land in Route C1.1 is Class 2 (capable of producing a wide range of	<u>Agriculture</u> Almost 100% of land in Route C1.2 is Class 2 (capable of producing a wide range of	<u>Agriculture</u> Around 70% of land in Route C2 is Class 2 (capable of producing a wide range of	<u>Agriculture</u> Around 30% of land in Route C3 is Class 2 (capable of producing a wide range of

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry There are areas of woodland as listed on the NFI across the route, these include areas in the south of the route option near Little Brechin, and in the centre near Northgate. In the north, Pitgarvie Wood and Greenbottom Wood cover large areas of the route. Woodland near Little Brechin and Northgate effectively spans the width of the route option and so may be affected. Recreation There is a core path which passes through the southern part of the route at Parkside leading to Pittendriech. A core path is located in the central part of the route at Westside and passes into route C3. Infrastructure & Planning	crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry Route C1.1 crosses large areas of woodland as listed on the NFI throughout the route. In the centre of the route, near North Water Bridge an area of woodland stretches across the width of the route. To the west of this woodland there is another area of woodland that covers half of the route, as well as a narrow belt of woodland running along the southern section of the route. There are also several narrow belts of woodland in the north of the route. However, none of these are likely to be affected. Recreation There are no core paths located within the route. Infrastructure & Planning	crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry An area of woodland as listed on the NFI stretches across the width of route C1.2 north of Luthermuir. There are small areas of woodland at Mill of Thornton, Blackiemuir and Oatyhill. Recreation There are no core paths located within the route. Infrastructure & Planning The A90 dual carriageway passes through the eastern edge of the route where route C1.2 and C1.1 adjoin. A planning application has been submitted for the development of seven dwellinghouses on Caldhame Wood School Road in Luthermuir (APP/2021/1563). A	crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry Woodland covers the width of the route in the southern section near Balnamoon which may be affected. Recreation There are no core paths located within the route.	crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry Edzell Wood (consisting of conifer and a band of broadleaved woodland (southwest of Edzell Wood) stretch across the width of route C3 in the centre of the route which are likely to be affected. There are several smaller areas of woodland in the south of the route between Kirkton of Menmuir and Black Muir, and Eslie Moss in the north of the route. Recreation A core path spans the width of the route and passes into route C1 at Edzell Wood. Infrastructure & Planning A planning application has been approved for a residential development east of Edzell at the former Edzell Airbase

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	A planning application has been approved for a residential development east of Edzell at the former Edzell Airbase (APP/2012/0037). This proposed development covers part of route C1 in the centre of the west side.	The A90 dual carriageway and the East Coast Main line pass through the route in a south-east to north-west orientation. A planning application has been approved for a roadside services development adjacent to the A90 at Laurencekirk, in the northern part of the route.	planning application has been approved for the erection of 200kW Ground Mounted Solar PV Array north of Blackiemuir (APP/2022/2042) in the north of route C1.2.		(APP/2012/0037) within the route option.
Technical Considerations	<u>All Relevant Criteria</u> The route passes near the disused Edzell Airfield which has a likelihood of unexploded ordnance (UXOs) associated with Second World War bombing. The number of angle supports on all section C routes are comparable. Throughout section C, the routes start to interface with urban areas such as Inchbare, Edzell and Laurencekirk, which would result in the requirement for numerous angle supports. All routes in Section C interact with metallic pipelines and	<u>All Relevant Criteria</u> Route C1.1 requires a major crossing to over sails the East Coast Main Line railway and the A90 dual carriageway, south west of Laurencekirk. There is an approximate distance of 3.1km between the A90 and rail crossings, which would require two scaffolding structures to be installed during construction stringing works. Route C1.1 passes through a floodplain at the River North Esk spanning approximately 3.2km which would require at least multiple structures to be situated within the floodplain.	<u>All Relevant Criteria</u> The route passes near the disused Edzell Airfield which has a likelihood of unexploded ordnance (UXOs) associated with Second World War bombing. The number of angle supports on all section C routes are comparable. Throughout section C, the routes start to interface with urban areas such as Inchbare, Edzell and Laurencekirk, which would result in the requirement for numerous angle supports. There is an operational wind turbine located on the western	<u>All Relevant Criteria</u> The route passes near the disused Edzell Airfield which has a likelihood of unexploded ordnance (UXOs) associated with Second World War bombing. The number of angle supports on all section C routes are comparable. Throughout section C, the routes start to interface with urban areas such as Inchbare, Edzell and Laurencekirk, which would result in the requirement for numerous angle supports. All routes in Section C interact with metallic pipelines and	<u>All Relevant Criteria</u> The route passes near the disused Edzell Airfield which has likelihood of unexploded ordnance (UXOs) associated with Second World War bombing. The number of angle supports on all section C routes are comparable. A consented wind turbine is located to the north of Route C3 at Wellsden. There is also a consented wind turbine located on the western edge of the route at Moss-side of Esslie. An operational wind turbine is

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	cross or run parallel with the National Grid pipe network. Route C1 passes parallel to a National Grid pipeline for 1.6km South of Edzell Wood. Route lengths in section C are considered comparable with the shortest route length being C1 at approximately18.3km.	Route C1.1 has the least number of angle supports over its route. Throughout section C, the routes start to interface with urban areas such as Inchbare, Edzell and Laurencekirk, which would result in the requirement for numerous angle supports. All routes in Section C interact with metallic pipelines and cross or run parallel with National Grid pipe network. Route C1.1 crosses an INEOS pipeline. Route lengths in section C are considered comparable with the longest route length being C1.1 at approximately 18.7km.	edge of the route at Brigton Farm. All routes in Section C interact with metallic pipelines and cross or run parallel with the National Grid pipe network. Route lengths in section C are considered comparable.	cross or run parallel with the National Grid pipe network. Route lengths in section C are considered comparable.	located within the route at Steelstrath Farm. Throughout section C, the routes start to interface with urban areas such as Inchbare, Edzell and Laurencekirk, which would result in the requirement for numerous angle supports. All routes in Section C interact with metallic pipelines and cross or run parallel with the National Grid pipe network. Route lengths in section C are considered comparable.
Cost Considerations	<u>Capital and Operational Cost</u> Route C1 has the lowest anticipated cost of all the options in section C. All routes are of similar length and have similar woodland felling and compensation requirements.	<u>Capital and Operational Cost</u> Route C1.1 is predicted to be approximately a 5% higher cost than C1. All routes are of similar length and have similar woodland felling and compensation requirements, although route	<u>Capital and Operational Cost</u> Route C1.2 is predicted to be approximately a 5% higher cost than C1. All routes are of similar length and have similar woodland felling and compensation requirements.	<u>Capital and Operational Cost</u> Route C2 is predicted to be approximately a 5% higher cost than C1. All routes are of similar length and have similar woodland felling and compensation requirements.	<u>Capital and Operational Cost</u> Route C3 is predicted to be approximately a 5% higher cost than C1. All routes are of similar length and have similar woodland felling and compensation requirements.

Topic	Route C1	Route C1.1	Route C1.2	Route C2	Route C3
	All routes are within close proximity to existing public highways and can be considered similar for new access track construction with the exception of route C1.2. Routes C1, C1.2 and C2 have a similar number of distribution OHL crossings.	C1.1 has the most felling and compensation requirements. All routes are within close proximity to existing public highways and therefore all route options can be considered similar for new access track construction with the exception of route C1.2. Route C1.1 has more major crossings which would require scaffolding and possible road closures during construction.	Route C1.2 has limited existing access tracks and therefore would incur greater costs for new access track construction. Route C1.2has the highest number of distribution OHL crossings.	All routes are within close proximity to existing public highways except for route C1.2 and therefore all route options can be considered similar for new access track construction with the exception of route C1.2. Routes C1, C1.2 and C2 have a similar number of distribution OHL crossings.	All routes are within close proximity to existing public highways except for route C1.2 and therefore all route options can be considered similar for new access track construction with the exception of route C1.2. C3 has the lowest number of distribution OHL crossings. Route C3 passes through an area which has a planning application submitted for a major recreational and housing estate.

5.4.1 Section Summary

Route C3 includes the River North Esk and West Water Palaeochannels SSSI (south east of Edzell) which will be difficult to avoid. Given that this is a geological SSSI, any groundworks or access tracks are unlikely to be appropriate in this area. It is also constrained by Eslie Moss SSSI, a raised bog and has potential to affect ornithological interests of a larger number of sites than the other route options. There is little to distinguish in natural heritage terms between C1 and variations C1.1 and C1.2.

From a hydrology and flooding perspective, Routes C1.1, C1.2 and C2 are considered less preferable, crossing several major floodplains including those of the West Water and River North Esk. Routes C1 and C2 cross the West Water and River North Esk at locations with wide floodplains, but in the northern extent of these routes the floodplain is narrower and could be spanned.

Route C1 would be the preferred route option for Cultural Heritage in order to keep the OHL furthest away from the Caterthun Hillforts Scheduled Monument and Property in Care (PiC) and with a lower level of cultural heritage constraint overall than Route C1.1. Route C3 is the least preferred due to the proximity to the Caterthun Hillforts, it is considered that the impact on the setting of the Hillforts from this route option would be the highest.

Route C1 crosses lower lying landform than the other route options and avoids the more sensitive valley landscape of the River North Esk valley as well as higher land within the southern part Section C, reducing predicted long distance visibility of the OHL. There are some pinch points and potential impacts on views for Route C1 (and particularly for C1.2), but this remains the landscape and visual preference overall. Route C1 is the shortest option overall and takes the route away from the settlement at Laurencekirk. In addition, avoidance of areas of LEPO woodland would be more challenging with Route C2 as well as areas of woodland which span Route C3.

On balance Route C1 is preferred having regard to the environmental criteria.

Table 5.6a – Environmental RAG Rating Table for Section C of the OHL route

Route	RAG Impact Rating - Environmental														
	Natural Heritage					Cultural Heritage		People			Landscape		Land Use		
	Designations	Protected Species	Habitats	Geology, Hydrology and Hydrogeology	Ornithology	Designations	Cultural Heritage Assets	Settlements	Visual	Physical Effects	Designations	Character	Agriculture	Forestry	Recreation
C1	M	L	L	M	M	M	L	L	M	L	L	M	M	L	L
C1.1	M	L	L	M	M	M	M	L	M	L	L	M	M	M	M
C1.2	M	L	L	M	M	L	L	L	M	L	L	M	M	L	M
C2	M	L	L	M	M	M	L	L	M	L	L	M	M	L	L
C3	H	L	L	M	M	M	L	L	M	L	L	M	L	M	M

The majority of the constraints identified within the preferred route option could be avoided and where this is not possible mitigated by careful design, micro-siting and the implementation of good practice construction techniques. Further survey work would be required to inform an appropriate alignment and minimise environmental effects where possible.

Table 5.6b – Engineering RAG Rating Table for Section C of the OHL route

Route	RAG Impact Rating - Engineering													
	Major Crossings	Minor Roads	Elevation	Slope	UXO	Flooding	Peatland	Access	Angle Supports	Windfarms	Communication Masts	Urban Areas	Metallic Pipes	Lengths
C1	L	M	L	L	M	L	L	L	M	L	L	M	M	L
C1.1	H	M	L	L	L	M	L	L	L	L	L	M	M	M
C1.2	L	M	L	L	M	L	L	L	M	L	L	M	M	M
C2	L	M	L	L	M	L	L	L	M	L	L	M	M	M
C3	L	L	L	L	M	L	L	L	M	L	L	M	M	M

From a technical perspective and based upon the RAG ratings applied, there is relatively little to distinguish in technical terms. Route C1 is the shortest route and avoids the major road and rail crossings associated with Route C1.1 and the wide flood plain that this route option would need to cross. Route C1 is the preferred route option overall on engineering criteria / technical factors.

For the economic appraisal, all route options have been allocated a Lower constraint RAG rating (most preferred) and have similar costs. Route C1 is the preferred option from a cost perspective as it has the lowest predicted cost due to its shortest overall length and relatively good road access.

Table 5.6c – Economic RAG Rating Table for Section C of the OHL route

Route	RAG Impact Rating – Cost	
	Capital	Operational
C1	L	L
C1.1	L	L
C1.2	L	L
C2	L	L
C3	L	L

5.5 Study Area Section D – Laurencekirk to Fiddes

Table 5.7 below presents a summary of the main considerations and findings of the comparative appraisal of route options D1, D1.1, D1.2, D2, D2.1 and D3 in Section D.

Table 5.7 – Summary of Comparative Appraisal for Section D

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
Natural Heritage	Designations Route D1 does not include any designated sites. The route has a limited number of woodlands listed on the AWI, all of which are LEPO and can be avoided during alignment design. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are almost exclusively those associated with intensive agricultural land management practices and are likely to be of limited ecological importance. Protected species assemblages may be present within the route. Route D1 contains habitats that have the potential to support populations of	Designations Route D1.1 does not include any designated sites. The route has a limited number of woodlands listed on the AWI, all of which are LEPO and can be avoided during alignment design. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route D1. Protected species assemblages are likely to be similar to Route D1. Route D1.1 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC.	Designations Route D1.2 does not support any designated sites or any woodlands listed on the AWI. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route D1. Protected species assemblages are likely to be similar to Route D1. Route D1.2 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route D1.2 does not coincide directly with	Designations Route D2 does not include any designated sites. The route has just one woodland listed on the AWI, which is LEPO and can be avoided during alignment design. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route D1. Protected species assemblages are likely to be similar to Route D1. Route D2 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route D2 does not	Designations Route D2.1 does not include any designated sites. The route has a small part of one woodland listed on the AWI, which is LEPO and can be avoided during alignment design. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route D1. Protected species assemblages are likely to be similar to Route D1. Route D2.1 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route D2.1 does not coincide directly with any SPA, however, it	Designations Route D3 does not include any designated sites. The route has just one woodland listed on the AWI, which is LEPO and can be avoided during alignment design. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route D1. Protected species assemblages are likely to be similar to Route D1. Route D3 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	Schedule 1 birds[19], and bird species that are red-listed in BoCC. Route D1 does not coincide directly with any SPA, however, it overlaps with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 13km to the south. In addition, Fowlsheugh SPA 5.4km to the east holds breeding herring gull, the foraging birds also potentially overlapping with the OHL. As such, Route D1 may affect foraging of the qualifying features of Montrose Basin SPA and Fowlsheugh SPA. Hydrology, Geology and Hydrogeology Route D1 crosses a wide section of floodplain south of Auchenblae with flooding from the Luther	Route D1.1 does not coincide directly with any SPA, however, it overlaps with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20 km) of the Montrose Basin SPA 15km to the south. In addition, Fowlsheugh SPA 5.4km to the east (as part of Route D1) holds breeding herring gull, the foraging birds also potentially overlapping with the OHL. As such, Route D1.1 may affect foraging of the qualifying features of Montrose Basin SPA and Fowlsheugh SPA. Hydrology, Geology and Hydrogeology Route D1.1 crosses a wide section of floodplain south of	any SPA, however, it overlaps with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 18km to the south. In addition, Fowlsheugh SPA 5.4km to the east holds breeding herring gull, the foraging birds also potentially overlapping with the OHL. As such, Route D1.2 may affect foraging of the SPA qualifying features of Montrose Basin SPA and Fowlsheugh SPA. Hydrology, Geology and Hydrogeology Route D1.2 crosses a wide section of floodplain south of Auchenblae with flooding from the	coincide directly with any SPA, however, it overlaps with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 12.8km to the south. In addition, Fowlsheugh SPA lies 5.4km to the north and east as part of Route D1 and holds breeding herring gull, the foraging birds also potentially overlapping with the OHL. As such, Route D2 may affect foraging associated with the qualifying features of Montrose Basin SPA and Fowlsheugh SPA. Hydrology, Geology and Hydrogeology The Luther Water runs through the west extent of this route parallel to	overlaps with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA over 12km to the south and Fowslheugh SPA 5.4km to the north and east which has herring gull as a qualifying feature. As such, Route D2.1 may affect foraging of the qualifying features of Fowlsheugh SPA and the Montrose Basin SPA. Hydrology, Geology and Hydrogeology The Luther Water runs through the west extent of this route parallel to the route direction, the floodplain is wide in places. There are opportunities within the route where an OHL could cross over fairly short distances to avoid	red-listed in BoCC. Route D3 does not coincide directly with any SPA, however, it overlaps with the core foraging ranges of qualifying features (pink-footed and/or greylag geese; 15-20km) of the Montrose Basin SPA 10.8km to the south. Fowlsheugh SPA 5.4km to the north and east holds breeding herring gull, the foraging birds also potentially overlapping with the OHL. As such, Route D3 may affect foraging of the qualifying features of Montrose Basin SPA and Fowlsheugh SPA. Hydrology, Geology and Hydrogeology The route crosses the Bervie Water, which has one small area

[19] Birds which receive special protection under the Wildlife & Countryside Act 1981

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	Water estimated at points to be up to approximately 600m wide. The route crosses several other watercourses such as the Ducat Water and Bervie Water, but none has significant floodplains within the route. The NatureScot (2016) mapping show no areas of peatland within any of the Section D routes. BNG The route does not support any designated sites. It is dominated by heavily modified agricultural habitat types which are likely to be of limited ecological value. As such, it should be possible to deliver BNG within the route.	Auchenblae with flooding from the Luther Water estimated to be up to approximately 600m wide. The route crosses several other watercourses such as the Ducat Water and Bervie Water, but none has significant floodplains within the route. BNG The route is very similar to Route D1, with no features identified at this stage which pose a risk to the BNG assessment. As such, it should be possible to deliver BNG within the route.	Luther Water estimated to be up to approximately 600m wide. The route crosses several other watercourses such as the Ducat Water and Bervie Water, but none has significant floodplains within the route. The route is very similar to Route D1, with no features identified at this stage which pose a risk to the BNG assessment. As such, it should be possible to deliver BNG within the route.	the route direction, the floodplain is wide in places. There are opportunities within the route where an OHL could cross over fairly short distances to avoid the majority of the floodplain. The route crosses the Bervie Water where the predicted floodplain is less than 350m. BNG The route is very similar to Route D1, with no features identified at this stage which pose a risk to the BNG assessment. As such, it should be possible to deliver BNG within the route.	the majority of the floodplain extent. BNG The route is very similar to Route D1, with no features identified at this stage which pose a risk to the BNG assessment. As such, it should be possible to deliver BNG within the route.	where the floodplain is approximately 350m wide, east of Fordoun; however this can be avoided. BNG The route is very similar to Route D1, with no features identified at this stage which pose a risk to the BNG assessment. As such, it should be possible to deliver BNG within the route.
Cultural Heritage	Designations and Cultural Heritage Assets There are no World Heritage Sites or	Designations and Cultural Heritage Assets	Designations and Cultural Heritage Assets	Designations and Cultural Heritage Assets	Designations and Cultural Heritage Assets There are no World Heritage Sites or	Designations and Cultural Heritage Assets

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	Scheduled Monuments within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 6 Listed Buildings (5 x B Listed and 1 X C Listed). In addition, there are five assets recorded as 'Regionally Significant' in the HER within the route option, all are cropmark sites. There are no NIDLs within the route option. Overall, there are few cultural heritage constraints within the route option. Two Category B Listed Country Houses, Kair House (LB 2842) and Redhall House (LB 9652), located within the route	There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 1 Scheduled Monument, and • 4 Listed Buildings (2 x B Listed and 2 x C Listed). In addition, there are four assets recorded as 'Regionally Significant' in the HER within the route option, the majority of which are cropmark sites. There are no NIDLs within the route option. Overall, there are few cultural heritage	There are no World Heritage Sites or Scheduled Monuments within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 6 Listed Buildings (5 x B Listed and 1 X C Listed). In addition, there are five assets recorded as 'Regionally Significant' in the HER within the route option, all are cropmark sites. There are no NIDLs within the route option. Overall, there are few cultural heritage	There are no World Heritage Sites or Scheduled Monuments within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 7 Listed Buildings (4 x B Listed and 3 x C Listed). In addition, there are four assets recorded as 'Regionally Significant' in the HER within the route option, all are cropmark sites. There are no NIDLs within the route option. Overall, there are few cultural heritage constraints within the route option.	Scheduled Monuments within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there is: • 1 Category B Listed Building. In addition, there are five assets recorded as 'Regionally Significant' in the HER within the route option, all are cropmark sites. There are no NIDLs within the route option. Overall, there are few cultural heritage constraints within the route option. Two Category B Listed Country Houses, Kair House (LB 2842) and Redhall House (LB 9652), located within the route	There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 1 Scheduled Monument; and • 7 Listed Buildings (6 x B Listed and 1 x C Listed). In addition, there are six assets recorded as 'Regionally Significant' in the HER within the route option, all are cropmark sites. There are no NIDLs or heritage assets recorded. One Category B Listed Country Houses, Kair House (LB 2842), located within the route

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	option appear to have open views out to the surrounding farmland that form key elements of their settings, and these will be taken into considered during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and designed landscape where views out from, and to the assets, are key elements of their settings and these will be key considerations during alignment design. These include: • Scheduled Monument, Fourdoun Homestead Moat (SM2231), north of the route option. • Scheduled Monuments, Montgoldrum Cairn (SM 4820), Montogoldum Cairn & Hut Circles (SM 4754), Hillhead Long	constraints within the route option. One Scheduled Monument, Fourdoun Homestead Moat (SM2231) present within the route option has open views out in all directions across open farmland. These views likely form a key element of its setting, and this will be taken into consideration during alignment design. Within the wider landscape surrounding the Route Option there are a number of designed landscape where views out from, and to the assets, are key elements of their settings and these will be a key consideration during alignment design. These include:	constraints within the route option. Two Category B Listed Country Houses, Kair House (LB 2842) and Redhall House (LB 9652), located within the route option appear to have open views out to the surrounding farmland that form key elements of their settings, and these will be taken into considered during alignment design. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and designed landscape where views out from, and to the assets, are key elements of their settings and these will	One Category B Listed Country Houses, Kair House (LB 2842), located within the route option appears to have open views out to the surrounding farmland that form key elements of Its settings, and this will be taken into considered during the alignment design stage. Within the wider landscape surrounding the Route there are a number of Scheduled Monuments and designed landscape where views out from, and to the assets, are key elements of their settings and these will be a key consideration during alignment design. These include: • Scheduled Monuments, Montgoldrum Cairn (SM 4820),	option appear to have open views out to the surrounding farmland that form key elements of their settings, and these will be taken into considered during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and designed landscape where views out from, and to the assets, are key elements of their settings and these will be key consideration during the alignment design. These include: • Scheduled Monuments, Montgoldrum Cairn (SM 4820), Montogoldum Cairn & Hut Circles (SM 4754), Hillhead Long Cairn (SM 4754), Cairn of	option appears to have open views out to the surrounding farmland that form key elements of Its settings, and this will be taken into considered during the alignment design stage. One Scheduled Monument, Erskine's Knap Burial Mound (SM 5168), stands within the route to the northwest of Laurencekirk. Wide views from the prehistoric burial mound, and intervisibility between this monument and other contemporary monuments outwith the route (i.e., Cairn of Shiels, Cairn (SM 5315) and Cairn of Arthurhouse (SM 3339)) are likely key elements of its setting. Views to and from the

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	Cairn (SM 4754) and Cairn of Arthurhouse (SM 3339), all south of the route option. • Arbuttnott House GDL (GDL 16) and associated listed buildings, south of the route option. • Glenbervie House GDL (GDL 194), and associated listed buildings, north of the route option.	• Glenbervie House GDL (GDL 194), and associated listed buildings, south of the route option. • Arbuttnott House GDL (GDL 16), and associated listed buildings, south of the route option.	be key consideration during the alignment design stage. These include: • Scheduled Monument, Fourdoun Homestead Moat (SM2231), north of the route option. • Scheduled Monuments, Montgoldrum Cairn (SM 4820), Montogoldum Cairn & Hut Circles (SM 4754), Hillhead Long Cairn (SM 4754) and Cairn of Arthurhouse (SM 3339), all south of the route option. • Arbuttnott House GDL (GDL 16), and associated listed buildings, south of the route option. • Glenbervie House GDL (GDL 194) and	Montogoldum Cairn & Hut Circles (SM 4754), Hillhead Long Cairn (SM 4754), Cairn of Arthurhouse (SM 3339) and Erskine's Knap Burial Mound (SM 5168), all south of the route option. • Glenbervie House GDL (GDL 194) and associated listed buildings, north of the route option. • Arbuthnott House GDL (GDL 16) and associated listed buildings, east of the route option.	Arthurhouse (SM 3339) and Erskine's Knap Burial Mound (SM 5168), all south of the route option. • Glenbervie House GDL (GDL 194) and associated listed buildings, north of the route option. • Arbuthnott House GDL (GDL 16), and associated listed buildings, east of the route option.	burial mound, and intervisibility between contemporary monument, will be a key consideration for alignment design. Within the wider landscape surrounding the Route there are Scheduled Monuments and designed landscapes where views out from, and to the assets, are key elements of their settings which will be a key consideration during alignment design. These include: • Scheduled Monuments, Montgoldrum Cairn (SM 4820), Montogoldum Cairn & Hut Circles (SM 4754), Hillhead Long Cairn (SM 4754), Cairn of Shiels, Cairn (SM 5315) and Cairn of Arthurhouse

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
			associated listed buildings, north of the route option.			(SM 3339), all south of the route. • Arbuthnott House GDL (GDL 16) and associated buuildings, south of the route. • Glenbervie House GDL (GDL 194) and associated listed buildings, north of the route.
People	Settlements The section of this route between Waulkmill and Auchenzeoch is relatively open and offers flexibility for routeing. The dog-leg turn north of Fordoun however is constrained by a pinch point created by residential properties at Pittengardner, along the minor road between Auchenblae and Fordoun and a former airfield immediately north-east. These properties are likely	Settlements In comparison to route D1, this route offers less flexibility due to a pinch point formed by residential properties at Pitrennie Mill and Mains of Fordoun as well as a number of further scattered residential properties at Crossroads and Brownmuir. These properties are likely to have close proximity views of the OHL.	Settlements Route D1.2 is a small deviation from route D1 from Oldcake to Wairds of Alpity. This route offers limited flexibility due to scattered individual residential properties, the existing OHL which limits space for routeing. There is also a single operational wind turbine. Visual	Settlements There is a pinch point at the southern end of the route, between residential properties at Kilnhill and Mains of Haulkerton, where the route passes between these properties and across a small pocket of mixed woodland. A second pinch point is formed by residential properties at Mill of Conveth and Oldtown, however there may be	Settlements This route comprises a small section between D1 and D2. It is sited in a generally open location and offers flexibility for routeing, avoiding the three residential properties at Pittarrow. Visual There will be views of the OHL from a number of roads that lead to and from Pittarrow however these views will be	Settlements The southern end of this route passes close to the settlement of Laurencekirk, between the A90 and the existing OHL line to the east. The existing OHL to the east along the eastern edge of Route D3 in combination with an additional OHL could result in cumulative visual effects from the

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	to have close proximity views of the OHL, as there are limited features to filter or screen views from these properties. After the OHL crosses the A90 at Fordoun, the route is constrained by the Bervie Water and properties at Kair House and Mains of Kair. <u>Visual</u> After the OHL crosses the A90 at Fordoun, the route is constrained by rising landform to the east of Mains of Kair. The upper slopes of Mains of Kair should be avoided in order ensure the OHL is not visible along the skyline. The lower slopes of Mains of Kair however could provide an opportunity to backcloth the OHL against the western slopes of Mains of Kair.	Beyond Brownmuir, the route becomes more open with less constraints before joining the D1 route crossing the A90. <u>Visual</u> There will be views of the OHL from a number of roads that pass through the route, including the A90, however these views will be fleeting when experienced by vehicle users.	Cumulative visual effects on residential properties in this short section of the route should be considered due to the proximity of the existing OHL to these properties.	opportunity to avoid these properties by routeing the OHL over the East Coast Main Line railway and A90. <u>Visual</u> This route joins Route D1 at Fourdoun and is subject to the same constraints around Mains of Kair, including the rising landform of Mains of Kair. As with Route D1, however, the lower slopes of Mains of Kair could provide an opportunity to backcloth the OHL. There will be views of the OHL from a number of roads the pass through the route, including the A90, however these views will be fleeting when experienced by vehicle users.	fleeting when experienced by vehicle users.	eastern edge of Laurencekirk. Visual amenity of properties on the eastern edge of Laurencekirk and surrounding individual properties within this part of the route should be considered. Route D3 joins route D2 between Upper Powburn and Woodside of Waterlair, and would continue as part of route D1 as the section continues northwards. <u>Visual</u> There will be views of the OHL from a number of roads the pass through the route, including the A90, however these views will be fleeting when experienced by vehicle users.
Landscape	<u>Designations</u>	<u>Designations</u>	<u>Designations</u>	<u>Designations</u>	<u>Designations</u>	<u>Designations</u>

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	No interaction with any national or local landscape designations. Landscape Character The majority of this route is located within the Broad Valley Lowlands – Aberdeenshire LCT. The route is also located within the northern part of Strathmore. This route generally follows the grain of the landscape and offers flexibility to avoid features that contribute to landscape character including pockets of deciduous or mixed woodland.	The route is located approximately 700m from the Braes of the Mearns SLA (from the centre of the route to the closest part of the SLA) and is therefore likely to introduce effects on views from the SLA and the character setting of the SLA. The route is also located within the northern part of Strathmore. Landscape Character The majority of this route is located within the Broad Valley Lowlands – Aberdeenshire LCT. This route generally follows the grain of the landscape and offers flexibility to avoid features that contribute to landscape character including pockets of	No interaction with any national or local landscape designations. Landscape Character This route is located within the Coastal Farmed Ridges and Hills – Aberdeenshire LCT. The route is also located within the northern part of Strathmore. This route generally follows the grain of the landscape and offers flexibility to avoid features that contribute to landscape character including pockets of deciduous or mixed woodland.	No interaction with any national or local landscape designations. Landscape Character The majority of this route is located within the Broad Valley Lowlands – Aberdeenshire LCT. The route is also located within the northern part of Strathmore. This route generally follows the grain of the landscape and offers flexibility to avoid features that contribute to landscape character including pockets of deciduous or mixed woodland.	No interaction with any national or local landscape designations. Landscape Character This route is located within the Broad Valley Lowlands – Aberdeenshire LCT. The route is also located within the northern part of Strathmore. This route offers flexibility to avoid features that contribute to landscape character including pockets of deciduous or mixed woodland.	No interaction with any national or local landscape designations. Landscape Character The majority of this route is located within the Coastal Farmed Ridges and Hills – Aberdeenshire LCT. The route is also located within the northern part of Strathmore. Route D3 generally follows the grain of the landscape with flexibility for routeing along most of the route.

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
		deciduous or mixed woodland.				
Land Use	Agriculture Around 80% of land in route D1 is Class 2 (capable of producing a wide range of crops) or Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry There are small areas of woodland throughout Route D1. In the south, Cammackmuir Plantation covers around half of the width of the route and in the north, a narrow band of broadleaved woodland covers most of the width of the route east of Pitkselly. These are unlikely to be affected. Recreation	Agriculture Around 90% of land in route D1.1 is Class 2 or Class 3.1. Forestry There are small areas of mixed woodland in the centre of the route south east of Auchenblae. Recreation There are no core paths within the route. Infrastructure The A90 dual carriageway and the East Coast Main Line pass through the northern area of the route in a southwest – north east orientation.	Agriculture Around 80% of land in route D1.2 is Class 2 or Class 3.1. Forestry Small areas of woodland as described for Route D1. Recreation There are no core paths within the route.	Agriculture Almost 100% of land in route D2 is Class 2 or Class 3.1. Forestry Haulkerton Plantation (broadleaved woodland and replanted ancient woodland) covers around half of the width of the route in the southern section of the route. Recreation There are no core paths within the route. Infrastructure The A90 dual carriageway and East Coast Main Line pass through the northern area of the route from Scotston.	Agriculture 100% of land in route D2.1 is Class 2. Forestry Plantation woodland as described for Route D2. Recreation There are no core paths within the route.	Agriculture Around 80% of land in route D3 is Class 2 or Class 3.1. Forestry There is a small area of mixed woodland in the southeast of the route. Recreation There are no core paths within the route.

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	There are no core paths within the route. Infrastructure The A90 dual carriageway and East Coast Main railway Line span the width of the route at Fourdoun.					
Technical Considerations	All Relevant Criteria The route requires major crossings to over sail the East Coast Main Line railway and the A90 dual carriageway. Both crossings are in close proximity to each other (min 90m & max 700m). All routes in Section D are orientated in an easterly direction to tie in to the new Fiddes substation and would cross the existing Kintore to Tealing (XT1/XT2) 275kV double circuit OHL and the Fiddes to Brechin (FB) 132kV single circuit OHL. The project would move spans of the XT1/XT2 circuit on to	All Relevant Criteria The route requires major crossings (as per Route D1). Tie in of the new OHL to Fiddes substation and crossings of existing transmission lines would be as described for Route D1. The route would have between 9 to 12 angle supports. The increase in support is due to routeing away from multiple identified constraints.	All Relevant Criteria The route requires major crossings (as per Route D1). Tie in of the new OHL to Fiddes substation and crossings of existing transmission lines would be as described for Route D1. The route would have between 9 to 12 angle supports. The increase in support is due to routeing away from multiple identified constraints.	All Relevant Criteria The route requires major crossings (as per Route D1). Tie in of the new OHL to Fiddes substation and crossings of existing transmission lines would be as described for Route D1. The route would have between 9 to 12 angle supports. The increase in support is due to routeing away from multiple identified constraints. There are two urban areas identified within	All Relevant Criteria The route requires major crossings (as per Route D1). Tie in of the new OHL to Fiddes substation and crossings of existing transmission lines would be as described for Route D1. The route would have between 9 to 12 angle supports. The increase in support is due to routeing away from multiple identified constraints. There are two urban areas identified within	All Relevant Criteria No major crossings are required for this option. Tie in of the new OHL to Fiddes substation and crossings of existing transmission lines would be as described for Route D1. Route D3 has the fewest angle supports (6). The increase in support is due to routeing away from multiple identified constraints. There are two urban areas identified within section D, Fordoun

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	flat formation structures and create a diamond crossing for the new build 400kV line to over sail and tie in at Fiddes. The route would have between 9 to 12 angle supports. The increase in support is due to routeing away from multiple identified constraints. There is an operational wind turbine located at the northern end of the route near Upper Pitforthie. There are two urban areas identified within Section D, Fordoun and Laurencekirk and a high number of dispersed dwellings. Routes D1 and D1.1 are furthest from the town of Laurencekirk. All routes in Section D interact with metallic pipelines and all sections cross National Grid, Shell	There is an operational wind turbine (West Cairnbeg) located within the western area of the route near Gallows Hill and another operational wind turbine located within the route at Fourdoun Sawmill. There are two urban areas identified within section D, Fordoun and Laurencekirk and a high number of dispersed dwellings. Routes D1 and D1.1 are furthest from the town of Laurencekirk. The village of Auchenblae is located just north of the route. All routes in Section D interact with metallic pipelines and all sections cross National Grid, Shell and INEOS's (D3x2) pipe networks.	There is an operational wind turbine located within the northern area of the route at Wairds of Alpity. There are two urban areas identified within section D, Fordoun and Laurencekirk and a high number of dispersed dwellings. All routes in Section D interact with metallic pipelines and all sections cross National Grid, Shell and INEOS's (D3x2) pipe networks. Route lengths in Section D are comparable.	section D, Fordoun and Laurencekirk and a high number of dispersed dwellings. All routes in Section D interact with metallic pipelines and all sections cross National Grid, Shell and INEOS's (D3x2) pipe networks. Route D2 has the shortest route length at approximately 13.5km.	section D, Fordoun and Laurencekirk and a high number of dispersed dwellings. All routes in Section D interact with metallic pipelines and all sections cross National Grid, Shell and INEOS's (D3x2) pipe networks. Route D2.1 has the longest route length at approximately 14.9km.	and Laurencekirk and a high number of dispersed dwellings. All routes in Section D interact with metallic pipelines and all sections cross National Grid, Shell and INEOS's (D3x2) pipe networks. Route lengths in Section D are comparable.

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	and INEOS's (D3x2) pipe networks. Route lengths in Section D are comparable.	Route lengths in Section D are comparable.				
Cost Considerations	<u>Capital and Operational Cost</u> Route D1 is approximately 5% (more costly) of the lowest cost option (Route D2). All routes have similar felling and compensation requirements. The option has one railway crossing and a similar number of interactions with gas pipelines to other routes. Route D1 has among the lowest number of distribution OHL crossings compared to the other options and a major crossing of the A90 dual carriageway. The route is in close proximity to existing public highways and therefore	<u>Capital and Operational Cost</u> Route D2 has the lowest cost option, however all other routes are approximately 10% of this anticipated cost. All routes have similar felling and compensation requirements. The option has one railway crossing and a similar number of interactions with gas pipelines to other routes. Route D1.1 has among the lowest number of distribution crossings compared to the other options and a major	<u>Capital and Operational Cost</u> Route D2 has the lowest cost option, however all other routes are approximately 10% of this anticipated cost. All routes have similar felling and compensation requirements. The option has one railway crossing and a similar number of interactions with gas pipelines to other routes. The option has a major crossing of the A90 dual carriageway. The route is in close proximity to existing	<u>Capital and Operational Cost</u> Route D2 is the lowest cost option. All routes have similar felling and compensation requirements. The option has one railway crossing and a similar number of interactions with gas pipelines to other routes. The option has a major crossing of the A90 dual carriageway. The route is in close proximity to existing public highways and therefore new access	<u>Capital and Operational Cost</u> Route D2 has the lowest cost option, however all other routes are approximately 10% of this anticipated cost. All routes have similar felling and compensation requirements. The option has one railway crossing and a similar number of interactions with gas pipelines to other routes. The option has a major crossing of the A90 dual carriageway. The route is in close proximity to existing public highways and therefore new access	<u>Capital and Operational Cost</u> Route D2 has the lowest cost option, however all other routes are approximately 10% of this anticipated cost. All routes have similar felling and compensation requirements and a similar number of interactions with gas pipelines. The route option is in close proximity to existing public highways and therefore new access track construction should be limited.

	Route D1	Route D1.1	Route D1.2	Route D2	Route D2.1	Route D3
	new access track construction should be limited.	crossing of the A90 dual carriageway. The route is in close proximity to existing public highways and therefore new access track construction should be limited.	public highways and therefore new access track construction should be limited.	track construction should be limited.	track construction should be limited.	

5.5.1 Section Summary

There are no material differences in the predicted level of ecological and ornithological constraint for the routes in Section D. The principal options D1, D1.1, D1.2 and D2.1 all cross wide floodplains south of Auchenblae associated with the Luther Water, which are up to 600m wide in places, and while these can be avoided with careful siting this floodplain makes these routes slightly less preferable than Routes D2 and D3.

Route D3 has a greater degree of constraint from cultural heritage designations than the other principal route options. Route D3 is the least preferred due to the potential impacts on the intervisibility between a cluster of archaeological features within the southern half of the route option (including Erskine's Knap Burial Mound).

Route D1 is considered preferable from a landscape and visual perspective as the route offers large stretches of open, low lying land and is located over 1km from the Braes of the Mearns SLA. The route is located at a greater distance from the existing OHL that extends along the eastern edge of Route D3 and also offers opportunities to back-cloth the OHL against the lower slopes of Mains of Kair.

It is also considered that D1 is preferred in land use terms, as it allows a more direct crossing of the A90 and East Coast Main Line railway and generally keeps the OHL away from concentrations of settlements, particularly around Laurencekirk and there is opportunity within the route to avoid areas of woodland.

On balance, Route D1 is preferred having regard to the environmental criteria.

Table 5.8a – Environmental RAG Rating Table for Section D of the OHL route

Route	RAG Impact Rating – Environmental														
	Natural Heritage					Cultural Heritage		People			Landscape		Land Use		
	Designations	Protected Species	Habitats	Geology, Hydrology and Hydrogeology	Ornithology	Designations	Cultural Heritage Assets	Settlements	Visual	Physical Effects	Designations	Character	Agriculture	Forestry	Recreation
D1	L	L	L	M	M	L	L	L	M	L	L	M	M	L	M
D1.1	L	L	L	M	M	L	L	L	M	L	M	M	M	L	M
D1.2	L	L	L	L	M	M	L	L	M	L	L	M	M	L	M
D2	L	L	L	L	M	L	L	L	M	L	L	M	M	L	M
D2.1	L	L	L	M	M	L	L	L	M	L	L	M	M	L	M
D3	L	L	L	L	M	M	L	L	M	L	L	M	M	L	L

The majority of the constraints identified within preferred route option could be avoided and where this is not possible mitigated by careful design, micro-siting and the implementation of good practice construction techniques. Further survey work would be required to inform an appropriate alignment and minimise environmental effects where possible.

From a technical perspective and based upon the RAG ratings applied, route option D3 appears to have the lowest impact and risk of constraints with fewer major crossings. However, from a technical perspective route D1 is preferred overall due to a lower interface with residential and commercial properties.

Table 5.8b – Engineering RAG Rating Table for Section D of the OHL route

Route	RAG Impact Rating – Engineering													
	Major Crossings	Minor Roads	Elevation	Slope	UXO	Flooding	Peatland	Access	Angle Supports	Windfarms	Communication Masts	Urban Areas	Metallic Pipes	Lengths
D1	H	M	L	L	L	L	L	L	M	L	L	M	M	M
D1.1	H	M	L	L	L	L	L	L	M	L	L	L	M	M
D1.2	H	M	L	L	L	L	L	L	M	L	L	M	M	M
D2	H	M	L	L	L	L	L	L	M	L	L	M	M	L
D2.1	H	M	L	L	L	L	L	L	M	L	L	M	M	M
D3	H	L	L	L	L	L	L	L	L	L	L	M	M	M

For the economic appraisal, all route options have been allocated a Lower constraint RAG rating (most preferred). From a cost perspective, route D1 is preferred which is approximately 5% of the lowest cost option and the appraisal did not identify any clear differences between the options on cost criteria. There are no features on any specific route that would drive a higher operational cost. The preference is therefore principally driven by the technical and environmental constraints.

Table 5.8c – Economic RAG Rating Table for Section D of the OHL route

Route	RAG Impact Rating – Cost	
	Capital	Operational
D1	L	L
D1.1	L	L
D1.2	L	L
D2	L	L
D2.1	L	L
D3	L	L

5.6 Study Area Section E – Fiddes to River Dee

Table 5.9 below presents a summary of the main considerations and findings of the comparative appraisal of route options E1, E1.1 and E1.2 in Section E.

Table 5.9 – Summary of Comparative Appraisal for Section E

Topic	Route E1	Route E1.1	Route E1.2
Natural Heritage	Designations A very short stretch of the River Dee SAC lies within Route E1, at its northern edge. The route supports a number of woodlands listed on the AWI, all of which are LEPO. Three of these features (Carmont Wood, woodland at Nether Swanley, and Craiglug Wood) span the route meaning an OHL would result in some tree removal. Careful consideration of the OHL design would be needed at these points to reduce the extent of tree felling, habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are almost exclusively those associated with intensive agricultural land management practices and are likely to be of limited ecological importance. Protected species assemblages may be present within the route. Route E1 contains habitats that have the potential to support populations of Schedule 1 birds[20], and bird species that are red-listed in BoCC. The Route also coincides with higher levels of wader sensitive habitat (and related high relative abundance). Route E1 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying	Designations The Elfhill LNCS is present within the route at Carmont and creates a pinch point at which careful design would be required to avoid direct impacts upon this site. There are no other designated sites within Route E1.1. The route supports a number of woodlands on the AWI, all of which are LEPO and can easily be avoided during alignment design. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route E1.Protected species assemblages may be present within the route. Route E1.1 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Fowlsheugh SPA lies 8km to the east of Route E1.1 with breeding herring gull as a qualifying species. The north section of Route E1.1 overlaps with the core foraging ranges of qualifying features (greylag geese; 15-20km) of the Loch of Skene SPA 9.1km to the north (as part of Route E1). As such, Route E1 may affect foraging of the	Designations The River Dee SAC spans Route E1.2 at its northern extent and a further tributary of the SAC runs along the western edge of the route. The River Dee LNCS spans the route at its northern edge, and some tree removal would be required and would result in habitat loss and fragmentation. Careful design targeting areas where the tree cover is narrower would reduce the number of trees that would need to be felled should this route be taken forward. The route supports a number of woodlands listed on the AWI, the majority of which are LEPO. A block of Ancient Woodland is present on the western boundary and can be easily avoided during alignment design. One block of LEPO woodland (Kirkton Wood) spans the corridor, adjacent to the B9077 road. Although this woodland is very narrow at this location, some tree removal will be required; careful alignment design would be required to reduce direct impacts through tree felling, habitat loss and fragmentation Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route E1.

[20] Birds which receive special protection under the Wildlife & Countryside Act 1981

Topic	Route E1	Route E1.1	Route E1.2
	features (greylag geese; 15-20km) of the Loch of Skene SPA 9.1km to the north of the northern most parts of the Route. In addition, Fowlsheugh SPA, 6km to the east, holds breeding herring gull, the foraging birds also potentially overlapping with the project works. As such, Route E1 may affect foraging of the qualifying features of Fowlsheugh SPA and the Loch of Skene SPA. Hydrology, Geology and Hydrogeology The route should seek to avoid the Forthie Water floodplain by following the east of the route before it crosses the A90 at Clearymuir. Flooding is very localised along this reach of the Forthie Water and can be easily avoided within the route . The route crosses through small, localised areas of Class 1, 3, 4 and 5 peatland. There is scope within the route to avoid or span the areas of peat. BNG The route supports a very short stretch of internationally designated site; this is a riverine SAC which would require to be crossed by the alignment, although this would be more likely to be within the adjoining Route F1. Areas of LEPO woodland will be more challenging to avoid, and some felling may be required, although these habitats are not considered to be irreplaceable in the BNG assessment. The route is otherwise dominated by heavily modified agricultural habitat types which are likely to be of limited ecological value. As such, it should be possible to deliver BNG within the route.	qualifying features of Fowlsheugh SPA and the Loch of Skene SPA. Hydrology, Geology and Hydrogeology The route crosses through small, localised areas of Class 1, 3, 4 and 5 peatland. These areas of peat can generally be avoided. There are some very wide sections of peatland (600m-700m wide) within the route but there is scope within the route to avoid these areas of peat with careful siting. BNG The route supports a single designated site (Elfhill LNCS) which is likely to support habitats of ecological value relevant to the BNG assessment. Like Route E1, I route is otherwise dominated by habitat types likely to be of limited ecological value. As such, assuming impacts to the LNCS can be avoided, it should be possible to deliver BNG within the route.	Protected species assemblages are likely to be similar to Route E1. Route E1.2 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route E1.2 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (greylag geese; 15-20 km) of the Loch of Skene SPA 9.5km to the north of the northernmost section. Fowlsheugh SPA lies 6 km to the east of Route E1.2 (as part of Route E1) and has as a qualifying feature breeding herring gull, the foraging birds also potentially overlapping with the project works. As such, Route E1.2 may affect foraging of the qualifying features of the Fowlsheugh SPA and the Loch of Skene SPA. Hydrology, Geology and Hydrogeology The route crosses a wide floodplain of the River Dee at the north extent of the route section, with an estimated floodplain over approximately 500m wide. The route crosses through areas of Class 3, 4 and 5 peatland, with most of the peat across the route being Class 4. There is one particularly large section of soils containing some peat (mainly Class 4 soils) spanning the central area of the

Topic	Route E1	Route E1.1	Route E1.2
			route that cannot be avoided and due to its width, it would not be possible to oversail. <u>BNG</u> The route supports a more extensive stretch of the River Dee SAC than Route E1; this riverine SAC would require to be crossed by the alignment, and careful design would be necessary to reduce any tree removal. The adjacent River Dee LNCS is likely to support habitats of ecological value relevant to BNG assessment. Similar to Route E1, the route is otherwise dominated by habitat types likely to be of limited ecological value. It may not be possible to avoid all impacts to the LNCS; despite this, it should be possible to deliver BNG within the route.
Cultural Heritage	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites or Listed Buildings within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 2 Scheduled Monuments. In addition, there are two assets recorded as 'Regionally Significant' in the HER within the route option. One (NO88SW0021) is a cropmark site; the other Newlands hut circles, cairns and field banks (NO89SW37) stretches across a large part of the route option to the	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any GDL, Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 2 Scheduled Monuments, and • 11 Listed Buildings (3 x B Listed and 8 x C Listed). In addition, there is one asset recorded as 'Regionally Significant' in the HER within the route	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the Route Option, and no part of the Route Option crosses any Inventory Historic Battlefield, or Conservation Area. Within the route option there are: • 6 Scheduled Monuments, • 7 Listed Buildings (5 x B Listed and 2 x C Listed), and • 1 GDL (Park House GDL (GDL 309)).

Topic	Route E1	Route E1.1	Route E1.2
	south of the public road between Newlands and South Brachmount creating a pinch point in this area. An attempt should be made to avoid the 'Regionally Significant' asset where possible during the alignment design stage. The route option clips the east edge of NIDL, Durris House (NO79NE0068) and attempt should be made to avoid the NIDLs where possible during the alignment design stage. The scheduled monuments are along the periphery of the Route Option and are unlikely to represent appreciable constraints. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, Montgoldrum, Cairn and Hut Circles (SM 4754), Montgoldrum, Cairn (SM 4830), south of the route option, • Scheduled Monument, Blackhill Wood Long Cairn and Cairn E of (SM 4509), west of the route option. Scheduled Monument, Bruxie Hill Long Cairn (SM 4574), east of the route option.	option, Newlands hut circles, cairns, and field banks (NO89SW37). This asset stretches across a large part of the route option to the south of the public road between Newlands and South Brachmount creating a pinch point in this area. An attempt should be made to avoid the 'Regionally Significant' asset where possible during the alignment design stage. The route option clips the east edge of NIDL, Durris House (NO79NE0068) and attempt should be made to avoid the NIDLs where possible during the alignment design stage. All of the listed buildings are located within Drumlithie village and have localised setting. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, Montgoldrum, Cairn and Hut Circles (SM 4754), Montgoldrum, Cairn (SM 4830), south of the route option, • Scheduled Monument, Blackhill Wood Long Cairn and Cairn E of (SM 4509) and Bruxie Hill Long Cairn (SM 4574), both east of the route option.	In addition, there is one asset recorded as 'Regionally Significant' in the HER within the route option, St Congalls Church (NO79NE0002) remains of previous church (also Category C Listed Building) and site of an earlier church, which survive adjacent to Catgeory B Listed Fraser Burial Isle (LB 2985) and south of the River Dee. There are no NIDLs within the route option. Park House GDL (GDL 309) stretches across the whole of the route option at its northern end and the route option intersects the GDL. This forms a significant constraint across the width of the route option. There is a pinch point at Upper Balfour, Cairns, House & Field System (SM 7879). The Scheduled Monument must be avoided during the alignment design stage. One Scheduled Monument, Castle Hill, Motte (SM 4713), stands within the route option, south of the River Dee. Views afforded from the motte along and across the River Dee are likely a key element of its setting and this will be a key consideration during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets, are key elements of their

Topic	Route E1	Route E1.1	Route E1.2
		• Glenbervie House GDL (GDL 194) and associated listed buildings, north of the route option.	settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, Montgoldrum, Cairn and Hut Circles (SM 4754), Montgoldrum, Cairn (SM 4830), south of the route option, • Scheduled Monument, Blackhill Wood Long Cairn and Cairn E of (SM 4509), west of the route option, • Scheduled Monument, Bruxie Hill Long Cairn (SM 4574), east of the route option.
People	<u>Settlements</u> The route passes through steep valley landform at the Cowie Water and crosses properties at Upper Swanley and Nether Swanley. Effects on Upper Swanley must be carefully considered to avoid the property being surrounded by the existing OHL to the east of the property and an additional OHL. Both Upper Swanley and Nether Swanley sit within coniferous forestry therefore visibility of the OHL may be reduced due to screening provided by this forestry. Upper Swanley however is more elevated with open views to the north, therefore views of the OHL in combination with the existing OHL must be carefully considered. <u>Visual</u>	<u>Settlements</u> The majority of this route would follow the E1 route however from Brenzieshill the route turns to the north-west and broadly runs parallel to the Dundee to Aberdeen railway before re-joining route E1 at Nether Wyndings. Before the route separates from Route E1, this route also passes through steep valley landform at the Cowie Water and crosses properties at Upper Swanley and Nether Swanley. Effects on Upper Swanley must be carefully considered to avoid the property being surrounded by the existing OHL to the east of the property and an additional OHL. Both Upper Swanley and Nether Swanley sit within coniferous forestry therefore visibility of the OHL may be reduced due to screening provided by this forestry. Upper Swanley however is more elevated	<u>Settlements</u> The majority of this route would follow the E1 route however at Bank Hill (23 m AOD) route E1.2 turns to the north-west and extends up to the Dee Valley separate from E1. Before the route separates from Route E1, this route also passes through steep valley landform at the Cowie Water and crosses properties at Upper Swanley and Nether Swanley. Effects on Upper Swanley must be carefully considered to avoid the property being surrounded by the existing OHL to the east of the property and an additional OHL. There is also a number of scattered residential properties at and around Strathie and Monthammock which may have close proximity views of the OHL. Many of these properties are located between areas of coniferous forestry,

Topic	Route E1	Route E1.1	Route E1.2
	There will be views of the OHL from a number of roads that pass through the route, however these views will be fleeting when experienced by vehicle users. Similar views will be obtained along some sections of the Dundee to Aberdeen railway. Views will also be obtained by recreational receptors, including those within the Dee Valley.	with open views to the north, therefore views of the OHL in combination with the existing OHL must be carefully considered. Visual There will be views of the OHL from a number of roads that pass through the route, however these views will be fleeting when experienced by vehicle users. Similar views will be obtained along some sections of the Dundee to Aberdeen railway. Views will also be obtained by recreational receptors, including those within the Dee Valley.	therefore visibility of the OHL might be reduced to due screening provided by the forestry. Visual There will be views of the OHL from a number of roads passing through the route, however these views will be fleeting when experienced by vehicle users. Similar views will be obtained along some sections of the Dundee to Aberdeen railway. Views will also be obtained by recreational receptors, including those within the Dee Valley.
Landscape	Designations The northern end of section enters into the Dee Valley SLA, which forms a sensitive section of the route due to potential effects on the special qualities of the SLA and views within it. The presence of the existing OHL in combination with an additional OHL has the potential to detract from smaller and more intimate scale of the River Dee valley landscape which forms the basis of the Dee Valley SLA. Landscape Character The majority of this route is located within the Coastal Farmed Ridges and Hills – Aberdeenshire LCT and the Summits and Plateaux – Aberdeenshire LCT. The southern extent of this route is located within the northern part of Strathmore.	Designations The northern end of section enters into the Dee Valley SLA, which forms a sensitive section of the route due to potential effects on the special qualities of the SLA and views within it. The presence of the existing OHL in combination with an additional OHL has the potential to detract from smaller and more intimate scale of the River Dee valley landscape which forms the basis of the Dee Valley SLA. Landscape Character The majority of this route is located within the Coastal Farmed Ridges and Hills – Aberdeenshire LCT and the Summits and Plateaux – Aberdeenshire LCT. The southern extent of this	Designations The northern end of section enters into the Dee Valley SLA, which forms a sensitive section of the route due to potential effects on the special qualities of the SLA and views within it. The presence of the existing OHL in combination with an additional OHL has the potential to detract from smaller and more intimate scale of the River Dee valley landscape which forms the basis of the Dee Valley SLA. Landscape Character The majority of this route is located within the Coastal Farmed Ridges and Hills – Aberdeenshire LCT and the Summits and Plateaux – Aberdeenshire LCT.

Topic	Route E1	Route E1.1	Route E1.2
	The route passes through a steep valley at the Cairn Water by Nether Wyndings. An OHL here is likely to conflict with the more complex character and intimate scale of the landscape of this valley. It is noted however that the existing OHL passes through this challenging landform. The route also passes through steep forested slopes to the south of the River Dee at Craiglug. Most of the trees here however are non-native coniferous trees, with a few native species on the edges, therefore offering less value to landscape character and greater scope for tree felling to accommodate an OHL.	route is located within the northern part of Strathmore. This route sweeps round to the west of Stoney Hill (166 m AOD) and Carmont Hill (236 m AOD) and appears to have less landscape character constraints such as native woodland than Route E1 until it re-joins this route.	The route crosses the Dee Valley at Kirkton of Durris where landform is shallower in comparison to the Dee Valley crossing in Route E1 and E1.1. At this point however there is native woodland that is likely to be impacted. Native woodland is considered to be a landscape feature that contributes to landscape character. As such, the loss of native woodland should be avoided as far as possible.
Land Use	<u>Agriculture</u> Around 10% of land in route E1 is Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). <u>Forestry</u> The route crosses several large areas of mixed woodland – to the northwest of Fiddes, west of Stonehaven (Carron/Carmont Wood (replanted ancient woodland) and another large area of mixed woodland). There are large areas of mixed woodland near Craiglug and Borrowfield that cover most of the width of the route in the northern section. <u>Recreation</u> There are no core paths within the route.	<u>Agriculture</u> Around 20% of land in route E1.1 is Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). <u>Forestry</u> There are small areas of mixed woodland in the south of route E1.1 and a larger area in the north (Carron/Carmont Wood). <u>Recreation</u> There are no core paths located within the route. <u>Infrastructure & Planning</u>	<u>Agriculture</u> Less than 5% of land in route E1.2 is Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). These areas of land are in the north of the route. <u>Forestry</u> The majority of route E1.2 is covered in areas of mixed woodland that cover all/most of the route width. In particular, the southern section of the route is covered completely by woodland that would likely be affected. <u>Recreation</u> There are no core paths within the route but there are numerous walking tracks within the woodland

Topic	Route E1	Route E1.1	Route E1.2
	Infrastructure & Planning The A90 dual carriageway spans the width of the route at Clearymuir. A planning application has been approved for the installation of 9.2kW ground mounted solar array east of Drumlithie, part of this infrastructure crosses into route E1 (APP/2022/1701).	The A90 dual carriageway and the East Coast Main Line spans the width of the route at the southern end of the route. A planning application has been approved for the installation of 9.2kW ground mounted solar array east of Drumlithie in the south of route E1.1 (APP/2022/1701). A planning application has been approved for the development of 15 dwellinghouses in Drumlithie (APP/2013/2288).	areas within the route (around Kirkton of Durris and Little Tulloch). Infrastructure & Planning A planning application was approved in 2016 for the extraction of sand and gravel over a period of 10 years south of the A93 at Nether Park Quarry, Banchory (APP/2016/0257). This site crosses most of route E1.2 in the north of the route.
Technical Considerations	All Relevant Criteria The new build 400kV OHL would head in a northerly direction towards Kintore, the OHL would also cross the existing Kintore to Tealing (XT1/XT2) 275kV double circuit OHL and the Fiddes to Brechin (FB) 132kV single circuit OHL. The project would move spans of the XT1/XT2 circuit on to flat formation structures and create a diamond crossing for the new build 400kV line to over sail and tie in at Fiddes. The route crosses the Cowie Water, situated north of the Hill of Swanley where a maximum slope of 33 degrees is encountered, the watercourse is approximately 20m wide. However, a 1km section between the Hill of Swanley and Glenton Hill follows steeper ground and careful consideration to tower placement will be required. It is estimated that Route E1 would require 16 angle support towers. The number of supports is required to	All Relevant Criteria The arrangements for crossing of existing OHLs would be as described for Route E1. The route crosses the Cowie Water, situated north of the Hill of Swanley where a maximum slope of 33 degrees is encountered, the watercourse is approx. 20m wide. However, a 1km section between the Hill of Swanley and Glenton Hill follows steeper ground and careful consideration to tower placement will be required. It is estimated that Route E1.1 would require 18 angle support towers. The number of supports is required to move the route away from residential and commercial properties as well as trying to reduce the interaction with National Grids pipeline in the section. The route passes within approximately 750m of the operational Meikle Carewe Wind Farm. The	All Relevant Criteria The arrangements for crossing of existing OHLs would be as described for Route E1 Section E1.2 has one less minor road crossing in comparison to Routes E1 and E1.1. Section E1.2 exceeds 200m on two occasions, the first is at the Hill of Swanley where it reaches 209m and the second is at Strathgyle Woods where the elevation is 262m. Neither of these elevations are considered technically challenging. The route crosses the Cowie Water, situated north of the Hill of Swanley where a maximum slope of 33 degrees is encountered, the watercourse is approx. 20m wide. However, a 1km section between the Hill of Swanley and Glenton Hill follows steeper ground and careful consideration to tower placement will be required.

Topic	Route E1	Route E1.1	Route E1.2
	move the route away from residential and commercial properties and to reduce interaction with National Grid pipelines. Consented Craigneil (Formerly Craigneil Hill) Wind Farm is located on the western of the route with one turbine located within the route. The route passes some 750m west of the operational Meikle Carewe Wind Farm. The windfarm is situated at an elevation of around 250m with the route positioned within a valley at 180m elevation. Clochna Hill Wind Farm is located to the east of the route with two turbines located within the route. A wind turbine is also located at Tewel Farm within the route. There is a large number of scattered dwellings in the route. All routes in Section E interact with metallic pipelines, all routes cross or pass parallel to National Grid pipe network. Route E1 passes parallel to two National Grid pipelines for 5.5km from Nether Pitforthie to Nether Wyndings passes parallel to one National Grid pipeline for approximately 3km, from just South of Carnie Burn to Craiglug.	windfarm is situated at an elevation of around 250m with the route positioned within a valley at 180m elevation. The operational Jacksbank Wind Farm is located to the west of the route with one turbine located within the route. There is one urban area identified within Route E1.1, Drumlithie and a large number of scattered dwellings in the route. All routes in Section E interact with metallic pipelines, all sections cross or parallel Nation Grids pipe network. Route E1.1 runs parallel to one National Grid pipe for approximately 3km from just South of Carnie Burn to Craiglug.	It is estimated that Route E1.2 would require 15 angle support towers. The number of supports is required to move the route away from residential and commercial properties as well as trying to reduce the interaction with National Grids pipeline in the section. Consented Craigneil (Formerly Craigneil Hill) Wind Farm is located partly within the south-west of the route with two turbines located within the route. There is one urban area identified within Route E1.2, Kirkton of Durris and a large number of scattered dwellings in the route. All routes in Section E interact with metallic pipelines, all sections cross or parallel National Grids pipe network. Route E1.2 runs parallel to two National Grid pipelines for 5.5km from Nether Pitforthie to Nether Wyndings.
Cost Considerations	<u>Capital and Operational Cost</u> Route E1 has the lowest cost of the three options. The proximity to existing public highways is similar across all route options. All routes have similar crossing requirements of the existing railway and A90 dual	<u>Capital and Operational Cost</u> Route E1.1 is estimated to have a cost within approximately 20% (higher) of the lowest cost option (Route E1).	<u>Capital and Operational Cost</u> Route E1.2 is estimated to have a cost within approximately 20% of the lowest cost option (Route E1). The proximity to existing public highways is similar across all route options. The terrain in Routes E1.1

Topic	Route E1	Route E1.1	Route E1.2
	carriageway. All route options have the same number of distribution OHL crossings. There are no features on any specific route that would drive a higher operational cost.	Route E1.1 is approximately 10% longer than the equivalent section of E1. The proximity to existing public highways is similar across all route options. The terrain in Routes E1.1 and E1.2 is more challenging than E1 and construction may be more costly due to the steeper and more undulating terrain. Route E1.1 has the lowest felling requirements. All routes have similar crossing requirements of the existing railway and A90. All route options have the same number of distribution OHL crossings. There are no features on any specific route that would drive a higher operational cost.	and E1.2 is more challenging than E1 and construction may be more costly due to the steeper and more undulating terrain. Route E1.3 has the highest felling requirements which will require higher compensation and compensatory planting costs. All routes have similar crossing requirements of the existing railway and A90. All route options have the same number of distribution OHL crossings. There are no features on any specific route that would drive a higher operational cost.

5.6.1 Section Summary

Route E1 and E1.1 are closely matched when considering environmental factors, particularly with respect to the predicted level of constraint from designated sites and potential for impacts on habitats, protected species and ornithology. Route E1.2 is likely to be more constrained by woodland habitats including an area on the Ancient Woodland Inventory. Routes E1.1 and 1.2 are also more constrained than E1 in relation to designated natural heritage sites.

Route E1.2 is considered the least preferable route with respect to geology and soils as it crosses the largest indicative areas of peatland identified from NatureScot mapping which would be difficult to avoid in some areas.

The level of cultural heritage constraint is greatest in Route E1.2 particularly in the northern section as this option intersects Park House GDL and a surrounding area with a greater concentration of archaeological sites and listed buildings. Route E1 is preferred over E1.1 in visual terms and over E1.2 in relation to landscape constraints as the route crosses a less sensitive part of the southern slopes of the Dee Valley, where there is less native woodland in comparison to Route E1.2. Route E1.1 is longer in route length and has more residential properties within this section of the route, in comparison to Route E1. Route E1.2 is also more heavily constrained by unavoidable areas of woodland, peat and other land uses than the equivalent northern section of E1.

On balance Route E1 is preferred having regard to the environmental criteria.

Table 5.10a – Environmental RAG Rating Table for Section E of the OHL route

Route	RAG Impact Rati–g - Environmental														
	Natural Heritage					Cultural Heritage		People			Land-scape		Land Use		
	Designations	Protected Species	Habitats	Geology, Hydrology and Hydrogeology	Ornithology	Designations	Cultural Heritage Assets	Settlements	Visual	Physical Effects	Designations	Character	Agriculture	Forestry	Recreation
E1	M	L	L	L	M	L	L	L	M	L	M	M	L	M	M
E1.1	M	L	L	L	M	L	L	L	M	L	M	M	L	L	M
E1.2	L	L	L	M	M	H	H	L	M	L	M	M	L	M	M

The majority of the constraints identified within this preferred route option could be avoided and where this is not possible mitigated by careful design, micro-siting and the implementation of good practice construction techniques. Further survey work would be required to inform an appropriate alignment and minimise environmental effects where possible.

Table 5.10b – Engineering RAG Rating Table for Section E of the OHL route

Route	RAG Impact Rati–g - Engineering													
	Major Crossings	Minor Roads	Elevation	Slope	UXO	Flooding	Peatland	Access	Angle Supports	Windfarms	Communication Masts	Urban Areas	Metallic Pipes	Lengths
E1	H	M	L	M	L	L	L	L	M	M	L	L	M	L
E1.1	H	M	L	M	L	L	L	L	M	M	L	M	M	M
E1.2	H	L	M	M	L	L	L	L	L	M	L	M	M	M

From a technical perspective and based upon the RAG ratings applied there was no clear preference identified with all route options requiring watercourse crossings and the need to navigate existing infrastructure including existing OHL infrastructure, areas of settlement and pipelines. Route E1 is the preferred option on balance as it has the lowest level of identified constraint particularly with respect to the potential to avoid settlements.

For the economic appraisal, all route options have been allocated a Lower constraint RAG rating (most preferred). Route E1 is the preferred option from a cost perspective as it is the lowest cost option. Option E1.1 would have the highest cost primarily due to its longer length and Route E1.2 would incur significant land assembly and compensatory planting costs due to the extensive woodland felling requirements.

Table 5.10c – Economic RAG Rating Table for Section E of the OHL route

Route	RAG Impact Rating – Cost	
	Capital	Operational
E1	L	L
E1.1	L	L
E1.2	L	L

5.7 Study Area Section F – River Dee to Kintore

Table 5.11 below presents a summary of the main considerations and findings of the comparative appraisal of route options F1, F1.1, F1.2, F2 and F2.1 in Section F.

Table 5.11 – Summary of Comparative Appraisal for Section F

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
Natural Heritage	Designations The River Dee SAC spans Route F1 at its southern edge, and adjacent habitats are designated as the River Dee LNCS. Careful design targeting areas where the tree cover is narrower would reduce the number of trees that would need to be felled. In addition, Loch of Skene SPA, Ramsar and SSSI is located on the western boundary of the route, and adjacent habitats are LNCS. Four further LNCS – Old Manse Wood, Carnie Woods, Culter Compensation Dam, and Baads Moss - overlap with the route. It should be possible to avoid direct impacts to all the designated sites through alignment design. The route supports a number of woodlands listed on the AWI, the majority of which are LEPO. A small extent of Ancient Woodland is present on the boundary of the route,	Designations Baads Moss LNCS is located on the eastern boundary of Route F1.1 and is easily avoided. There are no other designated sites within the route option although the overall route shares constraints described for F1. The route supports a number of woodlands listed on the AWI, all of which are LEPO. Woodlands near Westhill create a pinch point at which careful alignment design would be required to avoid a direct impact through tree felling, habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route F1, although there is only a limited extent of one LNCS which has limited contribution to habitat diversity.	Designations There are no designated sites within Route F1.2 although the overall route shares constraints described for parts of F1 and F2. The route supports a number of woodlands listed on the AWI, all of which are LEPO and easily avoided. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to those in Route F1, although there are no designated sites to contribute to habitat diversity. Protected species assemblages are similar to Route F1. Route F1.2 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route F1.2 also coincides with higher levels of wader sensitive habitat (and	Designations Route F2 encompasses an area of the Loch of Park SSSI. Adjacent land is designated as Loch of Park LNCS and is likely to contain habitats of ecological value. Impacts upon these sites can be avoided through alignment design. In addition, Barmekin Wood LNCS is on the western edge of the route and is easily avoided. The route supports a number of woodland listed on the AWI, the majority of which are LEPO. A small extent of Ancient Woodland is present near Landerberry which is easily avoided. The majority of LEPO woodlands can be avoided through careful design of the alignment; however, one area north-west of Drumoak spans the route, while a nearby woodland to the south creates a pinch point; as such, any OHL alignment in this route would result in a direct impact	Designations Route F2.1 encompasses a large proportion of the Loch of Park SSSI, which all but spans the route. Adjacent land is designated as Loch of Park LNCS and is ikely to contain habitats of ecological value. The Loch of Park SSSI and LNCS span the route, and it would not be possible to avoid direct impacts; as such, habitat loss and fragmentation would occur. In addition, Candyglirach LNCS creates a pinch point within the route and comprises an area of raised bog; careful design would be required to avoid this site. Barmekin Wood LNCS is on the northern boundary of the route and is easily avoided. The route supports a number of woodlands listed on the AWI, all of which are LEPO and which should be possible to avoid through careful design.

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	and this should be easily avoided. Not all of the LEPO woodlands are likely to be easily avoided, with blocks near Peterculter acting as a pinch point; some tree removal may therefore be required, resulting in habitat loss and habitat fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are dominated by those associated with intensive agricultural land management practices and are likely to be of limited ecological importance. Several LNCSs are present which are likely to contribute to the diversity of habitats within the route, although these are likely to be avoidable through alignment design. Protected species assemblages may be present within the route. Route F1 contains habitats that have the potential to support	Protected species assemblages are similar to Route F1. Route F1.1 contains habitats that have the potential to support populations of Schedule 1 birds and bird species that are red-listed in BoCC. The Loch of Skene SPA/SSSI/Ramsar Site lies adjacent to part of this route section as part of Route F1. It is likely that there would be a high collision risk from the introduction of a new OHL to greylag geese for which the loch is designated (this will also be present for the other qualifying features of the SPA which include goldeneye and goosander duck species as well as other waterfowl out with the designation). Given the potential proximity of the OHL to the SPA it is important to obtain on-the ground information (including desk study data etc.) regarding the foraging areas and flight	related high relative abundance). Route F1.2 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (greylag geese; 15-20 km) of the Loch of Skene SPA 2.8 km to the north of the northern most section of the Route. As such, Route F1.2 may affect foraging of the qualifying features of the Loch of Skene SPA. Hydrology, Geology and Hydrogeology Route F1.2 crosses the River Dee where the floodplain is less than 350 m in width. This route avoids most other wide floodplains further north along its extent. NatureScot (2016) mapping indicates there are small sections of soils containing some peat (Class 4 and 5 soils) along the route, but these can be avoided. BNG	to LEPO woodland through tree felling, habitat loss and fragmentation. Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to Route F1. A SSSI and a number of LNCSs are likely to contribute to habitat diversity within the route, although as noted these are likely to be avoidable through alignment design. Protected species assemblages are likely to be similar to Route F1. Route F2 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route F2 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (greylag geese; 15-20 km) of the Loch of Skene SPA 3.3 km to the east of the Route. As such, Route F2 may affect	Habitats, Protected Species and Ornithology Aerial imagery suggests that habitats within the route are similar to Route F1. Notable extents of a SSSI and LNCSs are likely to contribute to habitat diversity, and as noted above it would not be possible to avoid direct impacts upon all of these. Protected species assemblages are likely to be similar to Route F1. Route F2.1 contains habitats that have the potential to support populations of Schedule 1 birds, and bird species that are red-listed in BoCC. Route F2.1 does not coincide directly with any SPA, however, it does overlap with the core foraging ranges of qualifying features (greylag geese; 15-20 km) of the Loch of Skene SPA 3.3 km to the east of the Route. As such, Route F2.1 may affect foraging of the qualifying features of the Loch of Skene SPA.

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	populations of Schedule 1 birds[21] and bird species that are red-listed in BoCC. The Loch of Skene SPA/SSSI/ Ramsar lies adjacent to part of this route section, it is likely that there would be a high collision risk from the introduction of a new OHL to greylag geese for which the loch is designated (this would also be present for the other qualifying features of the SPA which include goldeneye and goosander duck species as well as other waterfowl out with the designation). Given the potential proximity of the OHL to the SPA it is important to obtain on-the ground information (including desk study data etc.) regarding the foraging areas and flight patterns to and from the roost used by geese in this area to allow assessment of likely significant effect on the SPA population.	patterns to and from the roost used by geese in this area to allow assessment of likely significant effect on the SPA population. Hydrology, Geology and Hydrogeology Route F1.1 crosses the River Dee where the floodplain is less than 350m in width. The route also crosses some sections of floodplain of the Leuchar Burn further north. This floodplain is estimated to be up to 300m wide. This route also passes beside the Loch of Skene, which has indicative flooding outwith the Loch bounds within the route. NatureScot (2016) mapping indicates there are small areas of soils containing some peat (Class 4 and 5 soils) along the route, with one very small section of Class 1 peat indicated in the north of the route, northeast of Dunecht,	The route does not support any designated sites. Like Route F1, it is dominated by habitat types likely to be of limited ecological value. As such, it should be possible to deliver BNG within the route.	foraging of the qualifying features of the Loch of Skene SPA. Hydrology, Geology and Hydrogeology Route F2 crosses the River Dee at a wide floodplain estimated at approximately 500m wide. Further north the route also crosses parts of the Gormack Burn estimated at up to 400m wide in places north of Schoolhill, but this can be avoided with narrower crossing points available within the route. NatureScot (2016) mapping indicates there are small sections of soils containing some peat (Class 4 and 5 soils) along the route, but these can be avoided. BNG The route supports a single nationally designated site, and two LNCSs relevant to the	Hydrology, Geology and Hydrogeology Route F2.1 crosses the River Dee at a point where the floodplain is approximately 500m wide. Further north the route crosses the Bo Burn and Kinnernie Burn but the wide floodplain sections can be avoided or are narrow enough to be spanned. NatureScot (2016) mapping indicates there are small sections of Class 1, 2, 4 and 5 peat along the route. Generally, there is scope to avoid or span these areas of peat. BNG The route supports a single nationally designated site, and three LNCSs relevant to the BNG assessment. It will not be possible to avoid impacts to the SSSI and one of the LNCSs, and this will affect the BNG assessment. Similar to Route F1, the route it is otherwise

[21] Birds which receive special protection under the Wildlife & Countryside Act 1981

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	Hydrology, Geology and Hydrogeology Route F1 crosses the River Dee where the predicted floodplain is narrower than 350m. However further north the route crosses a section of the Leuchar Burn floodplain, estimated at up to 750m wide in places. The route also passes around the east side of the Loch of Skene, which has indicative flooding outwith the Loch bounds within the route. NatureScot (2016) mapping indicates there are small sections of soils containing some peat (Class 4 and 5 soils) along the route, with one very small section of Class 1 peatland in the north of the route, northeast of Dunecht, with scope to avoid/span this. BNG The route supports a single internationally designated site; this is a riverine SAC which would require to be crossed by the alignment, and careful	but there is scope to avoid/span this within the route. BNG The route supports an LNCS relevant to the BNG assessment, although impacts can be easily avoided. Like Route F1, it is otherwise dominated by habitat types likely to be of limited ecological value. As such, it should be possible to deliver BNG within the route.		BNG assessment. It should be possible to avoid impacts to these sites through alignment design. Areas of LEPO woodland will be more challenging to avoid, and some felling may be required, although these habitats are not considered to be irreplaceable in the BNG assessment. Like Route F1, it is otherwise dominated by habitat types likely to be of limited ecological value. As such, it should be possible to deliver BNG within the route.	dominated habitat types likely to be of limited ecological value. Due to likely impacts upon the SSSI and LNCS, it would be challenging to deliver BNG within the route.

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	design would be necessary to reduce any required tree removal. A number of LNCSs are present which are likely to support habitats of ecological value relevant to the BNG assessment. The route is otherwise dominated by heavily modified agricultural habitat types. As such, assuming impacts to the LNCSs can be reduced or avoided, it should be possible to deliver BNG within the route.				
Cultural Heritage	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the route option, and no part of the route option crosses any Inventory Historic Battlefield or Conservation Area. Within the route option there are: • 2 Scheduled Monuments,	Designations and Cultural Heritage Assets There are no World Heritage Sites within the route option, and no part of the route option crosses any Inventory Historic Battlefield or Conservation Area. Within the route option there are: • 6 Scheduled Monuments,	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the route option, and no part of the route option crosses any Inventory Historic Battlefield or Conservation Area. Within the route option there are: • 6 Scheduled Monuments,	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the route option, and no part of the route option crosses any Inventory Historic Battlefield or Conservation Area. Within the route option there are: • 1 Scheduled Monument,	<u>Designations and Cultural Heritage Assets</u> There are no World Heritage Sites within the route option, and no part of the route option crosses any Inventory Historic Battlefield or Conservation Area. Within the route option there are: • 2 Scheduled Monuments, and

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	• 16 Listed Buildings (1 x A Listed (which forms part of Dunecht House (GDL), 11 x B Listed, and 4 x C Listed), and • 1 GDL, Dunecht House (GDL 153). In addition, there are seven assets recorded as 'Regionally Significant' in the HER within the route option. These include four possible standing stones (or cattle rubbing stones) (NJ71SE0004, 006, 008 and 009) a Mesolithic findspot (NO89NW0017), one church (Drumoack Church), which is also a Category C Listed Building, and Dunecht House lodges and boat house, also a Category A Listed Building. The majority of these can be readily avoided during the alignment design stage. There are two NIDLs (remains of 17th-19th century designed landscapes) within the route option: Skene House (NJ70NE0137) and Easter	• 17 Listed Buildings (1 x A Listed (which forms part of Dunecht House GDL), 11 x B Listed, and 5 x C Listed), and • 1 GDL, Dunecht House (GDL 153). In addition, there are seven assets recorded as 'Regionally Significant' in the HER within the route option. These include four possible standing stones (or cattle rubbing stones) (NJ71SE0004, 006, 008 and 009) a Mesolithic findspot (NO89NW0017), one church (Drumoack Church) which is also a Category C Listed Building and Dunecht House lodges and boat house also a Category A Listed Building. The majority of these can be readily avoided during the alignment design stage. There are two NIDLs (remains of 17th-19th century designed landscapes) within the route option: Skene House (NJ70NE0137) and Easter	• 13 Listed Buildings (1 x A Listed, 6 x B Listed (one of which forms part of Dunecht House GDL) and 6 x C Listed), and • 1 GDL, Dunecht House (GDL 153). In addition, there are two assets recorded as 'Regionally Significant' in the HER within the route option, Drumoack Church, which is also a Category C Listed Building, and Skene Parish Church, which is also a Category A Listed Building. Both can be readily avoided during the alignment design stage. There are no NIDLs within the route option. In addition, there are seven assets recorded as 'Regionally Significant' in the HER within the route option. These include four possible standing stones (or cattle rubbing stones) (NJ71SE0004, 006, 008 and 009) a Mesolithic findspot (NO89NW0017), one church	• 8 Listed Buildings (1 x A Listed, 4 x B Listed (two of which form part of Park House GDL and one of which forms part of Dunecht GDL), 3 x C Listed), and • 2 GDLs, Pak House GDL (GDL 309) and Dunecht GDL (141). In addition, there is one asset recorded as 'Regionally Significant' in the HER within the route option, Skene Parish Church, which is also a Category A Listed Building. This can be readily avoided during the alignment design stage. There are no NIDLs within the route option. Park House GDL (GDL 309) stretches across the whole of the route option at its southern end and the route option intersects the GDL. This forms a significant constraint across the width of the route option.	• 9 Listed Buildings (7 x B Listed and 2 x C Listed).Park House GDL (GDL 309) and associated Listed Buildings, lie to the immediate south of the route option. In addition, there is one asset recorded as 'Regionally Significant' in the HER within the route option, Skene Parish Church, which is also a Category A Listed Building. This can be readily avoided during the alignment design stage. There are no NIDLs within the route option. Park House GDL (GDL 309) stretches across the whole of the route option at its southern end and the route option intersects the GDL. This forms a significant constraint across the width of the route option. The route option clips the western end of Dunecht House GDL (GDL 153) at the northern end of the route. The GDL

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	Skene House (NJ70NE0138). Both NIDLs are crossed by the route option and attempt should be made to avoid the NIDLs where possible during the alignment design stage. The route option clips the eastern end of Dunecht House GDL (GDL 153) and the GDL should be avoided during the alignment design stage. There is a pinch point at Scheduled Monument Bogton Cairn, Field System and Trackway (SM 7877), forms a monument site within the central part of the southern section of the route option. The Scheduled Monument must be avoided during the alignment design stage. The majority of the listed buildings are clustered around Kirkton of Skene to the west of Westhill, and most have localised settings. Long views are afforded from one Category B Listed Building, Kirkton of Skene (LB 16527) aligned to	Skene House (NJ70NE0138). Both NIDLs are crossed by the route option and attempt should be made to avoid the NIDLs where possible during the alignment design stage. The route option clips the eastern end of Dunecht House GDL (GDL 153) and the GDL should be avoided during the alignment design stage. There is a pinch point at Scheduled Monument Bogton Cairn, Field System and Trackway (SM 7877), forms a monument site within the central part of the southern section of the route option. The Scheduled Monument must be avoided during the alignment design stage. The majority of the Scheduled Monuments (Benthoull Croft, Cairn (SM 12351), Leucharbrae Farmhouse, Cairn (SM 12394) and Woods of Carnie, Burial Mounds (SM 6077)) are clustered around Leuchar Burn and Leuchar	(Drumoack Church) which is also a Category C Listed Building and Dunecht House lodges and boat house also a Category A Listed Building. The route option clips the western end of Dunecht House GDL (GDL 153) at the northern end of the route. The GDL should be avoided during the alignment design stage. There is a pinch point between Dunecht GDL (GDL 153) and Scheduled Monument, New Wester Echt Stone Circle (SM 6074) which stands close to the centre of the route option just northwest of Dunecht House West Lodge (LB 3162). A group of Scheduled Monuments are present to the northern edge of the route option, including East Finncery, Cairn (SM 6075) and Easterhill, hut circles (SM 12314). East Finncery Cairn (SM 6075) stands on a south facing slope and wide views are afforded from the cairn to the southern	The route option clips the western end of Dunecht House GDL (GDL 153) at the northern end of the route. The GDL should be avoided where possible. There is a pinch point between Dunecht GDL (GDL 153) and Scheduled Monument, New Wester Echt Stone Circle (SM 6074) which stands close to the centre of the route option just northwest of Dunecht House West Lodge (LB 3162). The majority of the listed buildings are located within Echt village at the periphery of the route option and have localised settings. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the	should be avoided where possible. There is a pinch point between Dunecht GDL (GDL 153) and Scheduled Monument, New Wester Echt Stone Circle (SM 6074) which stands close to the centre of the route option just northwest of Dunecht House West Lodge (LB 3162). Tillyorn, Moated Homestead (SM 12161), present within the route option has open views out in all directions across open farmland. These views likely form a key element of its setting, and this will be taken into consideration during the alignment design stage. The majority of the listed buildings are located just west of Echt village and have localised settings. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets,

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	the southwest overlooking Loch of Skene and this view from the house will be a key consideration during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, South Leylodge Steading Stone Circle (SM 12350), South Fornet, Stone Circle (SM 12353), and Normandykes Roman Camp (SM2478), east of the route option. • Scheduled Monuments, Woods of Carnie, Burial Mounds, Leucharbrae Farmhouse, Cairn (SM 12394) and Benthoull Croft,	Moss. Their relationship with the waterbodies, and intervisibility between these topographically close monuments are likely to be key elements of their settings and these will be a key consideration during the alignment design stage. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, South Leylodge Steading Stone Circle (SM 12350), South Fornet, Stone Circle (SM 12353), and Normandykes Roman Camp (SM2478), east of the route option.	arc. Views in this direction are likely a key element of the cairns setting and will be a key consideration during the design stage. The majority of the listed buildings are located within Echt village at the periphery of the route option and have localised settings. Within the wider landscape surrounding the Route Option there are a number of Scheduled Monuments and Listed Buildings where views out from, and to, the assets, are key elements of their settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, South Leylodge Steading, Stone Circle (SM 12350), Upper Corskie, Stone Circle and Pictish Symbol (SM 6075) and Normandykes Roman Camp	alignment design stage. These include: • Scheduled Monuments, Barmekin of Echt, Fort (SM 57) and Tillyorn, Moated Homestead (SM 12161), both west of the route option. • Scheduled Monuments, South Leylodge Steading, Stone Circle (SM 12350), Upper Corskie, Stone Circle and Pictish Symbol (SM 6075) and East Finncery Cairn (SM 6075), all east of the route option. • Castle Fraser GDL (GDL 91), and associated listed buildings, west of the route option. • Drum Castle GDL (GDL 141), and associated listed buildings, east of the route option.	are key elements of their settings and these will be key consideration during the alignment design stage. These include: • Scheduled Monuments, South Leylodge Steading, Stone Circle (SM 12350) and Upper Corskie, Stone Circle and Pictish Symbol (SM 6075), east of the route option. • Scheduled Monuments, Barmekin of Echt, Fort (SM 57), west of the route option. • Castle Fraser GDL (GDL 91), and associated listed buildings, west of the route option. • Drum Castle GDL (GDL 141), and associated listed buildings, east of the route option.

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	Cairn (SM 12351), west of the route option. • Drum Castle GDL (GDL 141) and Castle Fraser GDL (GDL 91), and associated listed buildings, both west of the route option. • Category A Listed, Skene House (LB 16530), west of the route option.	• Scheduled Monument and Historic Environment Scotland Property in Care (PiC) Curlie, Stone Circle (SM 90088), west of the route option. • Drum Castle GDL (GDL 141) and Castle Fraser GDL (GDL 91), and associated listed buildings, both west of the route option. • Category A Listed, Skene House (LB 16530), west of the route option.	(SM2478), east of the route option. • Scheduled Monuments, Barmekin of Echt, Fort (SM 57), west of the route option. • Scheduled Monument and Historic Environment Scotland Property in Care (PiC) Curlie, Stone Circle (SM 90088), north of the route option. • Drum Castle GDL (GDL 141) and Castle Fraser GDL (GDL 91), and associated listed buildings, both west of the route option.		
People	<u>Settlements</u> Route F1 passes close to Westhill, and the smaller settlement of Kirkton of Skene, with potential to impact on views from these settlements. There are residential properties throughout the route, though flexibility to avoid very close proximity.	<u>Settlements</u> Route F1.1 passes close to Westhill, and the smaller settlement of Kirkton of Skene, with potential to impact on views from these settlements. There are residential properties throughout the route, though flexibility to avoid very close proximity.	<u>Settlements</u> Route F1.2 includes the small settlement of Echt, and passes close to Dunecht, with potential to impact on views from these settlements. There are residential properties throughout the route, though flexibility to avoid very close proximity.	<u>Settlements</u> Route F2 includes the small settlement of Echt, and passes close to Dunecht, with potential to impact on views from these settlements. There are residential properties throughout the route, though flexibility to avoid very close proximity.	<u>Settlements</u> Route F2 passes close to the small settlements of Echt, and Dunecht, with potential to impact on views from these settlements. There are residential properties throughout the route, though flexibility to avoid very close proximity.

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	<u>Visual</u> All routes cross the Dee Valley Path and the A93, with potential visual effects on users of these routes. The route passes immediately to the north-east of Loch Skene, where an OHL may introduce visual effects on recreational receptors on and around the loch (part of Dunecht House GDL). Potential for cumulative effects on views, as there are OHLs already within this route.	<u>Visual</u> All routes cross the Dee Valley Path and the A93, with potential visual effects on users of these routes. The route passes immediately to the north-east of Loch Skene, where an OHL may introduce visual effects on recreational receptors on and around the loch (part of Dunecht House GDL).	<u>Visual</u> All routes cross the Dee Valley Path and the A93, with potential visual effects on users of these routes. The route passes immediately to the east of Barmekin Hill, a hilltop viewpoint and Scheduled Monument, with potential for effects on panoramic views.	<u>Visual</u> All routes cross the Dee Valley Path and the A93, with potential visual effects on users of these routes. The route passes immediately to the east of Barmekin Hill, a hilltop viewpoint and Scheduled Monument, with potential for effects on panoramic views. Potential for cumulative effects on views, as there are OHLs already within this route.	<u>Visual</u> All routes cross the Dee Valley Path and the A93, with potential visual effects on users of these routes. The route passes immediately to the south and east of Barmekin Hill, a hilltop viewpoint and Scheduled Monument, with potential for effects on panoramic views. Potential for cumulative effects on views, as there are OHLs already within this route.
Landscape	<u>Designations</u> The southern end of this route is located within the Dee Valley SLA, with potential for effects on the special qualities of the SLA. The eastern routes have a slightly longer extent in the SLA than the western routes. <u>Landscape Character</u> The route is mainly within the Wooded Estates LCT and the similar Undulating Farmland	<u>Designations</u> The southern end of this route is located within the Dee Valley SLA, with potential for effects on the special qualities of the SLA. The eastern routes have a slightly longer extent in the SLA than the western routes. <u>Landscape Character</u> The route is mainly within the Wooded Estates LCT and the similar Undulating Farmland	<u>Designations</u> The southern end of this route is located within the Dee Valley SLA, with potential for effects on the special qualities of the SLA. The eastern routes have a slightly longer extent in the SLA than the western routes. <u>Landscape Character</u> The route is mainly within the Wooded Estates LCT and the similar Undulating Farmland	<u>Designations</u> The southern end of this route is located within the Dee Valley SLA, with potential for effects on the special qualities of the SLA. The western routes have a slightly shorter extent in the SLA than the eastern routes. <u>Landscape Character</u> The route is mainly within the Wooded Estates LCT, although the southern end is within the	<u>Designations</u> The southern end of this route is located within the Dee Valley SLA, with potential for effects on the special qualities of the SLA. The western routes have a slightly shorter extent in the SLA than the eastern routes. <u>Landscape Character</u> The route is mainly within the Wooded Estates LCT, although the southern end is within the

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	LCT, although the southern end is within the Broad Wooded and Farmed Valley LCT. There are frequent characteristic woodlands that could be impacted by OHL, including mixed and native woodlands and shelterbelts. These include a thick shelterbelt of native woodland and Scots Pine at Cairnton, and mixed woodlands at Lyne of Skene. The eastern routes are closer to areas of developed and settled landscape character, less sensitive to new OHL. Woodlands are associated with estate landscapes[22], a characteristic of the Wooded Estates LCT. This route includes estate woodland that forms part of Dunecht House GDL and also the locally distinctive but undesignated designed landscape at Easter Skene House, where the	LCT, although the southern end is within the Broad Wooded and Farmed Valley LCT. There are frequent characteristic woodlands that could be impacted by OHL, including mixed and native woodlands and shelterbelts. These include a thick shelterbelt of native woodland and Scots Pine at Cairnton, and mixed woodlands at Lyne of Skene. The eastern routes are closer to areas of developed and settled landscape character, less sensitive to new OHL. Woodlands are associated with estate landscapes, a characteristic of the Wooded Estates LCT. This route includes estate woodland that forms part of Dunecht House GDL and also the locally distinctive but undesignated designed landscape at Easter Skene House, where the	LCT, although the southern end is within the Broad Wooded and Farmed Valley LCT. There are frequent characteristic woodlands that could be impacted by OHL, including mixed and native woodlands and shelterbelts. These include a thick shelterbelt of native woodland and Scots Pine at Cairnton in the Dee Valley. Woodlands are associated with estate landscapes, a characteristic of the Wooded Estates LCT. This route includes estate woodland that forms part of Dunecht House GDL. There are further native and mixed woodlands within the route on the slopes of Barmekin Hill, and routeing across these slopes will be difficult without adverse effects on landscape character, including the historic aspects of the landscape (see also	Broad Wooded and Farmed Valley LCT. There are frequent characteristic woodlands that could be impacted by OHL, including mixed and native woodlands and shelterbelts. These include native woodlands at Loch of Park near the Dee Valley. Woodlands are associated with estate landscapes, a characteristic of the Wooded Estates LCT. This route includes estate woodland that forms part of Dunecht House GDL. There are further native and mixed woodlands within the route on the slopes of Barmekin Hill, and routeing across these slopes will be difficult without adverse effects on landscape character, including the historic aspects of the landscape (see also Cultural Heritage section). The steep topography here means	Broad Wooded and Farmed Valley LCT. There are frequent characteristic woodlands that could be impacted by OHL, including mixed and native woodlands and shelterbelts. Woodlands are associated with estate landscapes, a characteristic of the Wooded Estates LCT. This route includes estate woodland that forms part of Dunecht House GDL. There are further native and mixed woodlands within the route on the slopes of Barmekin Hill, and routeing across these slopes will be difficult without adverse effects on landscape character, including the historic aspects of the landscape (see also Cultural Heritage section). The steep topography here means OHL could have adverse effects on landscape character.

[22] Landscapes characterised by the formal planting and landscaping associated with estates typically from the 18th and 19th centuries and often designated as Gardens and Designed Landscapes. These areas also have importance for cultural heritage.

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	substantial hedges and mature beech trees make a positive contribution to the wider landscape character of this area.	substantial hedges and mature beech trees make a positive contribution to the wider landscape character of this area.	Cultural Heritage section). The steep topography here means OHL could have adverse effects on landscape character.	OHL could have adverse effects on landscape character.	
Land Use	Agriculture Less than 10% of land in route F1 is Class 3.1 (capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wide range). Forestry In the south of Route F1 there are several areas of mixed woodland to the west of Petercutler that cover most of the width of the route. There are several small areas of woodland in the north of route F1 and larger areas to the east of Loch of Skene and around Lyne of Skene. Recreation National Cycle Network (NCN) Route 195 crosses the southern end of the route.	Agriculture There is no prime agricultural land in route F1.1. Forestry An area of mixed woodland in the centre of the route (west of Benthoul) covers half of the width of the route. The north of the route (west and southwest of Cairnie) is mostly covered by mixed woodland. Recreation NCN Route 195 crosses the southern end of the route. There are no core paths located within the route.	Agriculture There is no prime agricultural land in route F1.2. Forestry There are small areas of woodland within this route. An area of mixed woodland in the east of the route (west of Benthoul) covers almost half of the width of the route. Recreation NCN Route 195 crosses the southern end of the route. There are no core paths located within the route.	Agriculture There is almost no prime agricultural land in route F2. There is a small area of Class 3.1 land in the south of the route. Forestry There are several areas of woodland in the south of the route including a large area of conifer woodland that stretches across the width of the route northwest of Drumoak. There are several areas of woodland in the centre of the route northeast of Landerberry. In the north of the route there is an area of woodland that stretches across the western half of the route to the west of Dunecht and other areas of woodland at Skene Moss, Castle Fraser Moss and north west of Letter.	Agriculture There is almost no prime agricultural land in route F2.1. There is a small area of Class 3.1 land in the south of the route. Forestry This route crosses large areas of woodland. There is a large area of broadleaved woodland that covers most of the southern section of the route (west of Drumoak). In the centre of the route there are several areas of mixed woodland including Midmar Forest which covers most of the width of the route to the west of Landerberry. In the north of the route there are several areas of mixed woodland, including a larger area west of Old Echt.

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	There are no core paths located within the route. Planning A planning application has been approved for a battery energy storage system (49.9 MW) north west of Leylodge in the north of route F1 (APP/2022/2022).			Recreation NCN Route 195 crosses the southern end of the route. There are no core paths located within the route. Planning A planning application has been submitted for the development of 25 dwellinghouses and associated infrastructure in Echt (APP/2022/2257).	Recreation NCN Route 195 crosses the southern end of the route. There are no core paths located within the route.
Technical Considerations	All Relevant Criteria All routes in Section F require major crossings as they all cross the River Dee and the existing 132kv double circuit OHL from Craigiebuckler to Tarland South and North (CLN/CLS). Current OHLs for circuits Kintore to Tealing (XT1/XT2) & Kintore to Fetteresso (XS1/XS2) would need to be realigned to allow access for the new 400kV OHL to tie in at Kintore substation.	All Relevant Criteria All routes in Section F require major crossings as set out for Route F1. Route F1.1 passes through areas of peatland for two short sections of 64m and 134m which are capable of being spanned. Route F1.1 has a ratio of 1:3 in respect to angle towers required versus suspension towers, due to the number of urban areas including Skene, Mid Anguston, Echt and	All Relevant Criteria All routes in Section F require major crossings as set out for Route F1. Route F1.2 passes through one section of 134m of peatland which is capable of being spanned. Route F1.2 is a short connecting section between F1 and F2 and therefore likely to have similar requirements for angle towers as these options.	All Relevant Criteria All routes in Section F require major crossings as set out for Route F1. Route F2 has a ratio of 1:3 in respect to angle towers required versus suspension towers, due to the number of urban areas including Skene, Mid Anguston, Echt and Dunecht and the large number of scattered dwellings located in this section.	All Relevant Criteria All routes in Section F require major crossings as set out for Route F1. Route F2.1 has a ratio of 1:3 in respect to angle towers required versus suspension towers, due to the number of urban areas including Skene, Mid Anguston, Echt and Dunecht and the large number of scattered dwellings located in this section.

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	Route F1 passes through areas of peatland for two short sections of 119m and 134m which are capable of being spanned. Route F1 has a ratio of 1:3 in respect to angle towers required versus suspension towers, due to the number of urban areas including Skene, Mid Anguston, Echt and Dunecht and the large number of scattered dwellings located in this section. All routes within section F cross National Grid pipe networks.	Dunecht and the large number of scattered dwellings located in this section. All routes within section F cross National Grid pipe networks. Route F1.1 however runs closer to the National Grid compressor station south of Skene.	All routes within section F cross National Grid pipe networks.	All routes within section F cross National Grid pipe networks.	All routes within section F cross National Grid pipe networks.
Cost Considerations	<u>Capital and Operational Cost</u> Routes F1 and F1.1 have the lowest cost of all the options in this section. All route options are approximately the same length except for F1.2. Routes F1 is likely to have the lowest land assembly costs due to the lowest felling requirements.	<u>Capital and Operational Cost</u> Routes F1 and F1.1 have the lowest cost of all the options in this section. All route options are approximately the same length except for F1.2. All routes, except for F2.1, are in close proximity to existing public highways and would	<u>Capital and Operational Cost</u> Route F1.2 is predicted to be approximately 15% higher than the lowest cost option. Route F1.2 is approximately 10% longer than the other options in Section F. All routes, except for F2.1, are in close proximity to existing public highways and would therefore require limited new access track construction. The	<u>Capital and Operational Cost</u> Route F2 is predicted to be approximately 15% higher than the lowest cost option. All route options are approximately the same length except for Route F1.2. Route F2 is likely to have the lowest land assembly costs due to the lowest felling requirements.	<u>Capital and Operational Cost</u> Route F2.1 is predicted to be approximately 15% higher than the lowest cost option . All route options are approximately the same length except for F1.2. Route F2.1 has the highest woodland felling requirements. Route F2.1 is more remote from existing public highways

Topic	Route F1	Route F1.1	Route F1.2	Route F2	Route F2.1
	All routes, except for F2.1, are in close proximity to existing public highways and would therefore require limited new access track construction. Options F1 and F1.1 require marginally more distribution OHL diversions compared to the other routes. The terrain on Route F1 is very flat.	therefore require limited new access track construction. Options F1 and F1.1 require marginally more distribution OHL diversions compared to the other routes. The terrain on Route F1.1 is very flat.	terrain on Route F1.2 is very flat.	All routes, except for F2.1, are in close proximity to existing public highways and would therefore require limited new access track construction. The terrain on Route F2 1 has very localised sections which could be challenging during construction.	than the other options and may therefore require new access track construction. The terrain on Route F2.1 has very localised sections which could be challenging during construction. Route F2.1 would likely incur marginally higher operational and maintenance costs than the other routes due to the more extensive access track requirements and the access in more challenging terrain.

5.7.1 Section Summary

Route F2.1 encompasses a large proportion of the Loch of Park SSSI and LNCS, and together these span the route. As such, it would be difficult to avoid direct impacts upon the SSSI, and it would not be possible to avoid the LNCS. Routes F2 and F2.1 are also constrained to some extent by the Loch of Park SSSI in their southern section and in some areas by woodland stretching across the route. Routes F1, F1.1 and F1.2 are less constrained by designated areas than F2 and F2.1.

In ornithological terms this area is complex, given the presence of the Loch of Skene SPA/SSSI/Ramsar within the routeing options. Routes F1 and F1.1 are located adjacent to the eastern boundary of this designated site. Given this potential for proximity of the OHL to the SPA in these route selections, it will be important to obtain detailed information regarding the foraging areas and flight patterns to and from the roost used by the SPA's qualifying bird species to assess likely significant effect. The other route options are located slightly further (and west) of the Loch of Skene however they lie within the core foraging ranges of qualifying bird species for the SPA. Routes F1, F1.1 and F1.2 cross the River Dee at a point where the floodplain is narrower than for Route options F2 and F2.1. Route F1 also crosses a wide floodplain of the Leuchar Burn making it the least favourable route as the floodplain cannot be avoided. Routes F1.1 and F2 also cross wide floodplains associated with the Leuchar Burn and Gormack Burn respectively, however these can be spanned or avoided.

F1 is preferred over F2 and its deviation F2.1 in terms of cultural heritage and marginally for landscape. Route F2 (and F2.1) is constrained at its southern end by the presence of Park House GDL (which F1, F1.1 and F1.2 avoids) and to some degree by Dunecht House GDL and the scheduled site Barmekin of Echt Fort at its northern end (avoided by F1 and F1.1), with a preference in cultural heritage terms for the route to follow a course to the east of the GDL. Routes F1.2, F2 and F2.1 are also constrained due to a narrow pinch point within which to align an OHL between designated areas at New Wester Echt Stone Circle and Dunecht GDL.

All routes have potential to impact on landscapes characterised by woodland and formally laid out estates particularly near to Dunecht House. There is a land use preference for the eastern routes as these would avoid the steep wooded terrain between Dunecht House and Barmekin Hill and which are generally less constrained by areas of mixed and native woodland. Of the two eastern routes there is no clear landscape preference between F1 and F1.1. In visual terms, the eastern routes avoid adverse impacts on views from sensitive locations such as Barmekin Hill, but they are closer to recreational and residential receptors at Westhill, Kirkton of Skene and Loch of Skene. Therefore there is a preference for the eastern routes F1 and F1.1 compared with the more westerly routes on landscape grounds.

Route F1 is preferred over its potential deviations F1.1 and F1.2. Whilst the landscape and ecological constraints in these route options are similar, with only a slight preference for F1.2 in ecological terms, there are considered to be fewer land use and cultural heritage constraints in F1.

On balance, Route F1 is the preferred option having regard to the environmental criteria.

Table 5.12a – Environmental RAG Rating Table for Section F of the OHL route

Route	RAG Impact Rating – Environmental														
	Natural Heritage					Cultural Heritage		People			Land-scape		Land Use		
	Designations	Protected Species	Habitats	Geology, Hydrology and Hydrogeology	Ornithology	Designations	Cultural Heritage Assets	Settlements	Visual	Physical Effects	Designations	Character	Agriculture	Forestry	Recreation
F1	M	L	L	L	H	M	M	M	M	L	M	M	L	L	M
F1.1	M	L	L	L	H	H	L	M	M	L	M	M	L	L	L
F1.2	L	L	L	L	M	H	L	M	M	L	M	M	L	L	L
F2	M	L	L	L	M	H	L	M	M	L	M	M	L	L	M
F2.1	H	L	L	L	M	M	L	M	M	L	M	M	L	M	L

The majority of the constraints identified within this route option could be avoided and where this is not possible, mitigated by careful design, micro-siting and the implementation of good practice construction techniques. Further survey work would be required to inform an appropriate alignment and minimise environmental effects where possible.

Table 5.12b – Engineering RAG Rating Table for Section F of the OHL route

Route	RAG Impact Rating – Engineering													
	Major Crossings	Minor Roads	Elevation	Slope	UXO	Flooding	Peatland	Access	Angle Supports	Windfarms	Communication Masts	Urban Areas	Metallic Pipes	Lengths
F1	H	L	L	L	L	L	M	L	M	L	L	M	M	M
F1.1	H	L	L	L	L	L	M	L	M	L	L	M	M	L
F1.2	H	L	L	L	L	L	M	L	L	L	L	M	M	M
F2	H	L	L	L	L	L	L	L	M	L	L	M	M	M
F2.1	H	L	L	L	L	L	L	L	M	L	L	M	M	M

From a technical perspective and based upon the RAG ratings applied, on balance, route F1 is the preferred option. All route options require a number of major crossings and the need to navigate existing infrastructure including settlements and pipelines. Route options F1 and F1.1 are comparable, with Route F1.1 being slightly shorter although the difference in length is only approximately 100m. Route F1.1 however runs closer to the National Grid compressor station, south of Skene. Route F1 was considered to be least constrained overall and therefore preferred on technical criteria.

For the economic appraisal, all route options have been allocated a Lower constraint RAG rating (most preferred). There are no features on any specific route that would drive a higher operational cost, except for F2.1 which would likely incur marginally higher operational and maintenance costs due to the more extensive access tracks requirements and the access in more challenging terrain. Route F1 is the preferred option from a cost perspective as it is the lowest cost option. With the exception of F1.1, all other route options are more expensive and result in other environmental and technical constraints that can be avoided in Route F1.

Table 5.12c – Economic RAG Rating Table for Section F of the OHL route

Route	RAG Impact Rating – Cost	
	Capital	Operational
F1	L	L
F1.1	L	L
F1.2	L	L
F2	L	L
F2.1	L	L

6. SELECTION OF PREFERRED ROUTE

The selection of the Preferred Route is achieved by consideration of the Preferred Option identified for each Section and how these may combine to form a preferred route overall. The selection of the Preferred Route takes account of the appraisals presented in Section 5 and a summary of the overall Preferred Route is presented below.

The Preferred Route is shown on Figure 6.1.

6.1 Section A

Two route options were considered and appraised in this section: Route A1 and Route A1.1.

There is little to distinguish between the two route options in terms of environmental, technical and cost criteria but on balance, Route A1 is the marginally preferred option.

With respect to environmental criteria, Route A1 is likely to give rise to fewer conflicts with key characteristics of the landscape and as it avoids more settlements and would be less visible overall.

With respect to engineering criteria, Route A1 is considered to have a marginally lower risk of technical constraints and impact for slope, requirement for changes of direction and minor road crossings and is the shorter of the two options for route length.

Route A1 has the lowest anticipated cost option for both capital and maintenance criteria and would also require construction of fewer new accesses.

6.2 Section B

Four route options were considered and appraised in this section: Routes B1, B1.1, B1.2 and B1.3.

On balance, Route B1 is the marginally preferred route with respect to environmental, technical and cost criteria.

There is little to distinguish between the route options for most environmental considerations, however the Cultural Heritage preference is for Route B1 to keep the OHL furthest away from the designated archaeology associated with Caterthun Hillforts. The Landscape preference is also for Route B1 as it is considered to better follow the topography, avoids sensitive wooded valleys and has the potential for use of upland areas to the west as a backdrop to help reduce its visibility in the landscape.

There is no clear preference for Section B with respect to engineering criteria, and each route is considered to be comparable, however Route B1 has a marginally lower anticipated impact to residential and commercial properties.

Cost is not considered to be a limiting factor for this Section and is considered comparable across all route options. Although Route B1 is the highest rated cost option, it is within 5% of the lowest anticipated capital cost option and all options have similar operational costs.

6.3 Section C

Five route options were considered and appraised in this section: Routes C1, C1.1, C1.2, C2 and C3.

On balance, Route C1 is the preferred route with respect to environmental, technical and cost criteria.

The principal environmental appraisal differences between the options relate to designated sites, hydrology and flooding, cultural heritage and landscape. The presence of West Water Palaeochannels SSSI and Eslie Moss SSSI within Route C3 would be difficult to avoid and constrains this option which also has wide floodplain crossings. Woodland is a greater constraint in options C2 and C3 than other options.

Route C1 is preferred for Cultural Heritage to keep the OHL furthest away from the Caterthun Hillforts Scheduled Monuments and generally has lower constraint that option C1.1. Route C1 also crosses lower lying landform than the other options reducing predicted long distance visibility of the OHL. Route C1 is the shortest route option and takes the OHL away from settlements at Laurencekirk.

Route C1 is the preferred route option on engineering criteria as it is the shortest in length and avoids major road and rail crossings.

Route C1 is the preferred option from a cost perspective as it has the lowest predicted cost due to its shortest overall length and relatively good road access.

6.4 Section D

Six route options were considered and appraised in this section: Routes D1, D1.1, D1.2, D2, D2.1 and D3.

On balance, Route D1 is the marginally preferred route with respect to environmental, technical and cost criteria.

From an environmental perspective, there is little to distinguish between the route options with respect to ecological and ornithological constraint. Route D1 is considered preferable from a landscape and visual perspective as the route offers large stretches of generally open low lying land and is more distant from designated areas of landscape. Route D1 also keeps the OHL away from sensitive cultural heritage assets found in option D3. Route D1 would permit a more direct crossing of the A90 dual carriageway and East Coast Main Line railway and generally keeps the OHL away from larger concentrations of settlements.

From a technical perspective, there is little to distinguish between the options. Although Route D3 has the marginally lowest impact and risk of constraints with minor roads and angle supports, Route D1 is marginally preferred technically due to a lower overall interface with residential and commercial properties.

From a cost perspective, cost is not considered to be a limiting factor for this Section and is comparable across all route options. Although Route D1 is not the lowest cost option, it is within approximately 5% of the lowest anticipated capital cost option, and all options have similar operational costs.

6.5 Section E

Three route options were considered and appraised in this section: Routes E1, E1.1 and E1.2.

On balance, Route E1 is the preferred route with respect to environmental, technical and cost criteria.

Routes E1 and E1.1 are closely matched in environmental terms particularly with respect to the predicted level of constraint from designated sites and potential for impacts on habitats, protected species and ornithology although there is greater constraint from areas of woodland in Route E1.2 than for the other two options. Route E1.2 is least preferred in relation to geology due to constraints associated with areas of peat land. The level of cultural heritage constraint is greatest in Route E1.2 particularly in the northern section as this option intersects Park House GDL and a surrounding area with a greater concentration of archaeological sites and listed buildings. Route E1 is preferred over E1.1 in visual terms and over E1.2 in relation to landscape constraints.

From a technical perspective, there is little to distinguish between the options. All route options require watercourse crossings (River Dee) and to navigate existing OHL infrastructure, areas of settlement and gas pipelines. Route E1 is the marginally preferred option on balance as it has the lowest level of identified constraint with respect to avoiding settlements and route length.

Route E1 is the preferred option from a cost perspective as it is the lowest cost option.

6.6 Section F

Five route options were considered and appraised in this section: Routes F1, F1.1, F1.2, F2 and F2.1.

On balance, Route F1 is the marginally preferred route with respect to environmental, technical and cost criteria.

Route F1 is the marginally preferred route for environmental criteria. Route options F1 and F1.1 are located adjacent to the eastern boundary of Loch of Skene SPA/SSSI/Ramsar. The other route options are located slightly further (and west) of the Loch of Skene however they lie within the core foraging ranges of qualifying bird species for the SPA. Routes F2 and F2.1 are also constrained by the presence of the Loch of Park SSSI at their southern end which would be difficult to avoid. Route F1 is preferred over F2 and its deviation F2.1 in terms of cultural heritage and marginally for landscape. The cultural heritage position is complex around the Loch of Skene area with key constraints associated with the Dunecht House GDL, scheduled monuments at Barmekin Hillfort and other listed buildings in the area. On balance the Cultural Heritage preference is for a route to pass east of the Dunecht House GDL.

All routes have potential to impact on landscapes characterised by woodland and formally laid out estates particularly near to Dunecht House. There is a land use preference for the eastern routes (F1 and F1.1) as these would avoid the

steep wooded terrain between Dunecht House and Barmekin Hill and which are generally less constrained by areas of mixed and native woodland.

From an engineering perspective, Route F1 is the preferred option on balance. All route options require a number of major crossings and the need to navigate existing infrastructure including settlements and pipelines. Route options F1 and F1.1 are comparable but Route F1 is considered to be marginally least constrained overall and therefore preferred on engineering criteria.

Route F1 is the preferred option from a cost perspective as it is the lowest cost option.

6.7 Preferred Route

Taking the route option preferences for each section into account, the **preferred route option** from an environmental, engineering and cost perspective combines Route options **A1, B1, C1, D1, E1 and F1** as shown on Figure 6.1.

The potential effects of the preferred route interpreted as RAG Impact ratings are summarised in Table 6.1 below.

It is important to note that the Preferred Route has been identified based on the outcome of the environmental, engineering and cost analysis at this stage. Once the Consultation events have been held and consultation responses received, these consultee comments will be considered, which may suggest an alteration to all or part of the Preferred Route.

If there were also any alterations to the Preferred Corridor following consideration of consultation feedback, this would subsequently affect the route options and would be taken into account by SSEN Transmission in selecting both a Proposed Corridor and Proposed Route.

Table 6.1 - RAG Rating Table for the Preferred Route

Discipline	Sub-discipline	Preferred Route					
		Route A1	Route B1	Route C1	Route D1	Route E1	Route F1
Environmental Appraisal							
Natural Heritage	**Designations**	M	M	M	L	M	M
	Protected Species	L	L	L	L	L	L
	Habitat	M	L	L	L	L	L
	Ornithology	M	M	M	M	M	H
	Hydrology, Geology and Hydrogeology	M	M	M	M	L	L
Cultural Heritage	**Designations**	M	M	M	L	L	M
	Cultural Heritage Assets	M	L	L	L	L	M
People	**Settlements**	L	L	L	L	L	M
	Visual	M	M	M	M	M	M
Landscape and Visual	**Designations**	L	L	L	L	M	M
	Landscape Character	M	M	M	M	M	M
Land Use	**Agriculture**	L	M	M	M	L	L
	Forestry/Woodland	L	L	L	L	M	L
	Recreation	L	L	L	M	M	M
Engineering Appraisal							
Infrastructure Crossing	Major crossings	H	L	L	H	H	H
	Minor Roads	L	M	M	M	M	L
Environmental Design	Elevation	M	L	L	L	L	L
	Slope	L	L	L	L	M	L

Discipline	Sub-discipline	Preferred Route					
		Route A1	Route B1	Route C1	Route D1	Route E1	Route F1
	UXO	L	L	M	L	L	L
	Flooding	M	M	L	L	L	L
Ground conditions	Peatland	L	L	L	L	L	M
Construction / Maintenance	Access	L	L	L	L	L	L
	Angle Supports	L	M	M	M	M	M
Proximity	Windfarms	L	L	L	L	M	L
	Communication masts	M	H	L	L	L	L
	Urban areas	L	L	M	M	L	M
	Metallic pipes	M	M	M	M	M	M
Other Considerations	Length	L	M	L	M	L	M
Economic Appraisal							
Cost	Capital (Construction)	L	L	L	L	L	L
	Operational (Maintenance)	L	L	L	L	L	L

7. 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.

7.1 Questions for Consideration by Consultees

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

- Have we adequately explained the need for the project?
- Do you feel sufficient information has been provided to enable you to understand what is being proposed and why?
- Are you satisfied that our approach taken to select the preferred route has been adequately explained?
- Do you agree with our preferred overhead line route, if not, why?
- Are there any factors, or environmental features, that you think require further consideration during the preferred route selection process?
- Do you have any other comments or concerns in relation to the transmission infrastructure requirements or about the preferred route selection?

7.2 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 be considered before the Proposed Route is confirmed. All feedback received concerning the Preferred Corridor will be reviewed following the same method should the Corridor Consultation have been consulted on separately to the Route Consultation.

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.

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Kintore Tie-in

Fiddes Tie-in

Tealing Tie-in

F2 F1 F1.2 F2.1 F1.1 E1.2 E1 E1.1 D1.1 D2.1 D1.2 D1 D2 D3 C1.2 C3 C2 B1.3 C1 C1.1 B1.2 B1.1 B1 A1 A1.1

Scale @ A3: 1:340,000

0 2 4 8 12 16 20 km

310000m.E 320 330 340 350 360 370 380 390 400 410

820 810 800 790 780 770 760 750 740 730000m.N

- Substation Areas

Section A (Tealing to Forfar)
- A1 (preferred option)
- A1.1

Section B (Forfar to Brechin)
- B1 (preferred option)
- B1.1
- B1.2
- B1.3

Section C (Brechin to Laurencekirk)
- C1 (preferred option)
- C1.1
- C1.2
- C2
- C3

Section D (Laurencekirk to Fiddes)
- D1 (preferred option)
- D1.1
- D1.2
- D2
- D2.1
- D3

Section E (Fiddes to River Dee)
- E1 (preferred option)
- E1.1
- E1.2

Section F (River Dee to Kintore)
- F1 (preferred option)
- F1.1
- F1.2
- F2
- F2.1

Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title: Context Plan

Drawn by: HW Date: 25/04/2023

Figure: 1.1

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Kintore Tie-in

Fiddes Tie-in

Tealing Tie-in

2b

1b

Scale @ A3: 1:400,000

0 2.5 5 10 15 20 25 km

300000m.E 310 320 330 340 350 360 370 380 390 400 410 420

730000m.N 740 750 760 770 780 790 800 810 820 830

Area of search (5km radius from existing substation)

Study area 10km buffer

Preferred Corridor

1b

2b

Project No: LT455

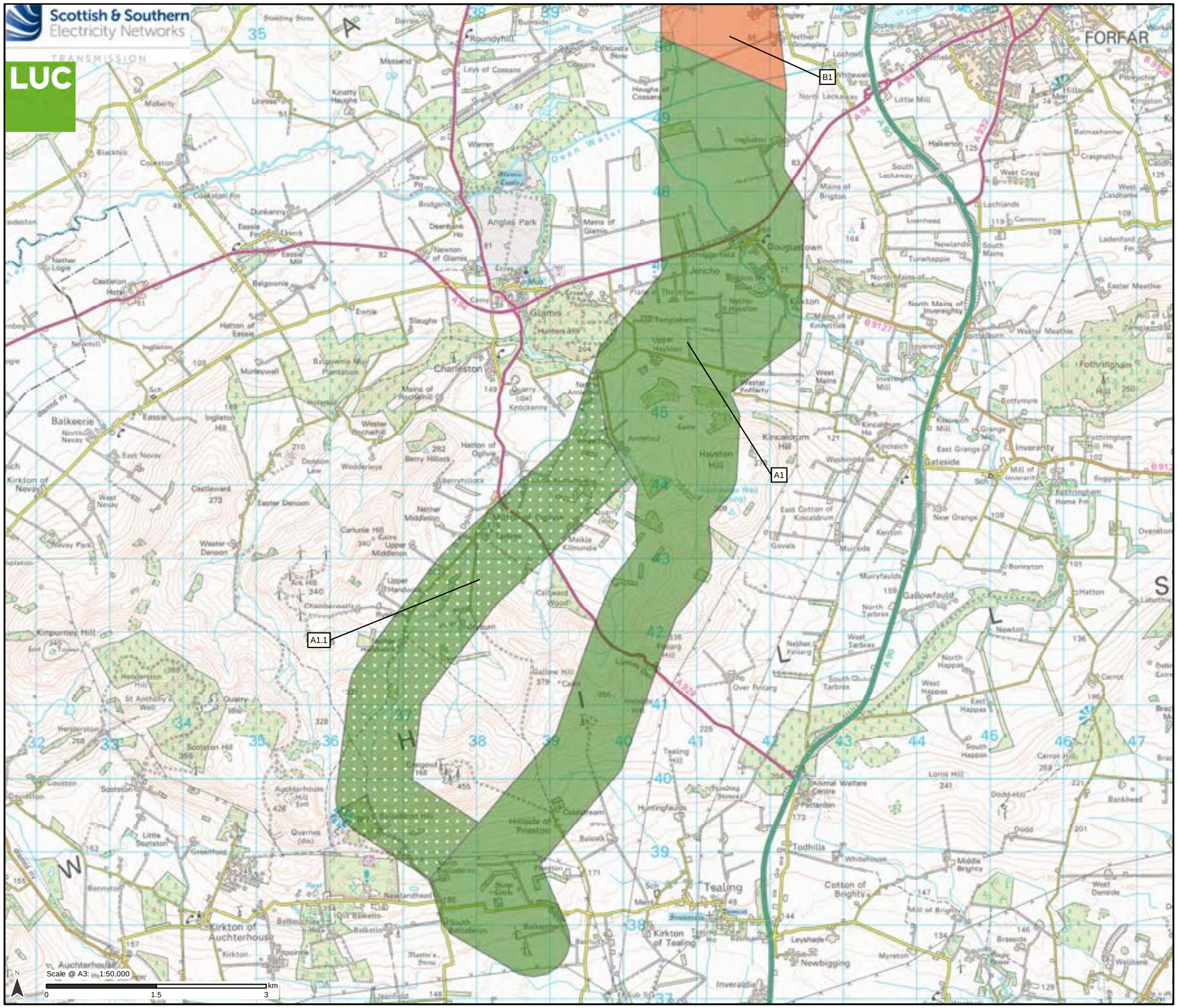
Project: Kintore - Fiddes - Tealing 400kV Overhead Line Connection

Title:

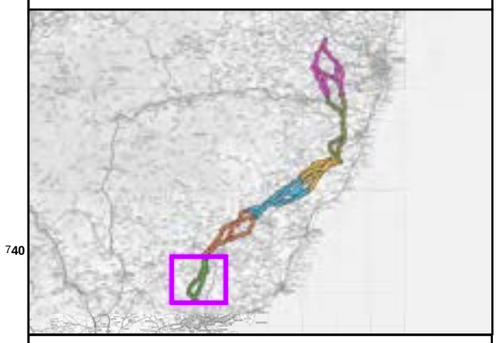
Preferred Corridor

Drawn by: HW Date: 27/04/2023

Figure: 3.1



A1 (preferred option)
A1.1
B1 (preferred option)



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

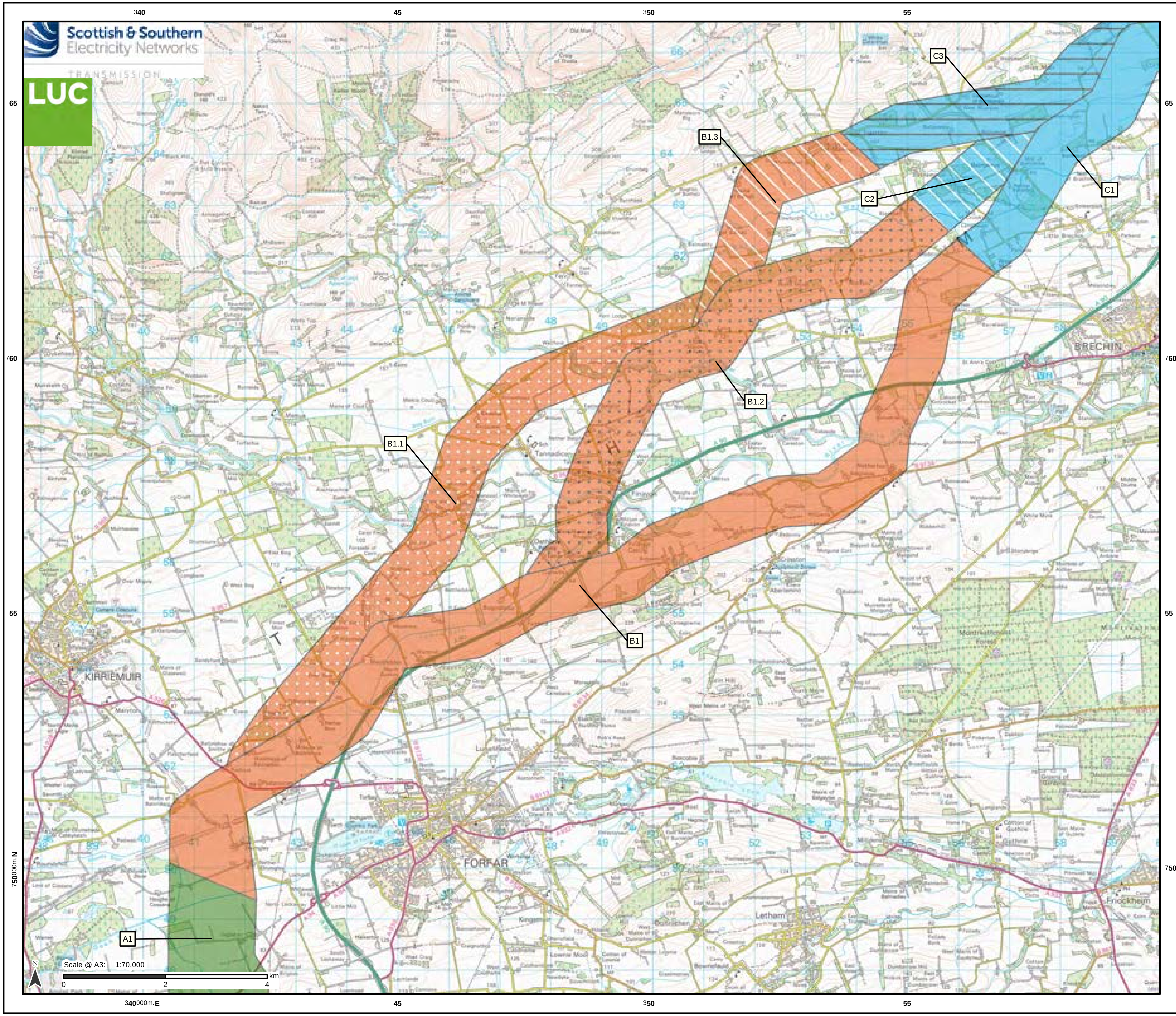
Title:

Route Plan - Section A

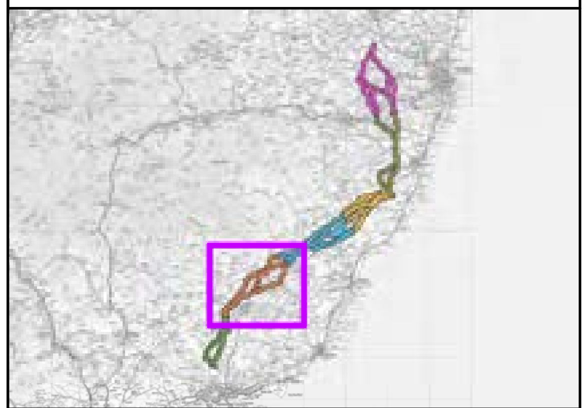
Drawn by: HW

Date: 25/04/2023

Figure: 4.1



- A1 (preferred option)
- B1 (preferred option)
- B1.1
- B1.2
- B1.3
- C1 (preferred option)
- C2
- C3



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

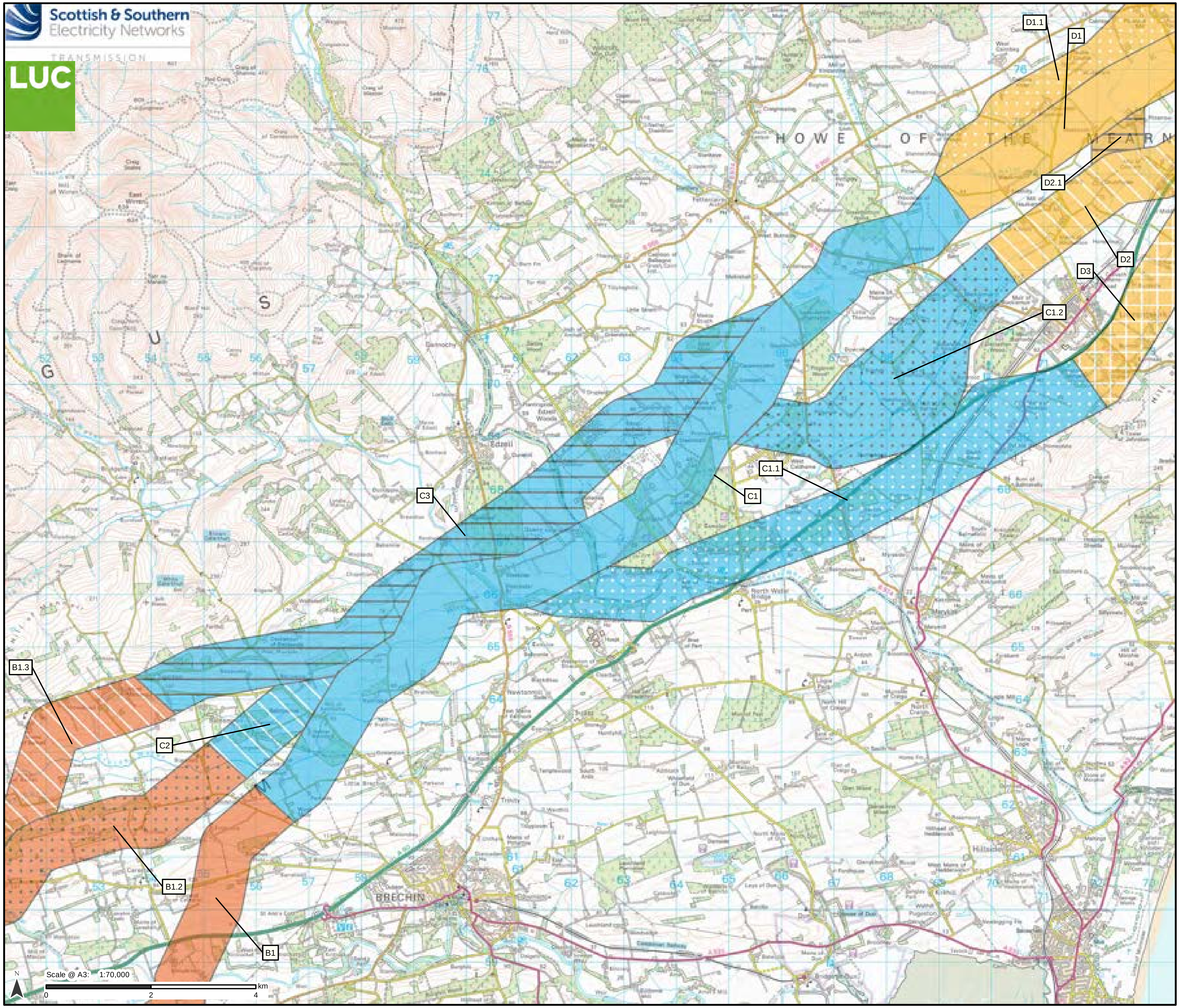
Title:

Route Plan - Section B

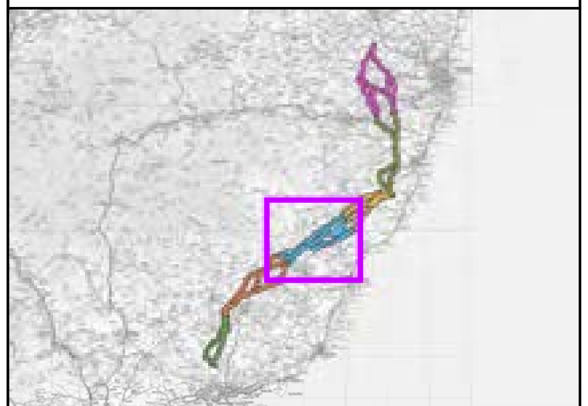
Drawn by: HW

Date: 25/04/2023

Figure: 4.2



B1 (preferred option)
B1.2
B1.3
C1 (preferred option)
C1.1
C1.2
C2
C3
D1 (preferred option)
D1.1
D2
D2.1
D3



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Route Plan - Section C

Drawn by: HW

Date: 25/04/2023

Figure: 4.3

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370 75 380

780 780

75 75

770000m.N

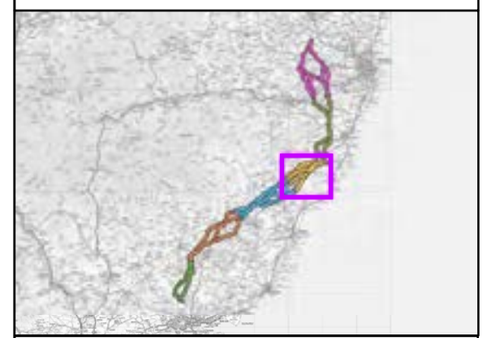
370000m.E 75 380

D1.1
E1.1
E1
D1
D1.2
D2
D3
D2.1
C1
C1.2
C1.1

OF THE MEARNS

Scale @ A3: 1:45,000
0 1 2 km

- C1 (preferred option)
- C1.1
- C1.2
- D1 (preferred option)
- D1.1
- D1.2
- D2
- D2.1
- D3
- E1 (preferred option)
- E1.1



Project No: LT455

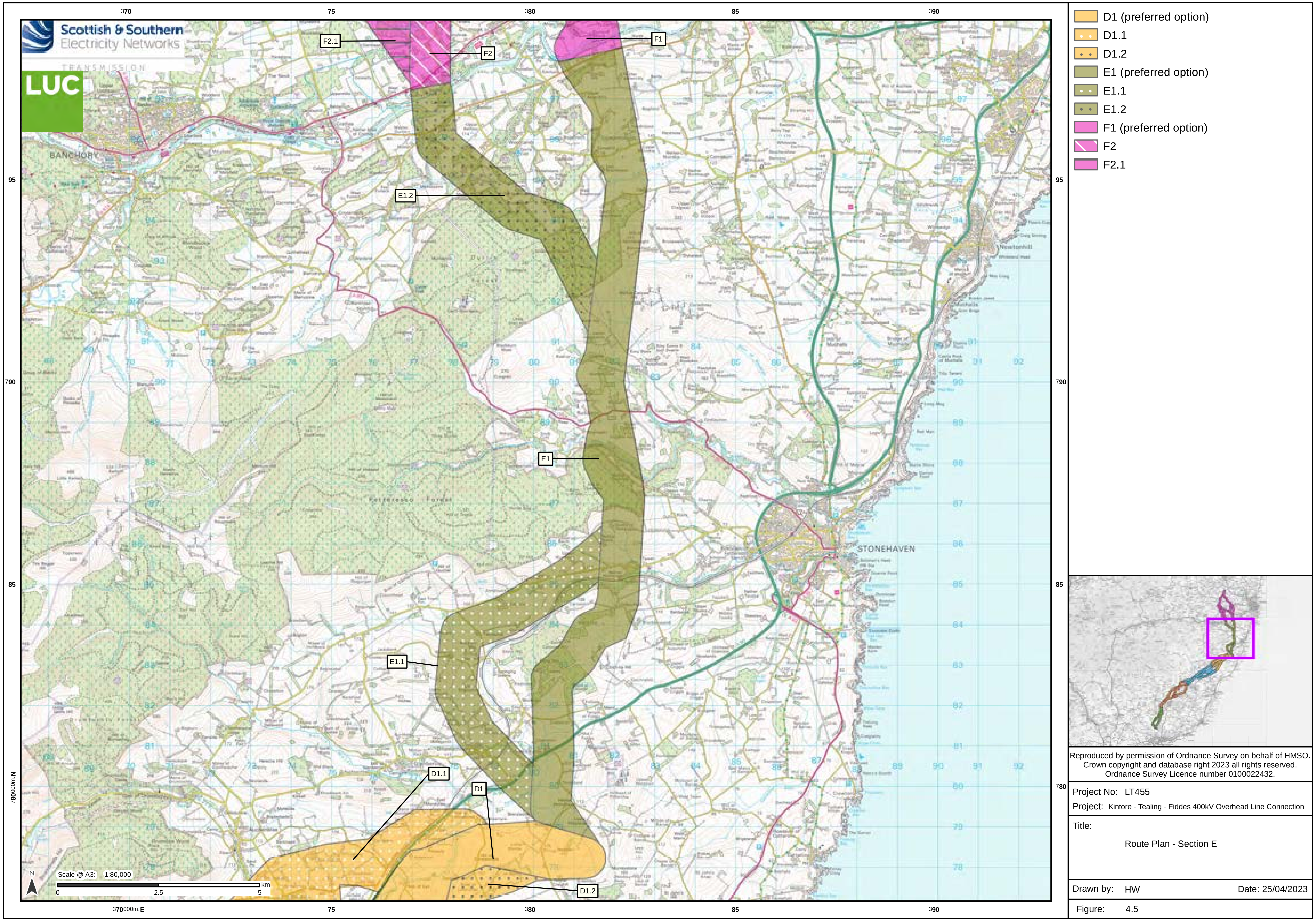
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Route Plan - Section D

Drawn by: HW Date: 25/04/2023

Figure: 4.4



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

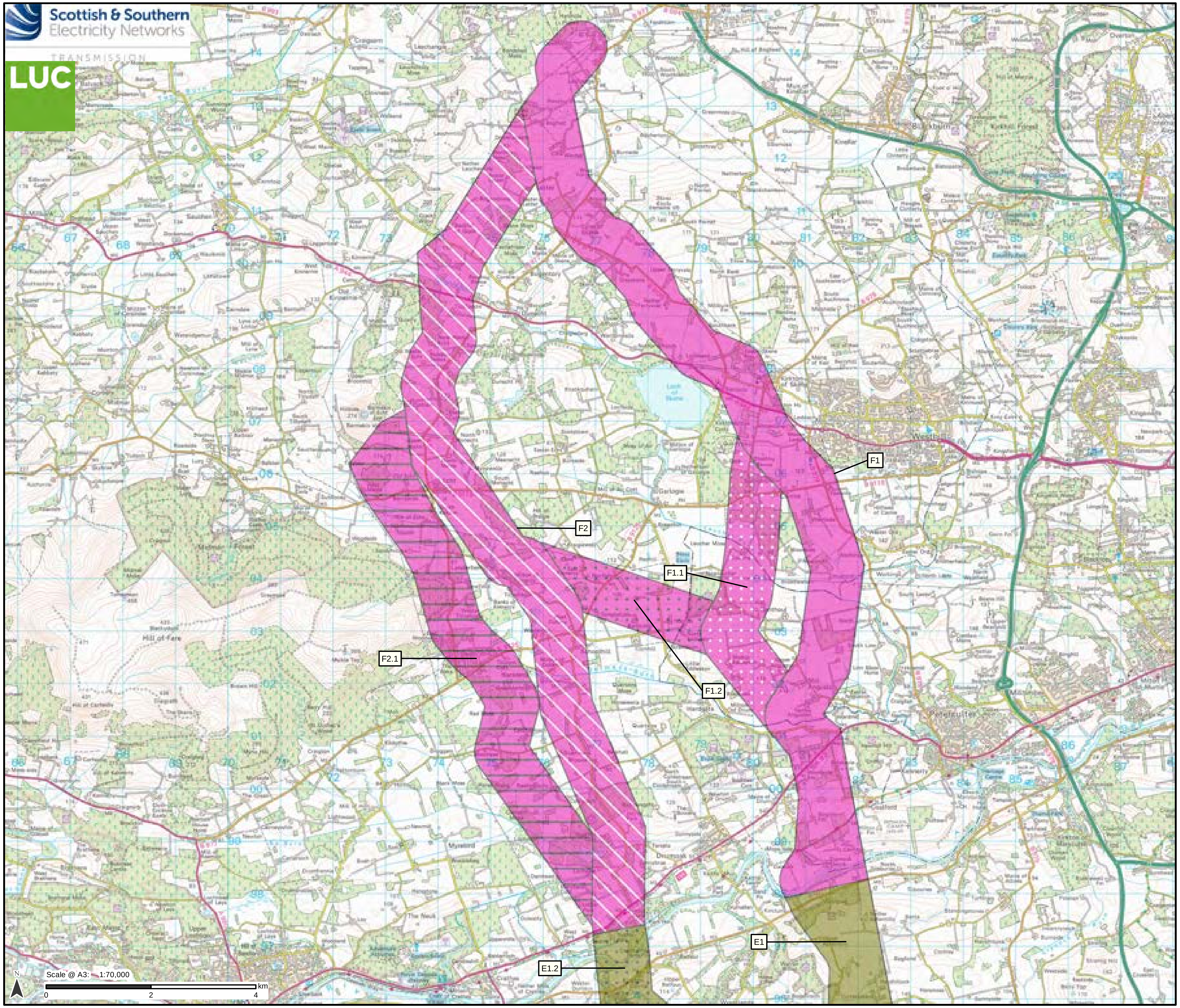
Title:

Route Plan - Section E

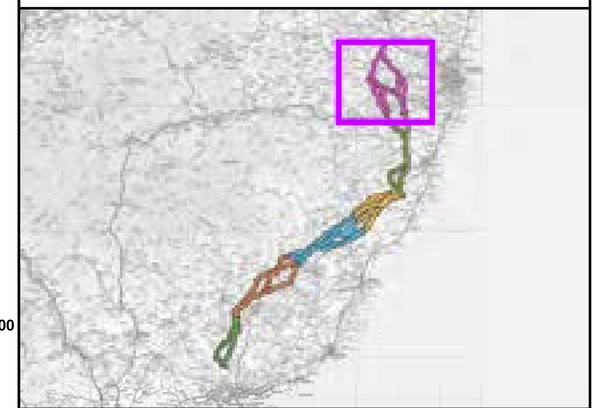
Drawn by: HW

Date: 25/04/2023

Figure: 4.5



- E1 (preferred option)
- E1.2
- F1 (preferred option)
- F1.1
- F1.2
- F2
- F2.1



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

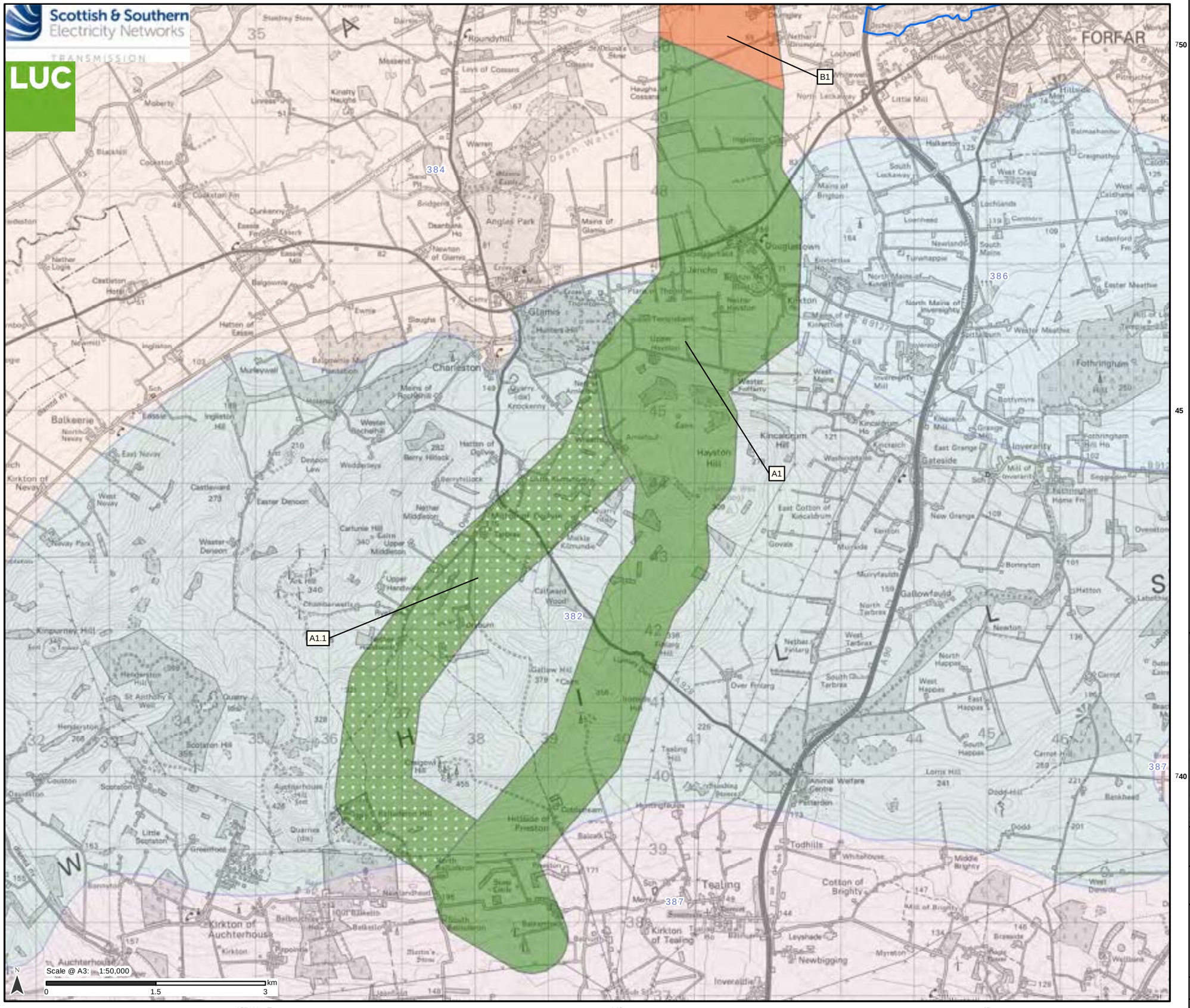
Title:

Route Plan - Section F

Drawn by: HW

Date: 25/04/2023

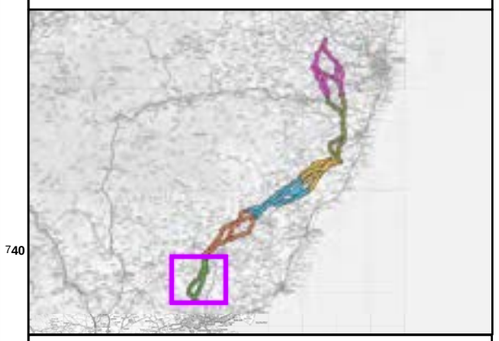
Figure: 4.6



- A1 (preferred option)
- A1.1
- B1 (preferred option)
- Country Park

Landscape Character Assessment

- 382: Lowland Hill Ranges
- 384: Broad Valley Lowlands - Tayside
- 386: Low Moorland Hills
- 387: Dipslope Farmland



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Landscape Constraints - Section A

Drawn by: HW Date: 25/04/2023

Figure: 5.1a

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B1

A1

A1.1

FORFAR

Scale @ A3: 1:50,000

0 1.5 3 km

N

335000m.E 340 345

740000m.N 745

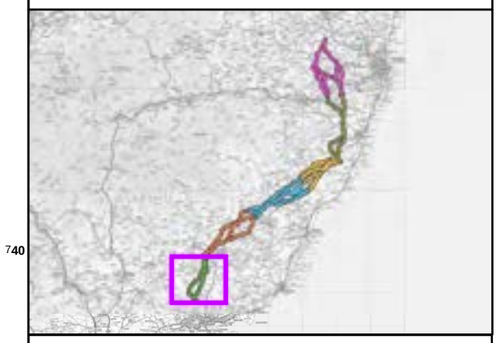
A1 (preferred option)

A1.1

B1 (preferred option)

Site of Special Scientific Interest

Special Area of Conservation



Project No: LT455

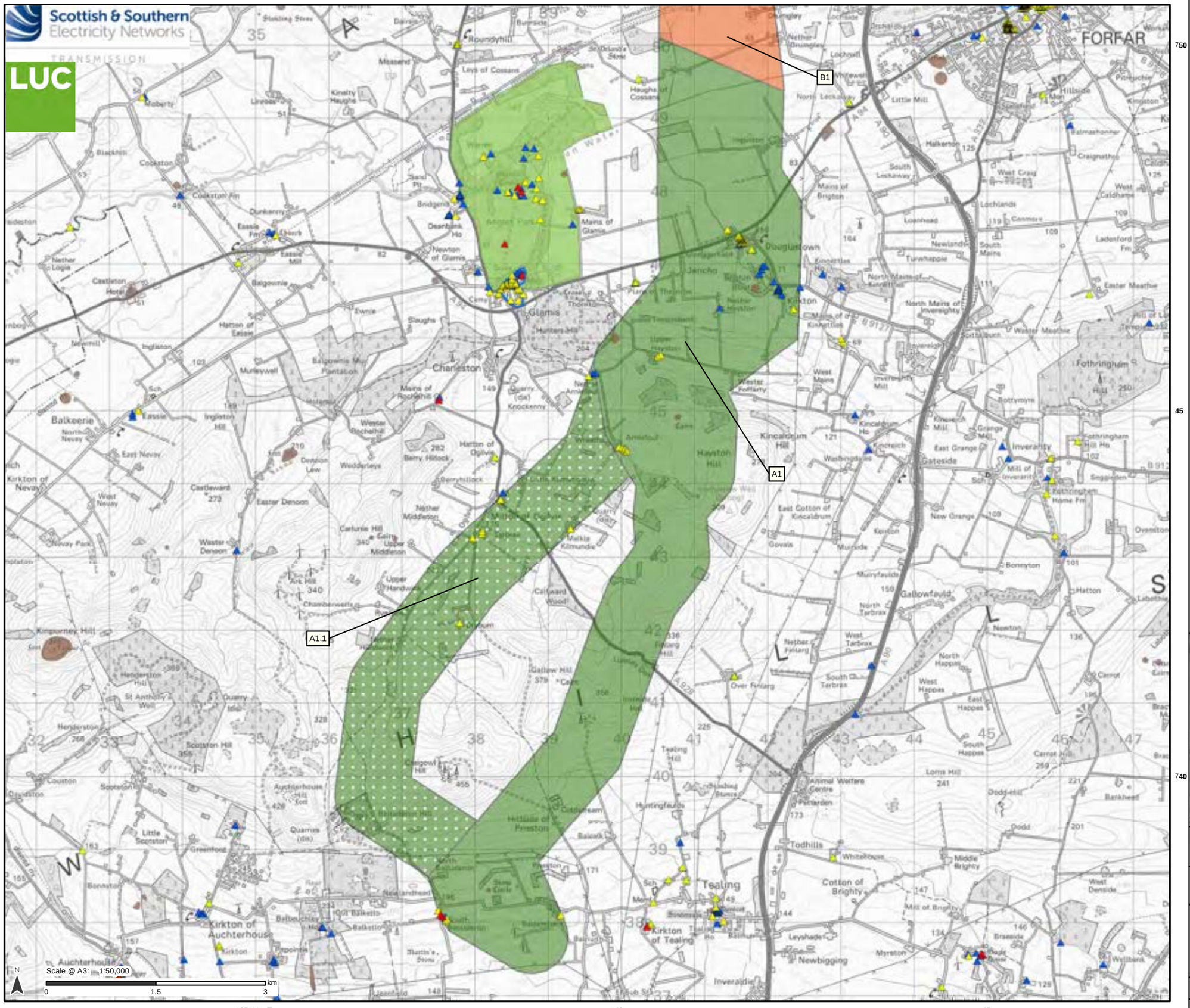
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Ecology Constraints - Section A

Drawn by: HW Date: 25/04/2023

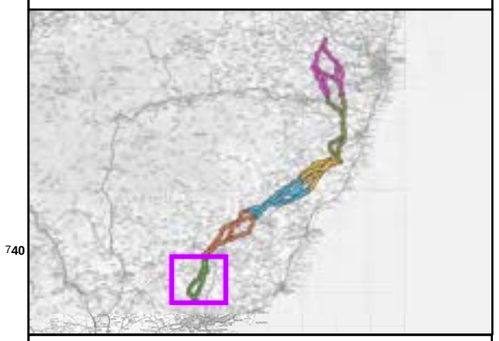
Figure: 5.1b



- A1 (preferred option)
- A1.1
- B1 (preferred option)

Listed building

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



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

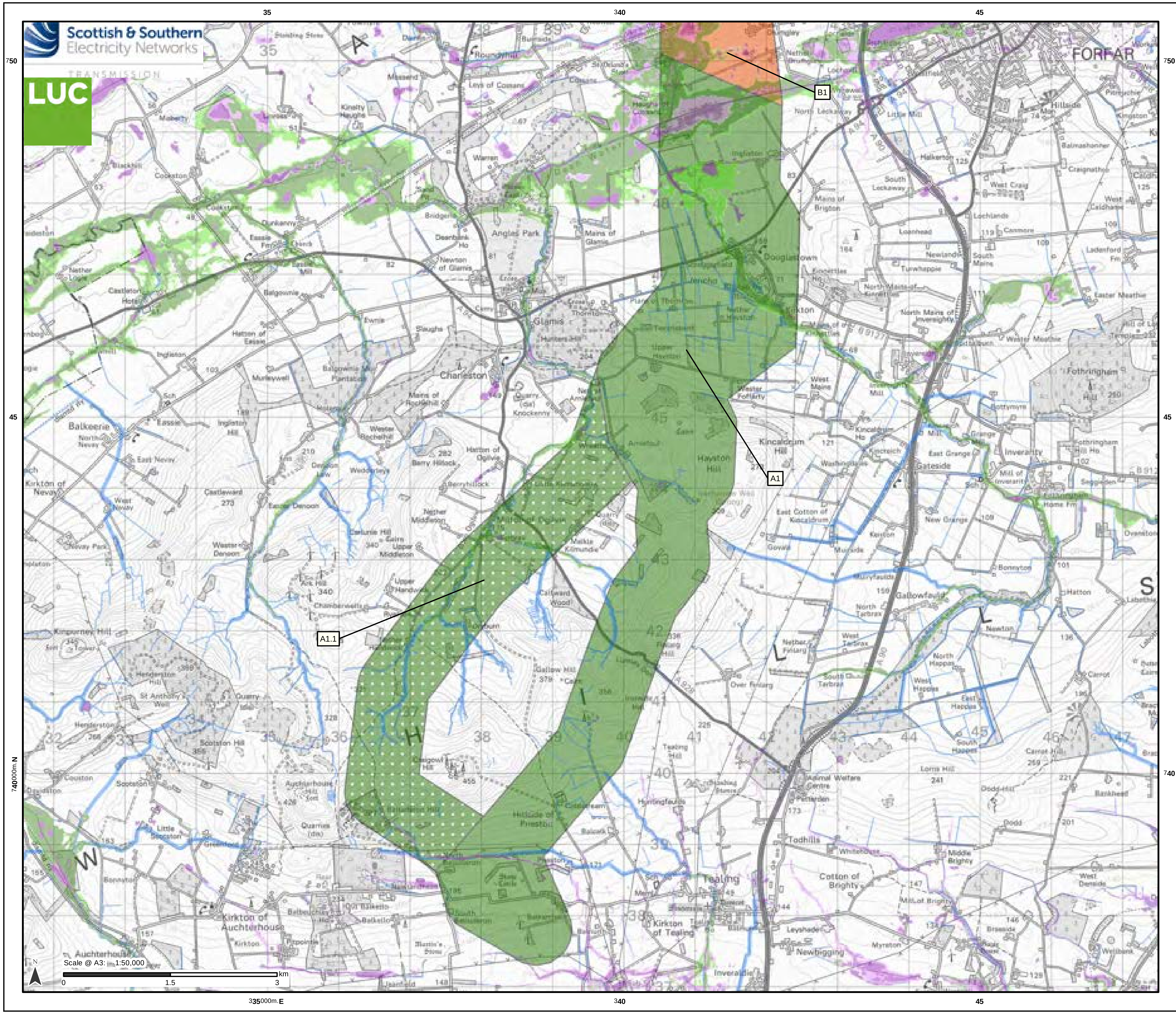
Title:

Cultural Heritage Constraints - Section A

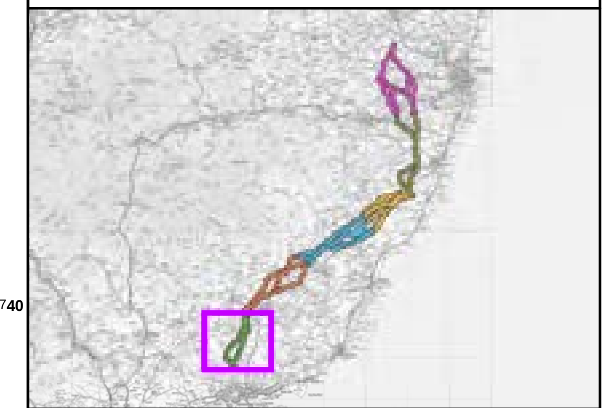
Drawn by: HW

Date: 25/04/2023

Figure: 5.1c



- A1 (preferred option)
- A1.1
- B1 (preferred option)
- 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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

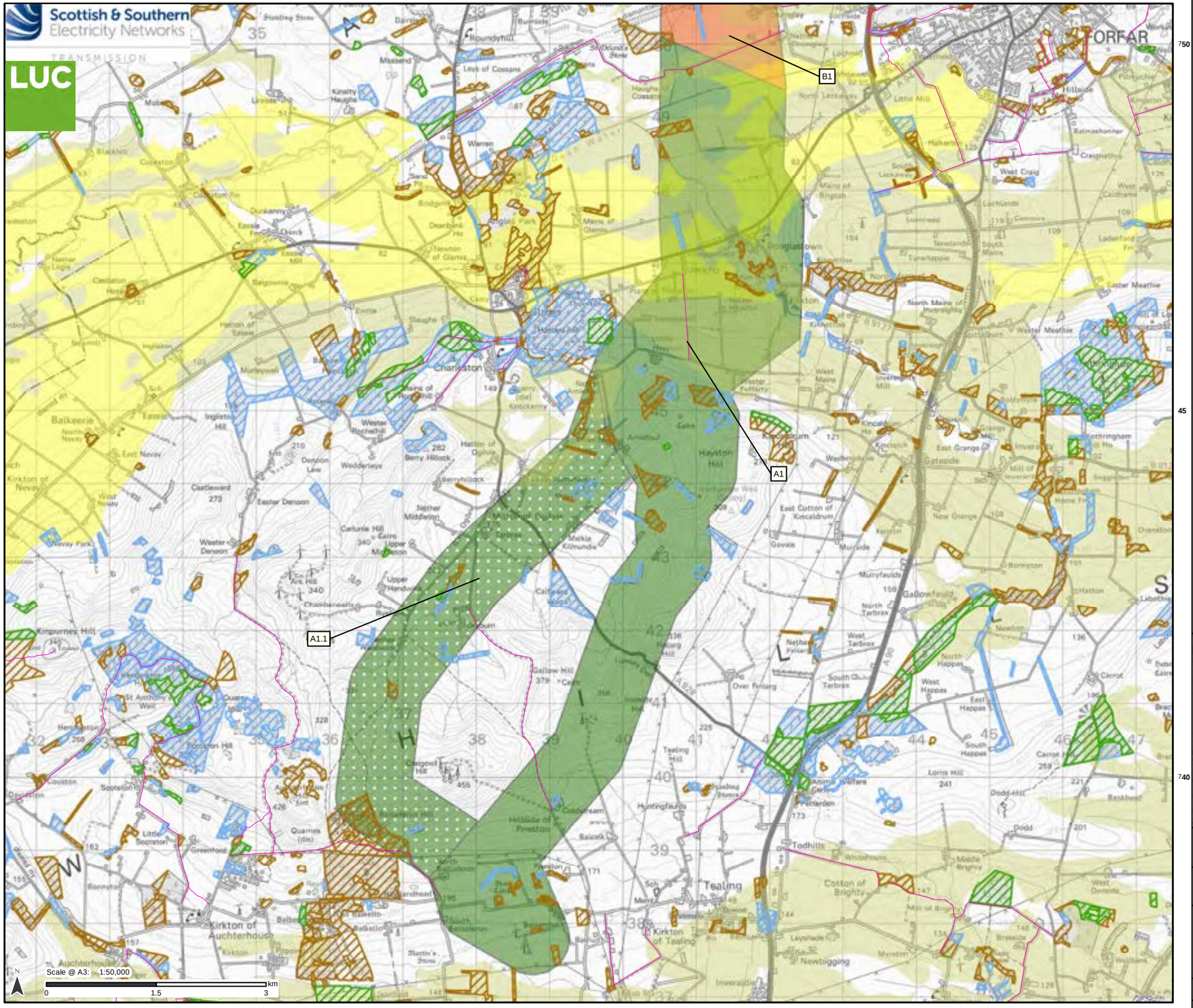
Title:

Hydrology Constraints - Section A

Drawn by: HW

Date: 25/04/2023

Figure: 5.1d



A1 (preferred option)

A1.1

B1 (preferred option)

Core path (indicative)

National Forest Inventory

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

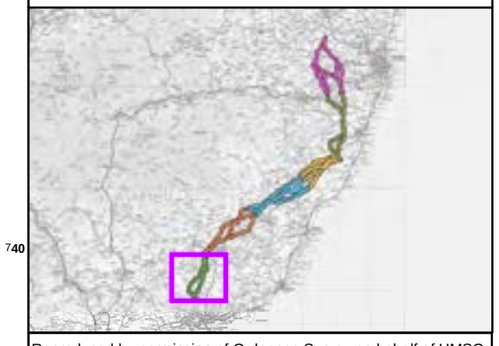
Conifer; Mixed mainly conifer

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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

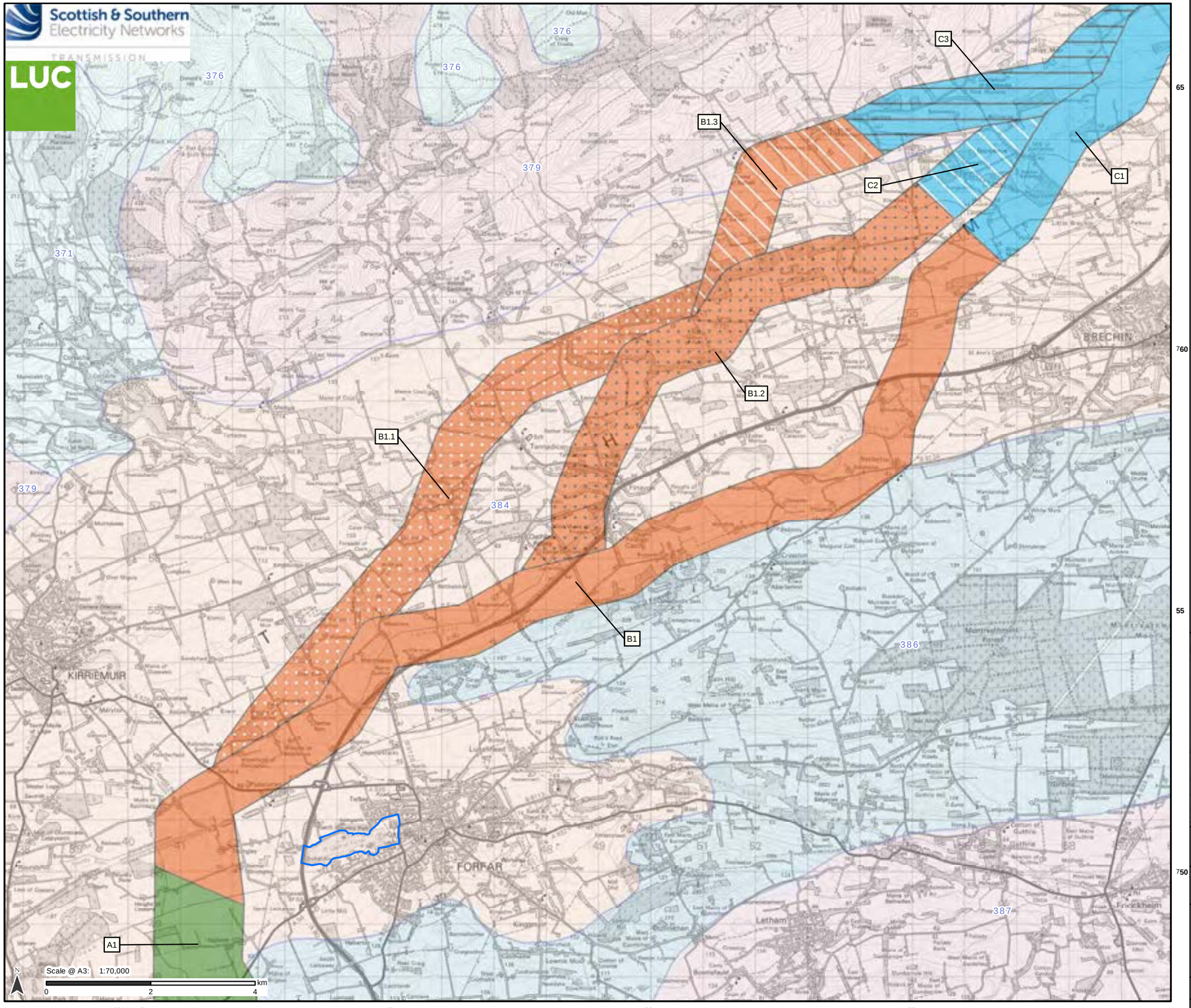
Title:

Land Use Constraints - Section A

Drawn by: HW

Date: 25/04/2023

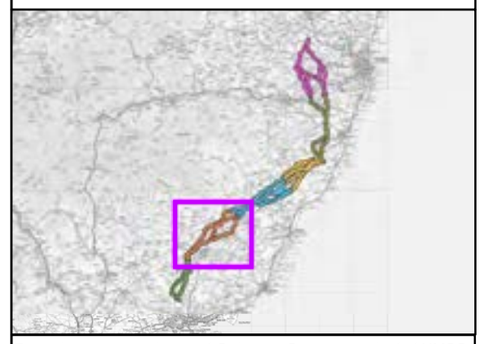
Figure: 5.1e



- A1 (preferred option)
- B1 (preferred option)
- B1.1
- B1.2
- B1.3
- C1 (preferred option)
- C2
- C3
- Country Park

Landscape Character Assessment

- 371: Mid Upland Glens
- 376: Summits and Plateaux - Tayside
- 379: Foothills - Tayside
- 384: Broad Valley Lowlands - Tayside
- 386: Low Moorland Hills
- 387: Dipslope Farmland



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Landscape Constraints - Section B

Drawn by: HW

Date: 25/04/2023

Figure: 5.2a

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

340 45 350 55

65 760 55 750

B1.3 C3 C2 C1 B1.2 B1.1 B1 A1

BRECHIN KIRRIEMUIR FORFAR Letham Friockheim

N

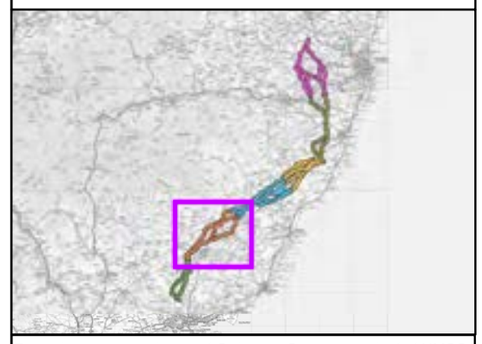
Scale @ A3: 1:70,000

0 2 4 km

340000m.E 45 350 55

750000m.N

- A1 (preferred option)
- B1 (preferred option)
- B1.1
- B1.2
- B1.3
- C1 (preferred option)
- C2
- C3
- Site of Special Scientific Interest
- Scottish Wildlife Trust reserve
- Wildcat Priority Area
- Special Area of Conservation



Project No: LT455

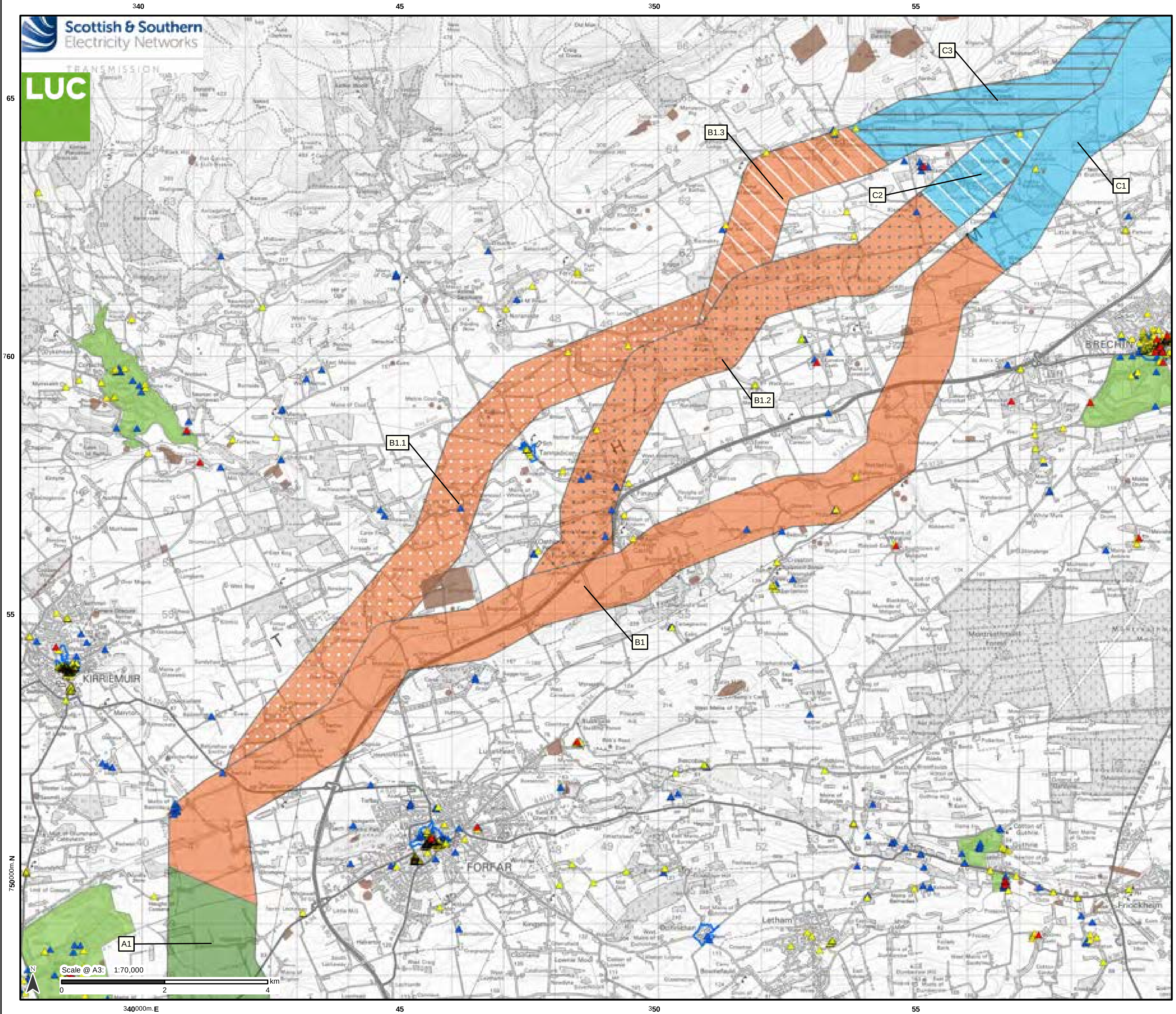
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Ecology Constraints - Section B

Drawn by: HW Date: 25/04/2023

Figure: 5.2b

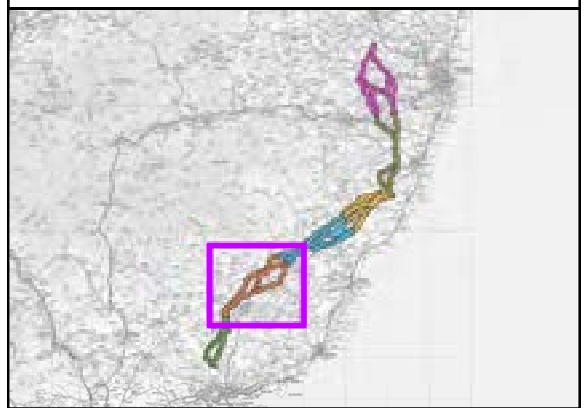


A1 (preferred option)
B1 (preferred option)
B1.1
B1.2
B1.3
C1 (preferred option)
C2
C3

Listed building

A
B
C

Conservation area
Scheduled monument
Garden and Designed Landscape



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

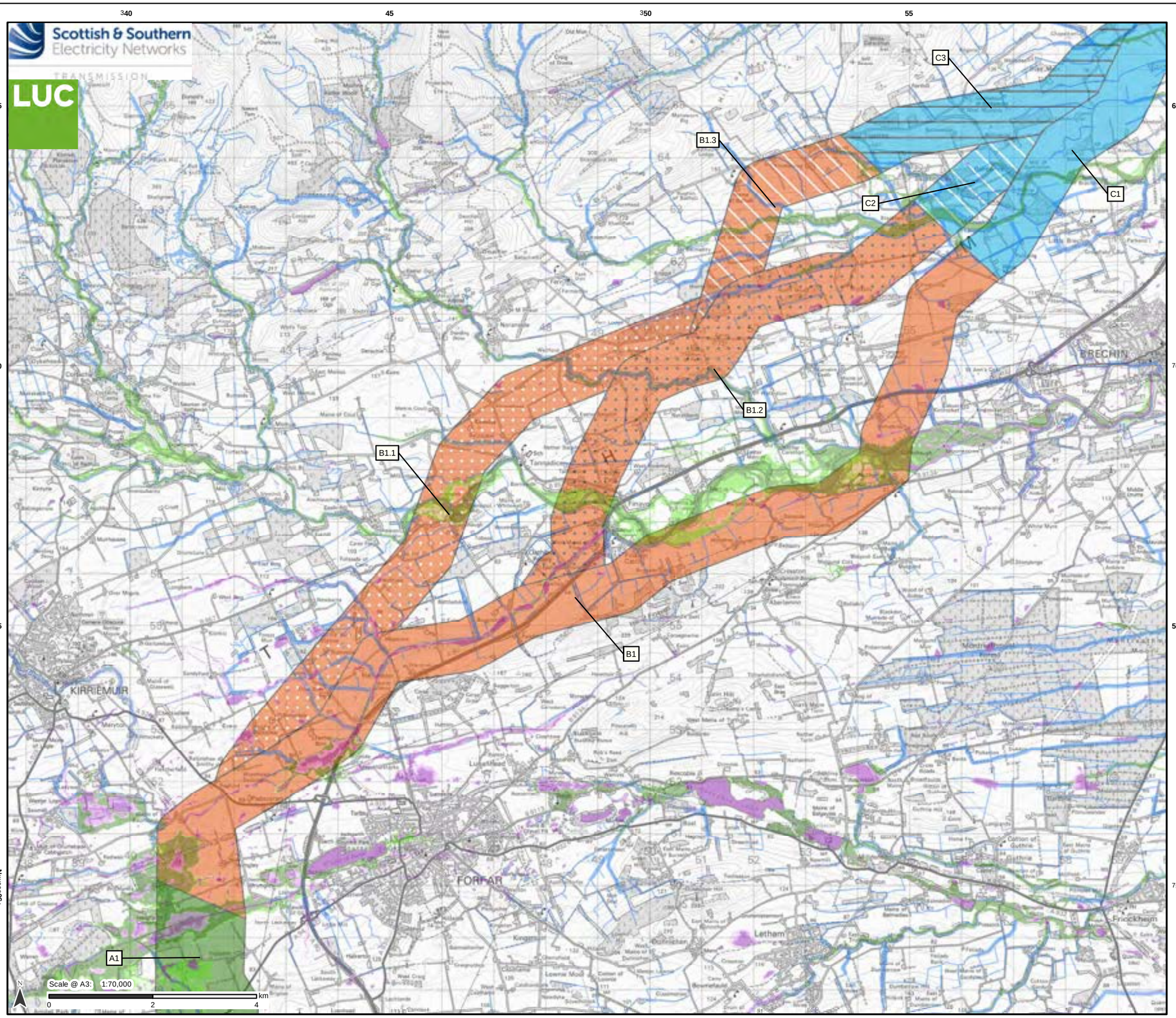
Title:

Cultural Heritage Constraints - Section B

Drawn by: HW

Date: 25/04/2023

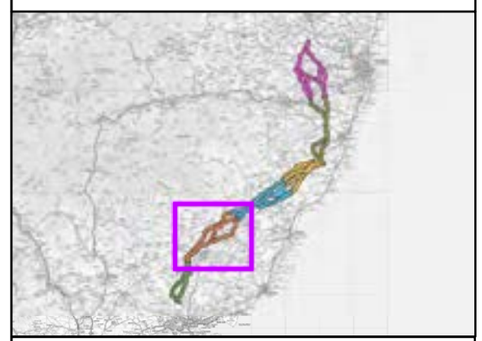
Figure: 5.2c



Scottish & Southern Electricity Networks
TRANSMISSION

LUC

- A1 (preferred option)
- B1 (preferred option)
- B1.1
- B1.2
- B1.3
- C1 (preferred option)
- C2
- C3
- 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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Hydrology Constraints - Section B

Drawn by: HW

Date: 25/04/2023

Figure: 5.2d

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

340 45 350 55

65

760

55

750

340000m.E 45 350 55

B1.3
C3
C2
C1
B1.2
B1.1
B1
A1

Scale @ A3: 1:70,000
0 2 4 km

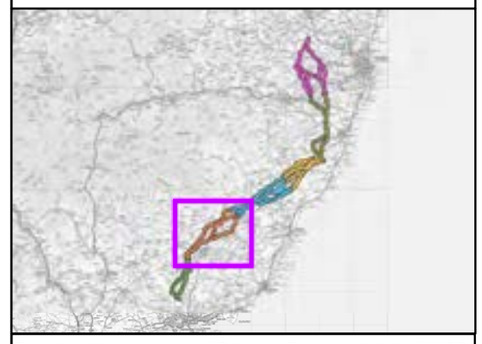
A1 (preferred option)
B1 (preferred option)
B1.1
B1.2
B1.3
C1 (preferred option)
C2
C3
Core path (indicative)

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: LT455
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:
Land Use Constraints - Section B

Drawn by: HW Date: 25/04/2023

Figure: 5.2e

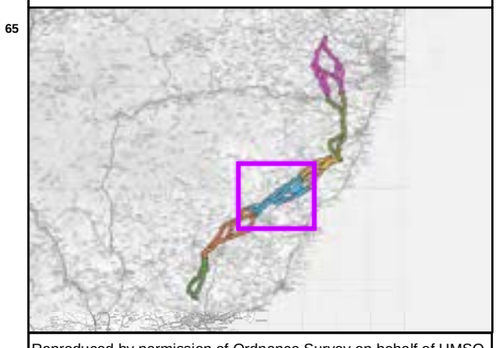
Scottish & Southern Electricity Networks
TRANSMISSION

LUC

B1 (preferred option)
B1.2
B1.3
C1 (preferred option)
C1.1
C1.2
C2
C3
D1 (preferred option)
D1.1
D2
D2.1
D3
Special Landscape Area

Landscape Character Assessment

13: Raised Beach Coast - Aberdeenshire
22: Broad Valley Lowlands - Aberdeenshire
24: Coastal Farmed Ridges and Hills - Aberdeenshire
29: Summits and Plateaux - Aberdeenshire
370: Upper Upland Glens
371: Mid Upland Glens
376: Summits and Plateaux - Tayside
379: Foothills - Tayside
384: Broad Valley Lowlands - Tayside
386: Low Moorland Hills
387: Dipslope Farmland
388: Beaches, Dunes and Links - Tayside
390: Lowland Basins



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Landscape Constraints - Section C

Drawn by: HW Date: 25/04/2023

Figure: 5.3a

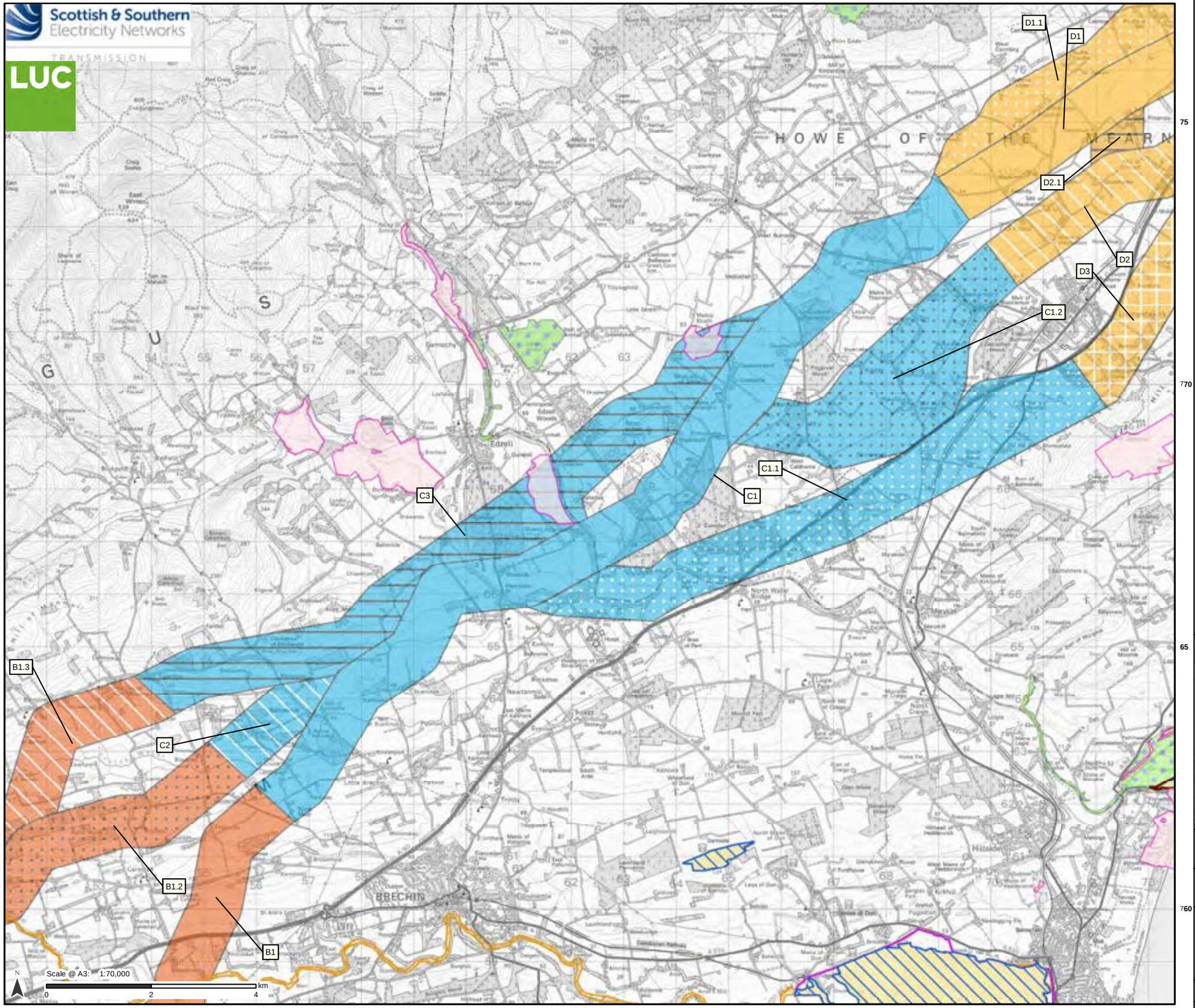
Scale @ A3: 1:70,000

0 2 4 km

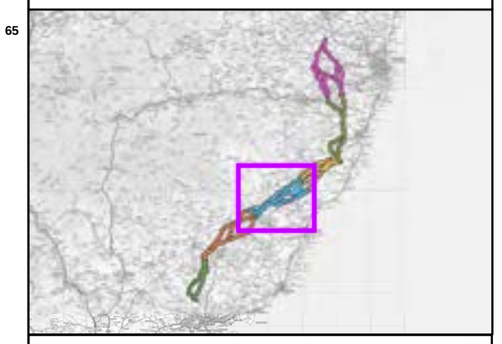
N

355000m.E 360 65 370

760000m.N



- B1 (preferred option)
- B1.2
- B1.3
- C1 (preferred option)
- C1.1
- C1.2
- C2
- C3
- D1 (preferred option)
- D1.1
- D2
- D2.1
- D3
- Special Protection Area
- RSPB Important Bird Area
- Site of Special Scientific Interest
- Scottish Wildlife Trust reserve
- Local Nature Reserve
- National Nature Reserve
- Special Area of Conservation
- Ramsar site
- Local Nature Conservation Site



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title: Ecology Constraints - Section C

Drawn by: HW

Date: 25/04/2023

Figure: 5.3b

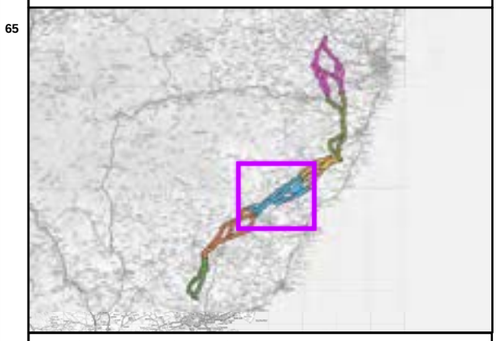
Scottish & Southern Electricity Networks
TRANSMISSION

LUC

B1 (preferred option)
B1.2
B1.3
C1 (preferred option)
C1.1
C1.2
C2
C3
D1 (preferred option)
D1.1
D2
D2.1
D3

Listed building

A
B
C
Conservation area
Scheduled monument
Garden and Designed Landscape



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title: Cultural Heritage Constraints - Section C

Drawn by: HW

Date: 25/04/2023

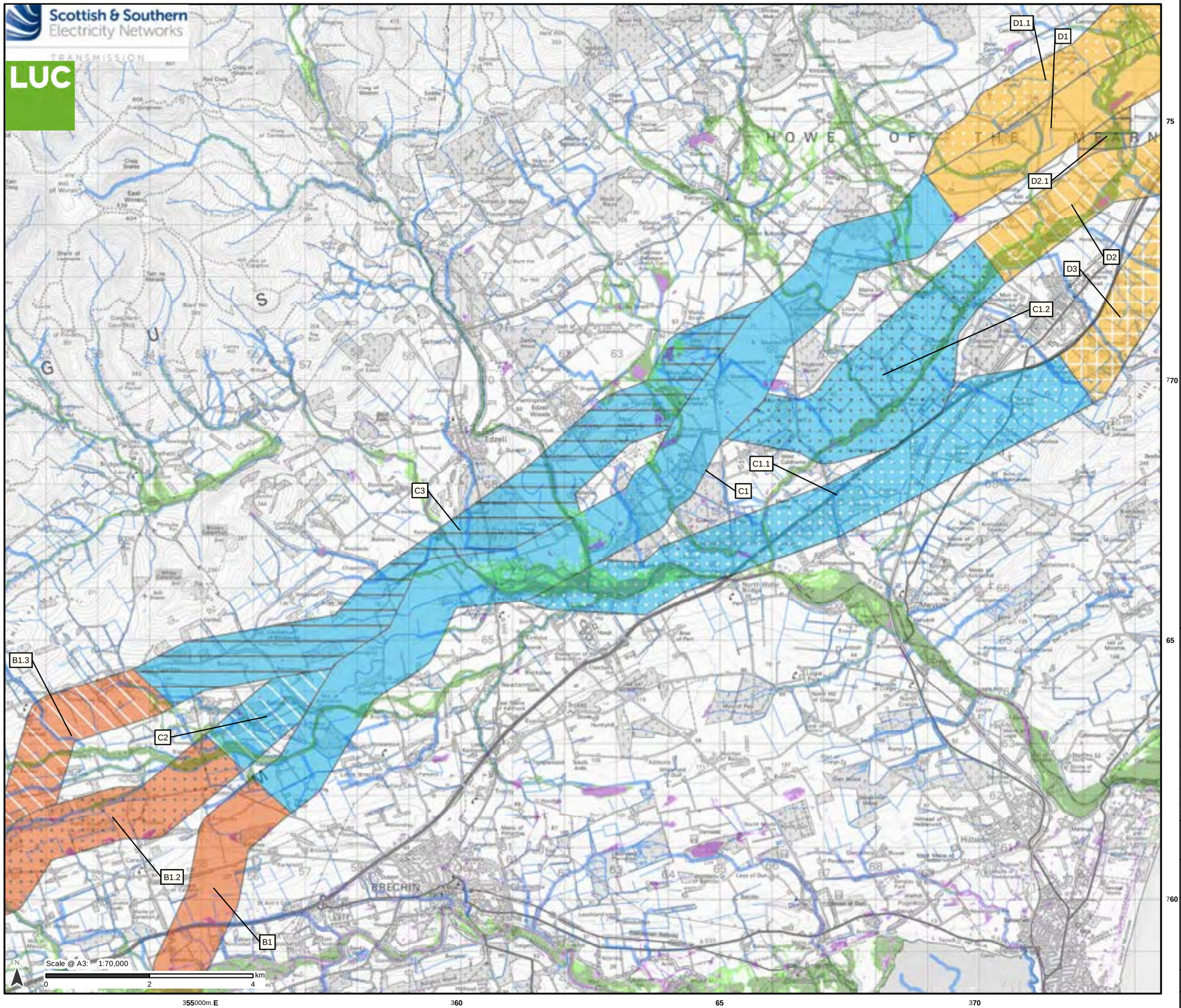
Figure: 5.3c

Scale @ A3: 1:70,000

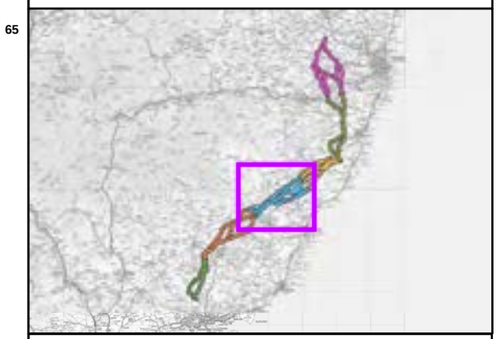
0 2 4 km

355000m.E 360 65 370

760000m.N 65 70 75



- B1 (preferred option)
- B1.2
- B1.3
- C1 (preferred option)
- C1.1
- C1.2
- C2
- C3
- D1 (preferred option)
- D1.1
- D2
- D2.1
- D3
- 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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title: Hydrology Constraints - Section C

Drawn by: HW Date: 25/04/2023

Figure: 5.3d

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

55 360 65 370

75 770 65 760

D1.1 D1 D2.1 D2 D3 C1.2 C1.1 C1 C3 B1.3 C2 B1.2 B1

Scale @ A3: 1:70,000
0 2 4 km

355000m.E 360 65 370

760000m.N

B1 (preferred option)
B1.2
B1.3
C1 (preferred option)
C1.1
C1.2
C2
C3
D1 (preferred option)
D1.1
D2
D2.1
D3

RouteType

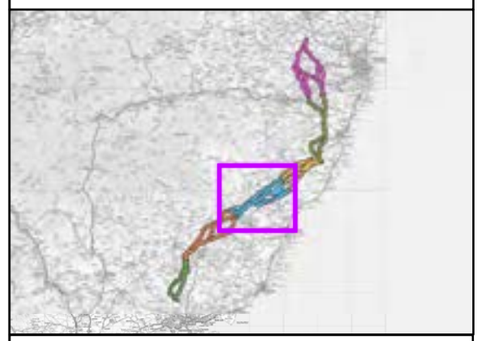
National Cycle Network (NCN)
NCN Link
Core path (indicative)

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: LT455

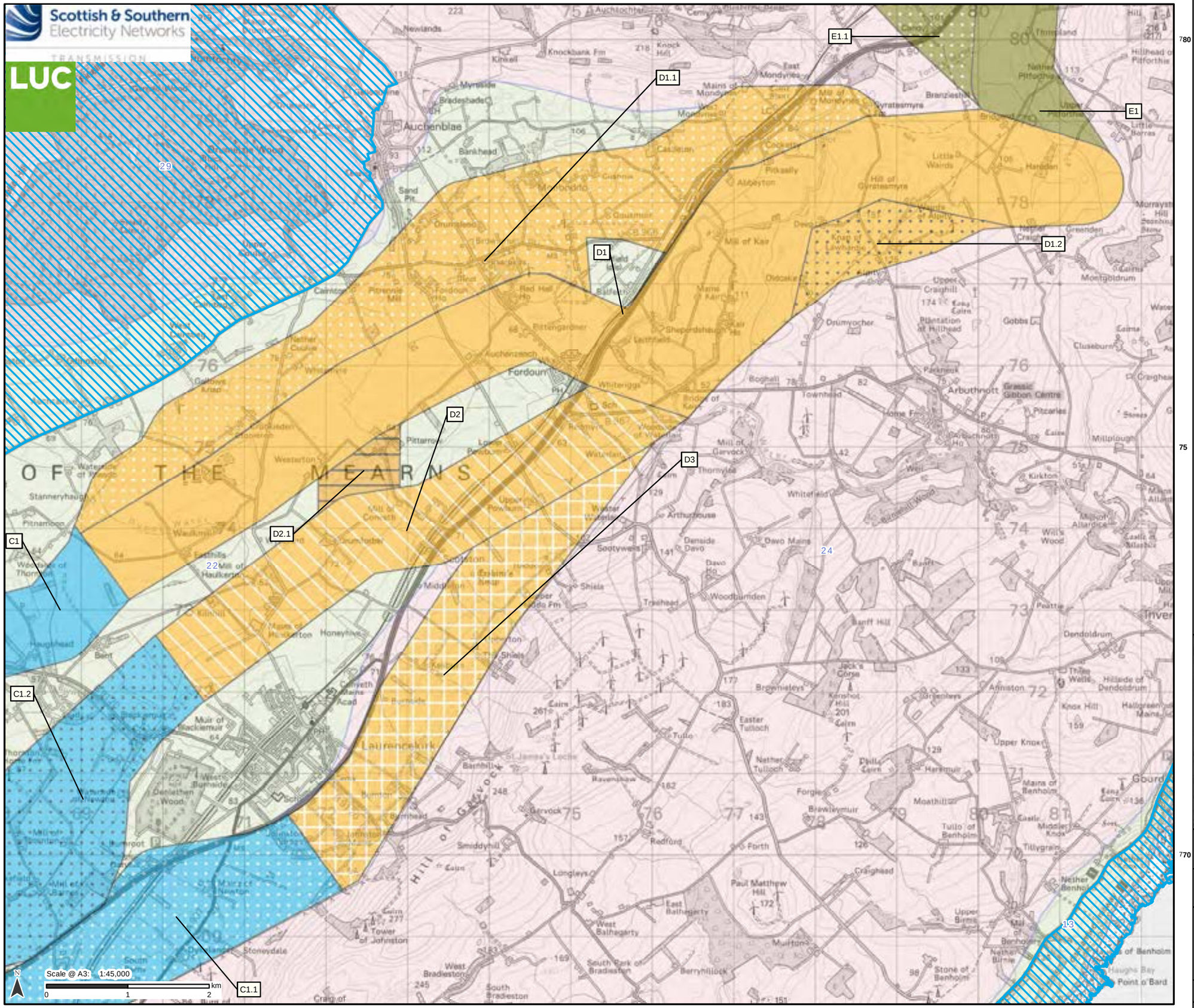
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Land Use Constraints - Section C

Drawn by: HW Date: 25/04/2023

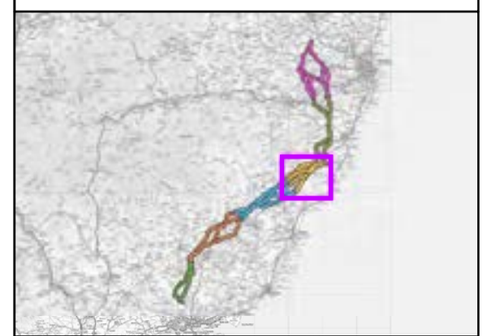
Figure: 5.3e



- C1 (preferred option)
- C1.1
- C1.2
- D1 (preferred option)
- D1.1
- D1.2
- D2
- D2.1
- D3
- E1 (preferred option)
- E1.1
- Special Landscape Area

Landscape Character Assessment

- 13: Raised Beach Coast - Aberdeenshire
- 22: Broad Valley Lowlands - Aberdeenshire
- 24: Coastal Farmed Ridges and Hills - Aberdeenshire
- 29: Summits and Plateaux - Aberdeenshire



Project No: LT455

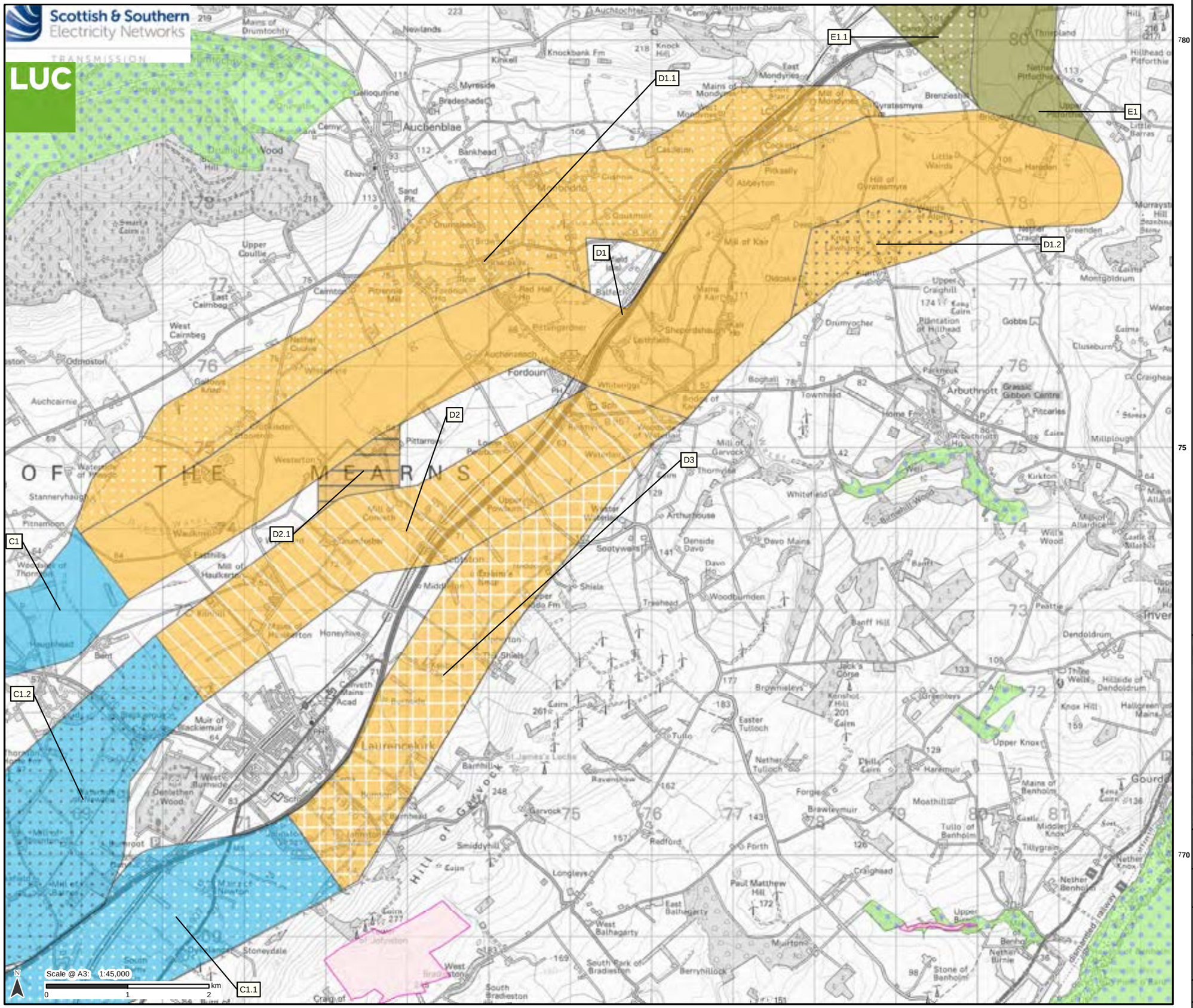
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

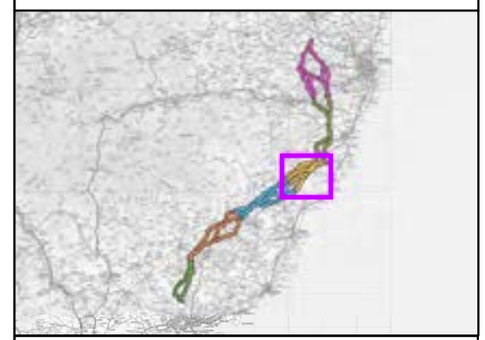
Landscape Constraints - Section D

Drawn by: HW Date: 25/04/2023

Figure: 5.4a



- C1 (preferred option)
- C1.1
- C1.2
- D1 (preferred option)
- D1.1
- D1.2
- D2
- D2.1
- D3
- E1 (preferred option)
- E1.1
- Site of Special Scientific Interest
- Local Nature Conservation Site



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

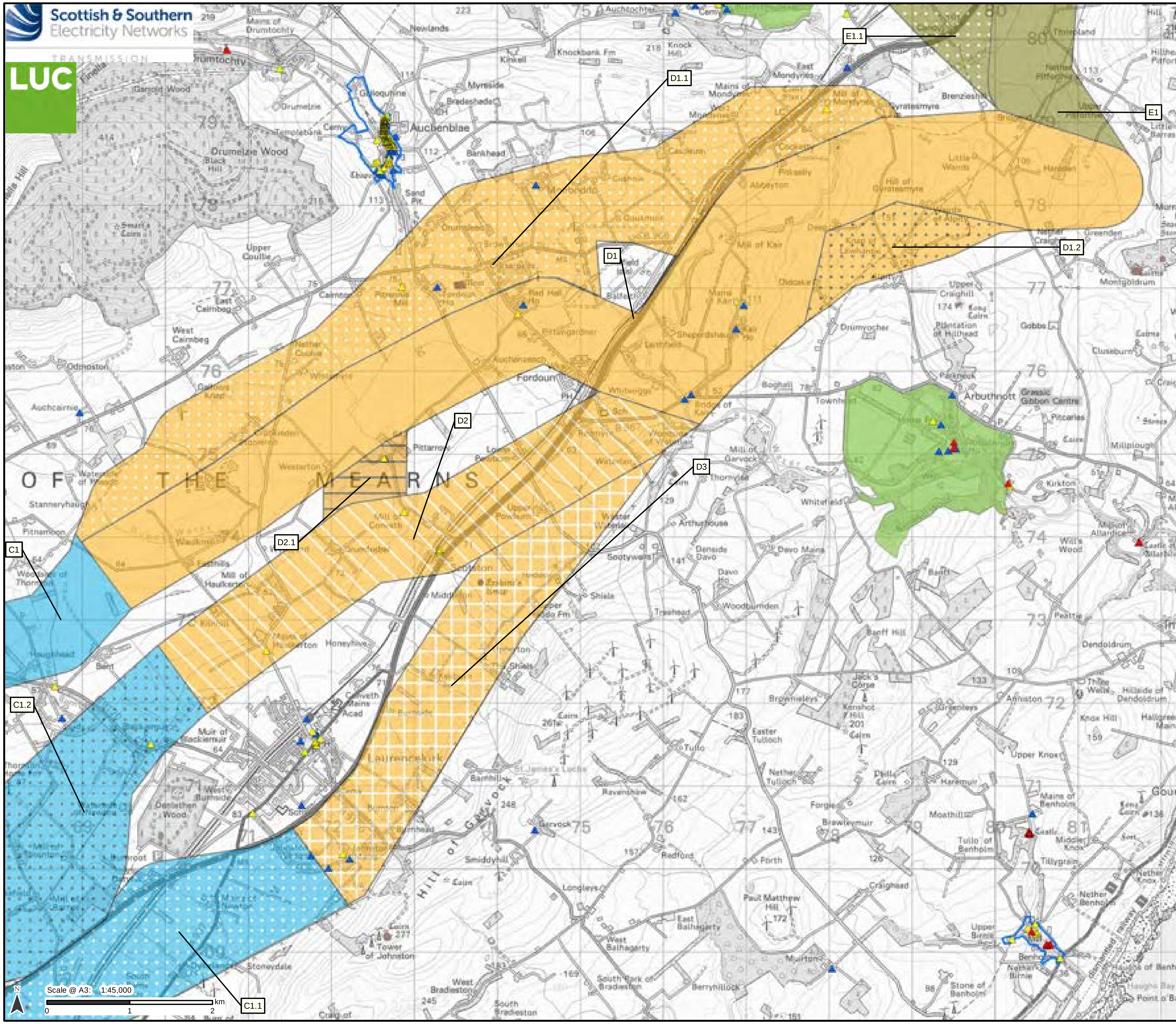
Title:

Ecology Constraints - Section D

Drawn by: HW

Date: 25/04/2023

Figure: 5.4b

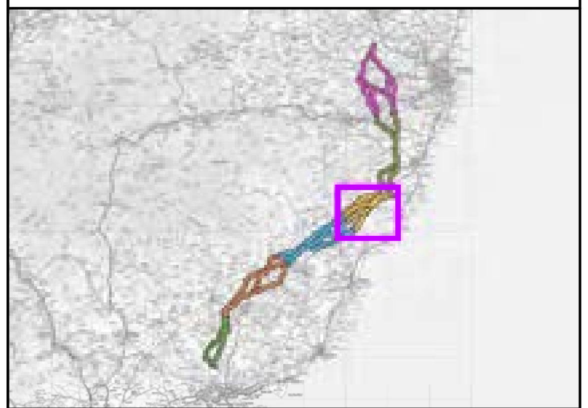


C1 (preferred option)
C1.1
C1.2
D1 (preferred option)
D1.1
D1.2
D2
D2.1
D3
E1 (preferred option)
E1.1

Listed building

- A
- B
- C

Conservation area
Scheduled monument
Garden and Designed Landscape



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

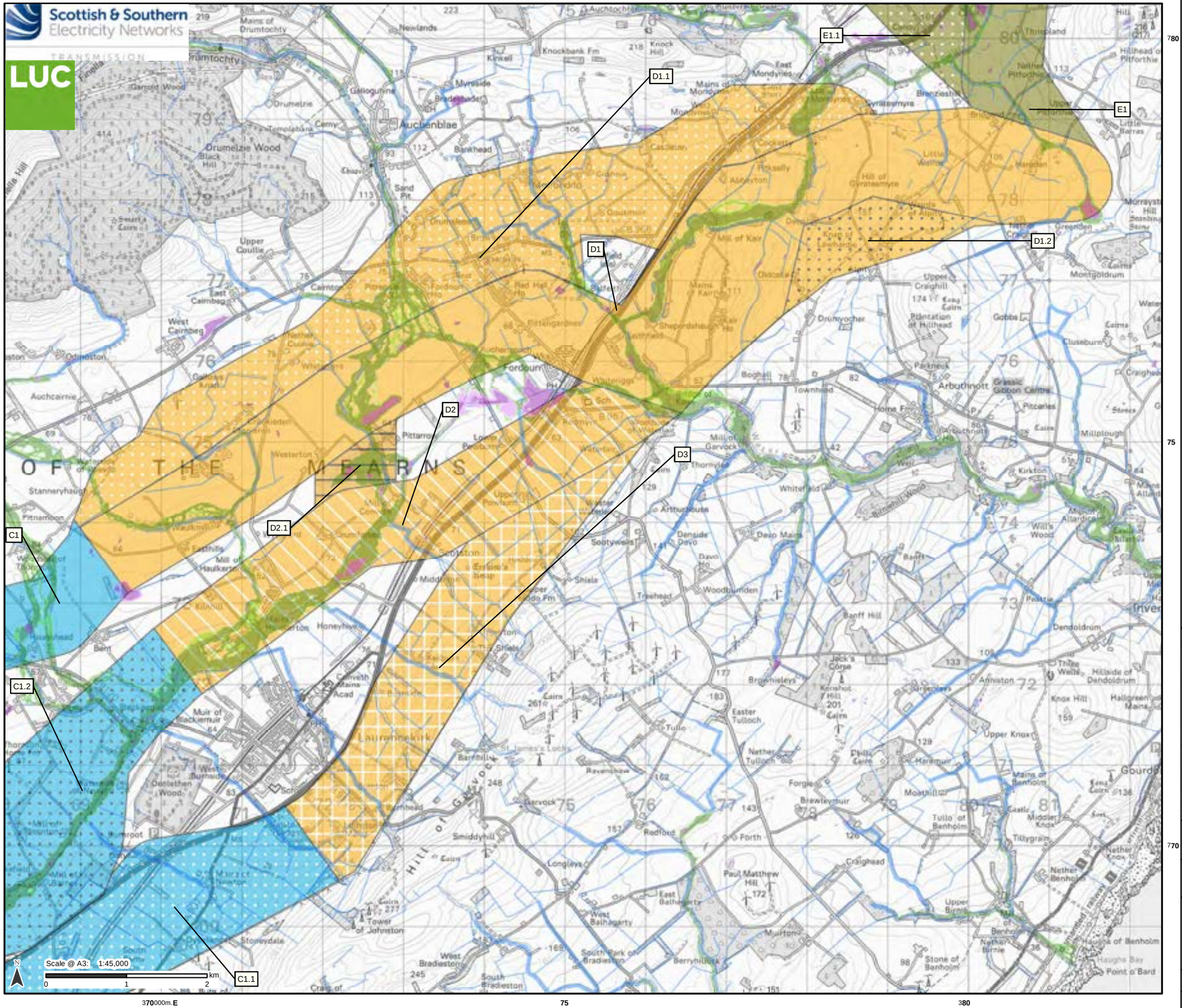
Title:

Cultural Heritage Constraints - Section D

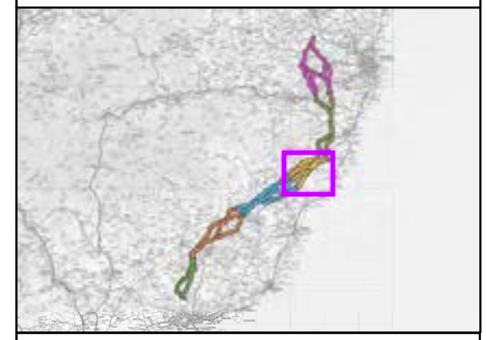
Drawn by: HW

Date: 25/04/2023

Figure: 5.4c



- C1 (preferred option)
- C1.1
- C1.2
- D1 (preferred option)
- D1.1
- D1.2
- D2
- D2.1
- D3
- E1 (preferred option)
- E1.1
- 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: LT455

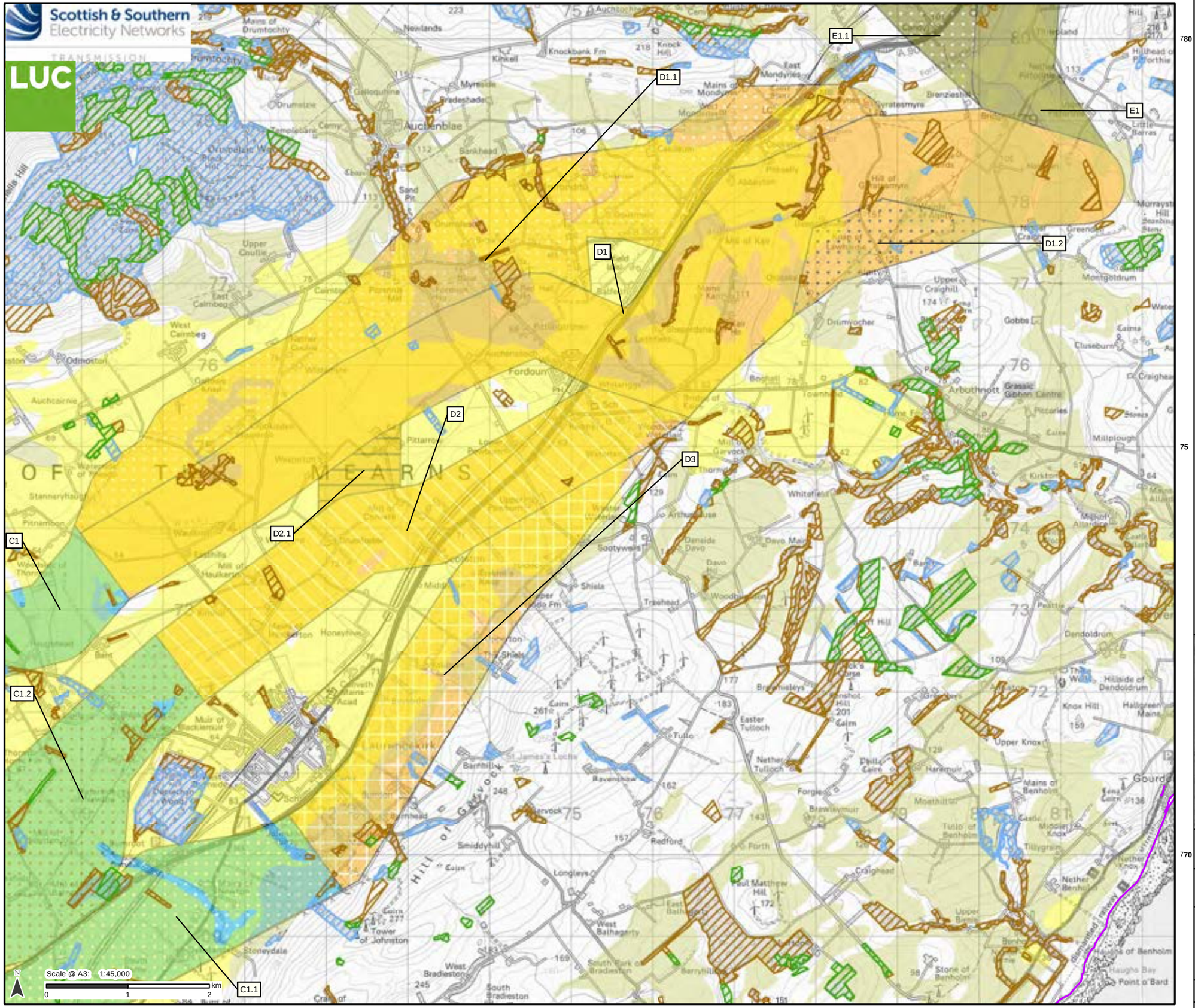
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Hydrology Constraints - Section D

Drawn by: HW Date: 25/04/2023

Figure: 5.4d



C1 (preferred option)
C1.1
C1.2
D1 (preferred option)
D1.1
D1.2
D2
D2.1
D3
E1 (preferred option)
E1.1

RouteType

National Cycle Network (NCN)

National Forest Inventory

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

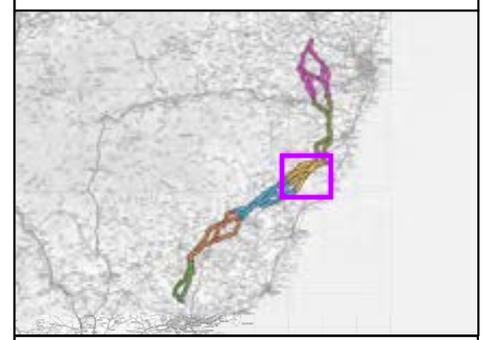
Conifer; Mixed mainly conifer

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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

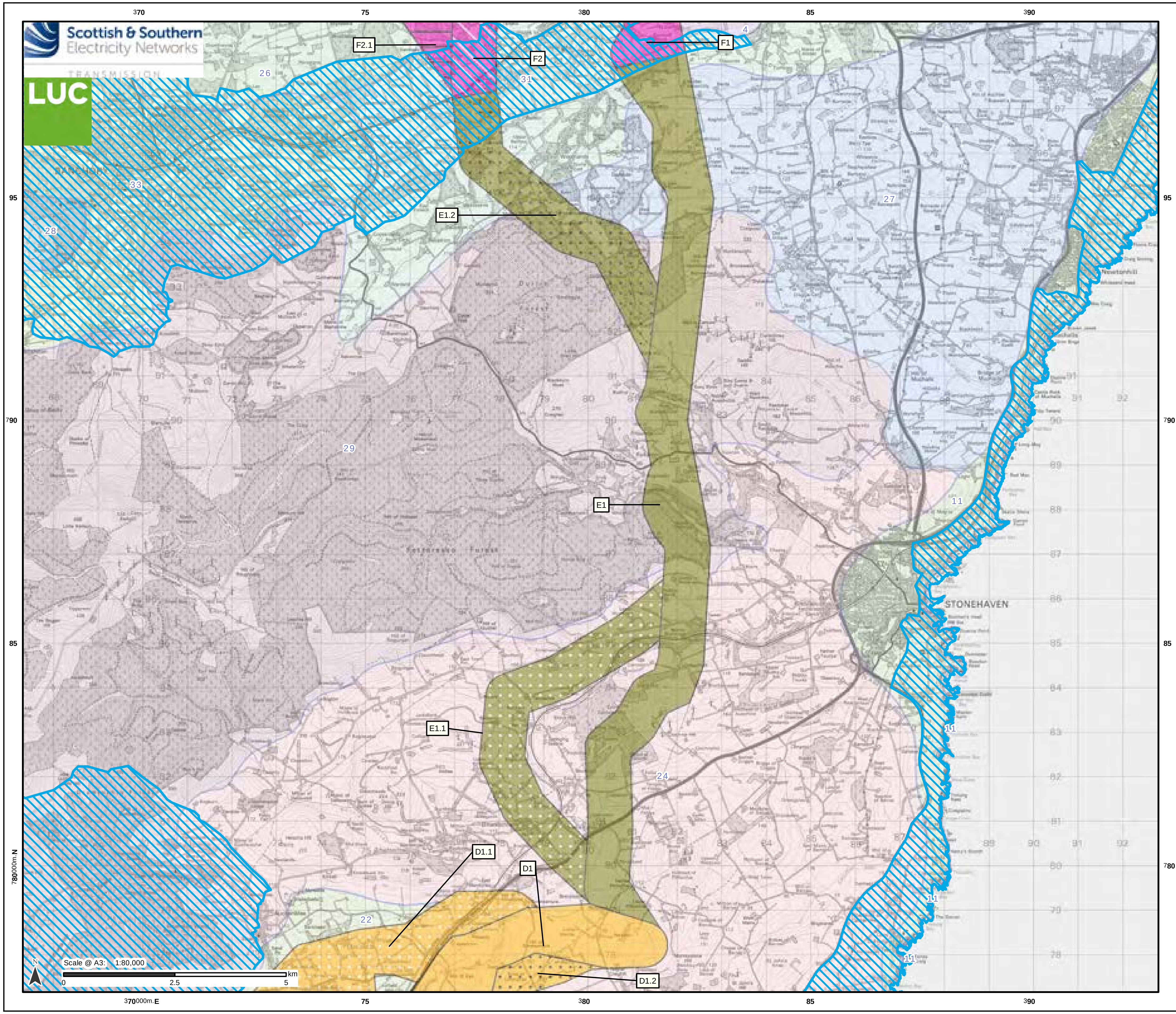
Title:

Land Use Constraints - Section D

Drawn by: HW

Date: 25/04/2023

Figure: 5.4e



- D1 (preferred option)
- D1.1
- D1.2
- E1 (preferred option)
- E1.1
- E1.2
- F1 (preferred option)
- F2
- F2.1
- Special Landscape Area

Landscape Character

- 4: River Valley - Aberdeen
- 11: Fragmented Rocky Coast
- 22: Broad Valley Lowlands - Aberdeenshire
- 24: Coastal Farmed Ridges and Hills - Aberdeenshire
- 26: Wooded Estates - Aberdeenshire
- 27: Farmed Moorland Edge -
- 28: Outlying Hills & Ridges
- 29: Summits and Plateaux - Aberdeenshire
- 31: Broad Wooded and Farmed Valley
- 33: Broad Wooded Valley with Estates

Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title: Landscape Constraints - Section E

Drawn by: HW Date: 25/04/2023

Figure: 5.5a

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

370 75 380 85 390

95

790

85

780000m N

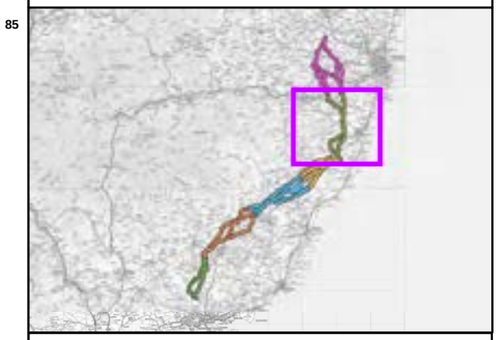
370000m E 75 380 85 390

F2.1
F2
F1
E1.2
E1
E1.1
D1.1
D1
D1.2

Scale @ A3: 1:80,000
0 2.5 5 km

N

D1 (preferred option)
D1.1
D1.2
E1 (preferred option)
E1.1
E1.2
F1 (preferred option)
F2
F2.1
Special Protection Area
RSPB Reserve
RSPB Important Bird Area
Site of Special Scientific Interest
Scottish Wildlife Trust reserve
Special Area of Conservation
Local Nature Conservation Site



Project No: LT455

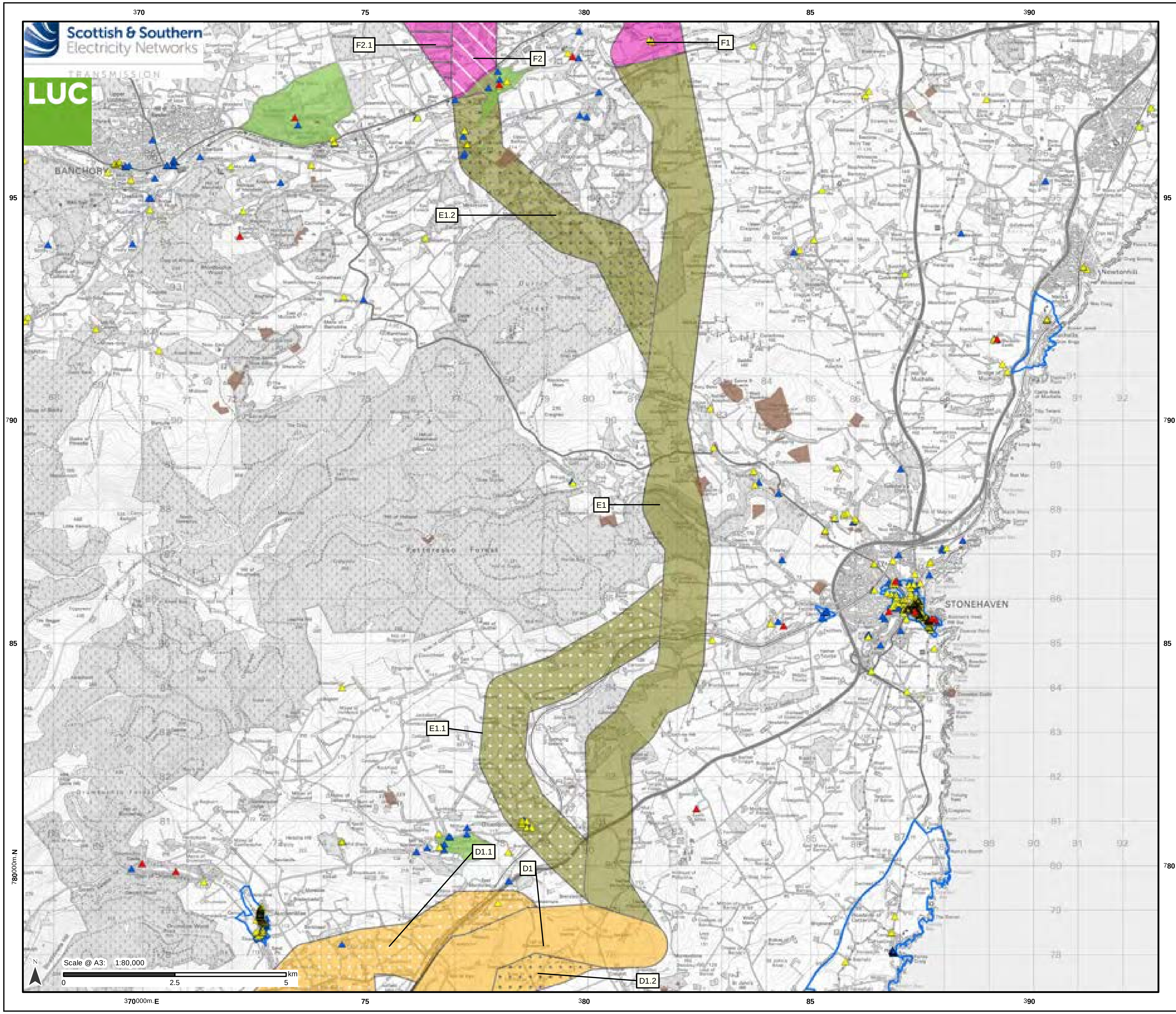
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Ecology Constraints - Section E

Drawn by: HW Date: 25/04/2023

Figure: 5.5b

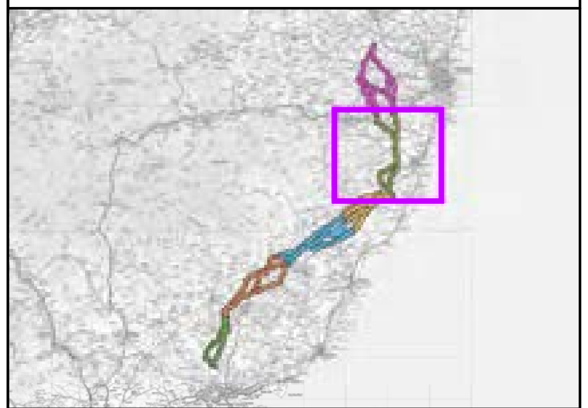


D1 (preferred option)
D1.1
D1.2
E1 (preferred option)
E1.1
E1.2
F1 (preferred option)
F2
F2.1

Listed building

A
B
C

Conservation area
Scheduled monument
Garden and Designed Landscape



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

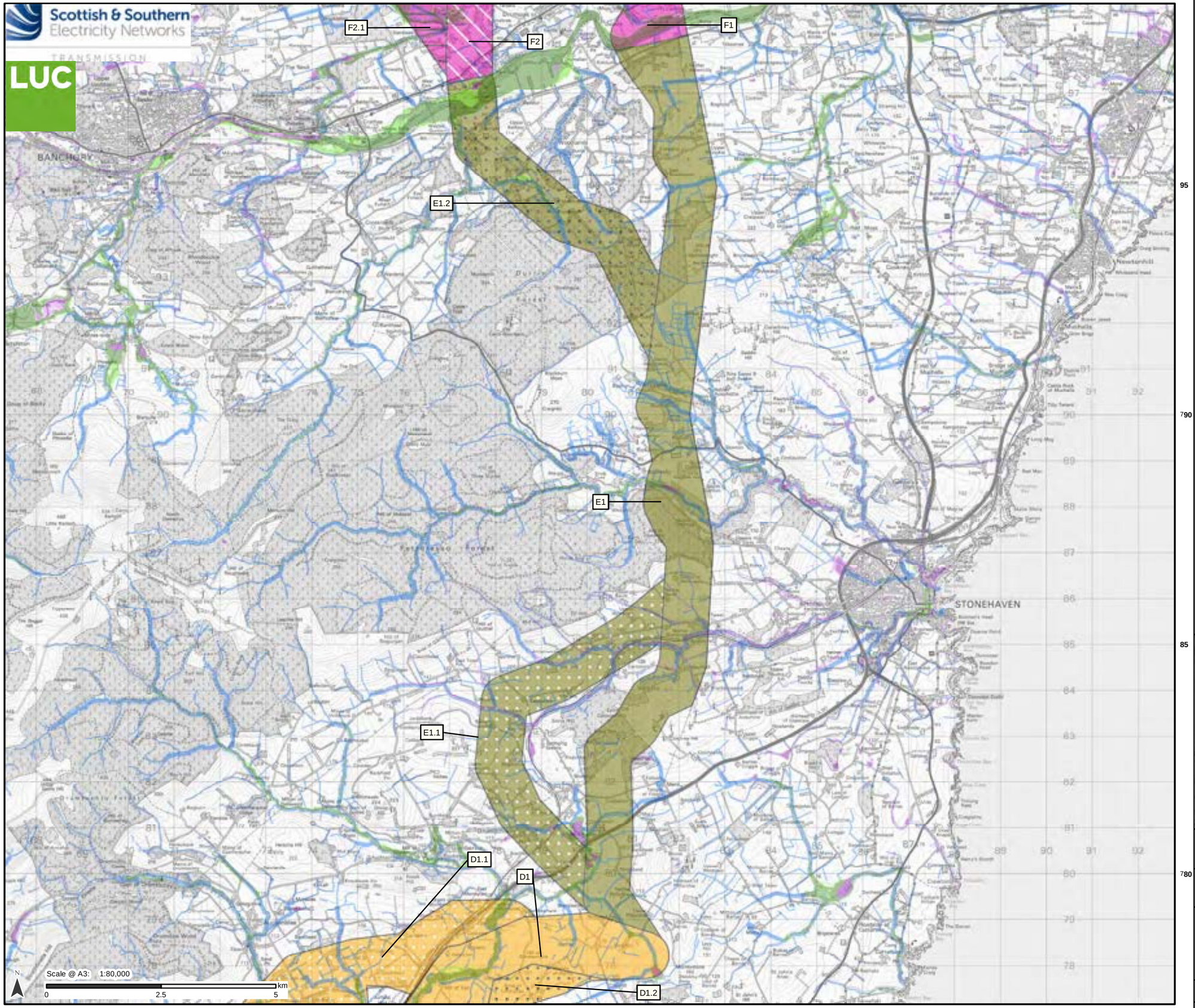
Title:

Cultural Heritage Constraints - Section E

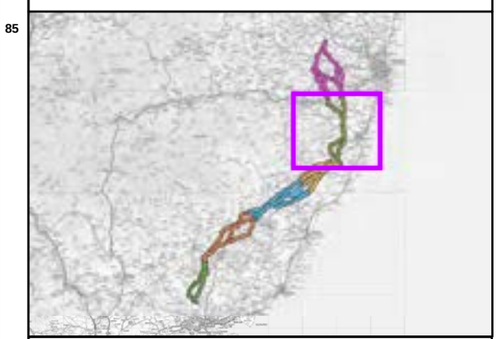
Drawn by: HW

Date: 25/04/2023

Figure: 5.5c



- D1 (preferred option)
- D1.1
- D1.2
- E1 (preferred option)
- E1.1
- E1.2
- F1 (preferred option)
- F2
- F2.1
- 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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Hydrology Constraints - Section E

Drawn by: HW

Date: 25/04/2023

Figure: 5.5d

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

F2.1
F2
F1
E1.2
E1
E1.1
D1.1
D1
D1.2
STONEHAVEN

N
Scale @ A3: 1:80,000
0 2.5 5 km

370 75 380 85 390
795 790 785 780
370000m.E 780000m.N

D1 (preferred option)
D1.1
D1.2
E1 (preferred option)
E1.1
E1.2
F1 (preferred option)
F2
F2.1

RouteType

National Cycle Network (NCN)

National Forest Inventory

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

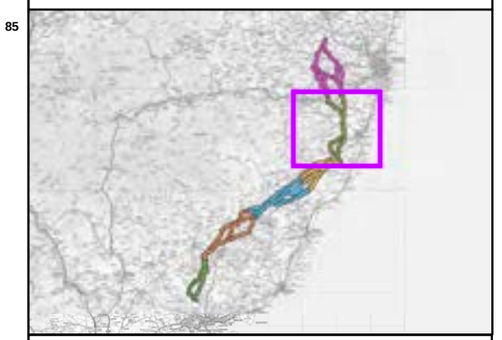
Conifer; Mixed mainly conifer

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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

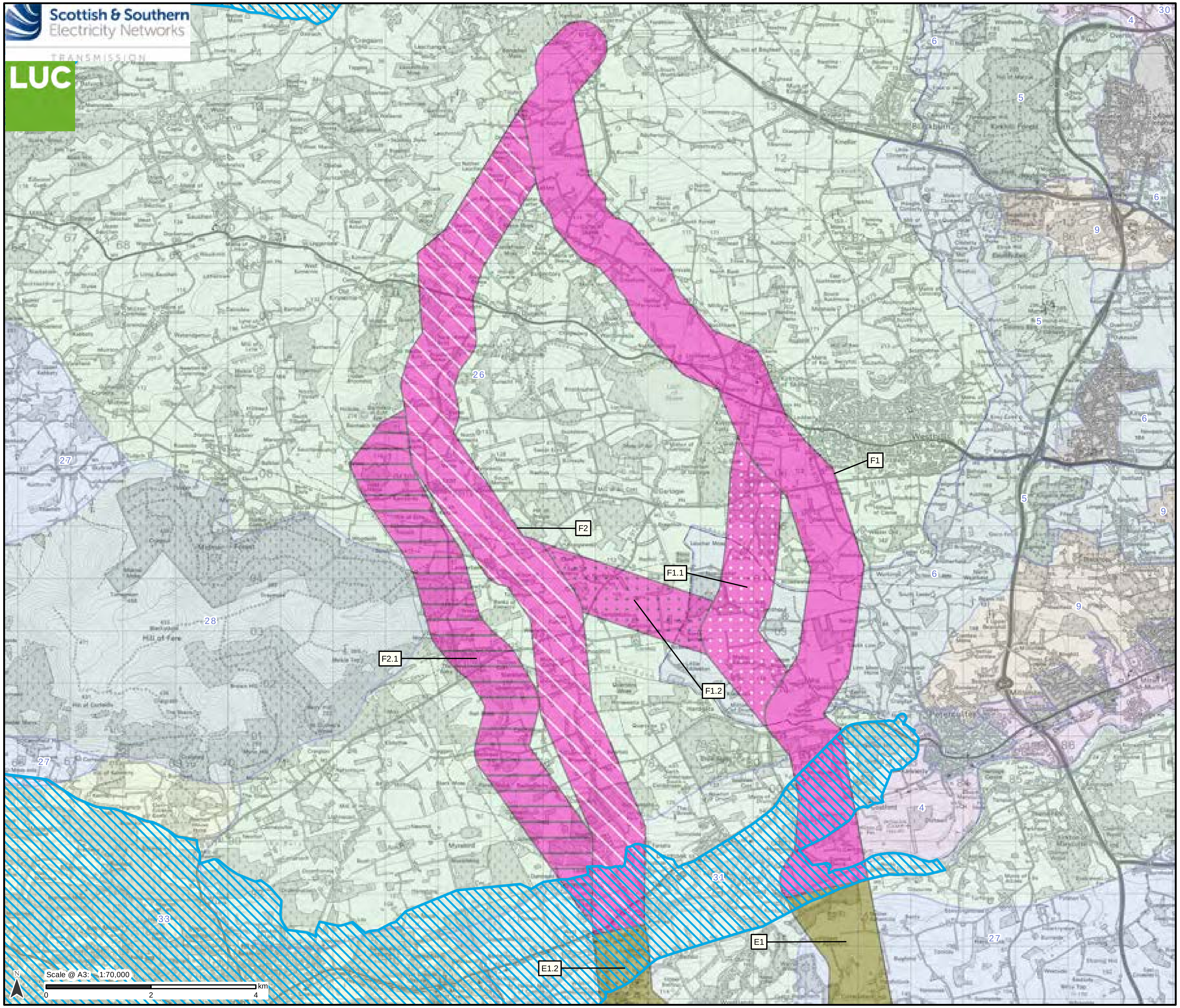
Land Use Constraints - Section E

Drawn by: HW Date: 25/04/2023

Figure: 5.5e

Scottish & Southern Electricity Networks
TRANSMISSION

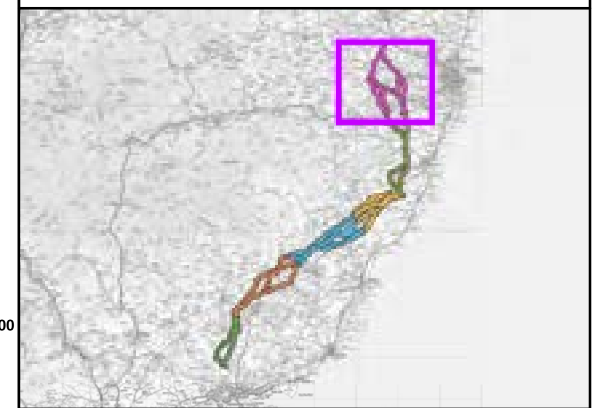
LUC



E1 (preferred option)
E1.2
F1 (preferred option)
F1.1
F1.2
F2
F2.1
Special Landscape Area

Landscape Character

Urban
4: River Valley - Aberdeen
5: Low Hills - Aberdeen
6: Undulating Open Farmland
9: Wooded Estates - Aberdeen
26: Wooded Estates - Aberdeenshire
27: Farmed Moorland Edge - Aberdeenshire
28: Outlying Hills & Ridges
30: Narrow Winding Farmed Valley
31: Broad Wooded and Farmed Valley
33: Broad Wooded Valley with Estates



Project No: LT455
Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:
Landscape Constraints - Section F

Drawn by: HW
Date: 25/04/2023

Figure: 5.6a

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

370 75 380 85

810 05

F1
F2
F1.1
F1.2
F2.1
E1
E1.2

N
Scale @ A3: 1:70,000
0 2 4 km

800000m N

370000m E 75 380 85

- E1 (preferred option)
- E1.2
- F1 (preferred option)
- F1.1
- F1.2
- F2
- F2.1
- Special Protection Area
- RSPB Important Bird Area
- Site of Special Scientific Interest
- Local Nature Reserve
- Special Area of Conservation
- Ramsar site
- Local Nature Conservation Site

Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

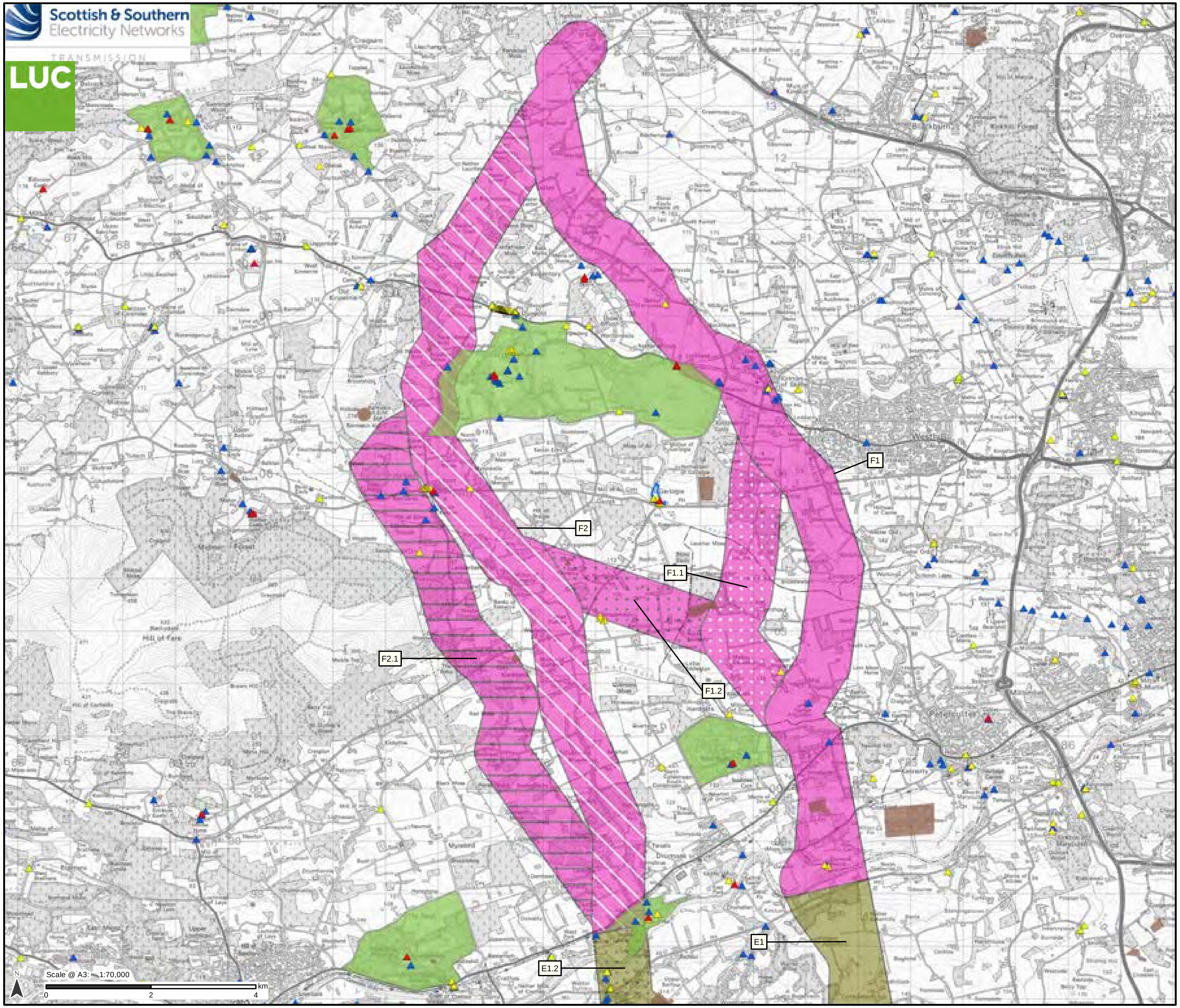
Ecology Constraints - Section F

Drawn by: HW Date: 25/04/2023

Figure: 5.6b

Scottish & Southern Electricity Networks
TRANSMISSION

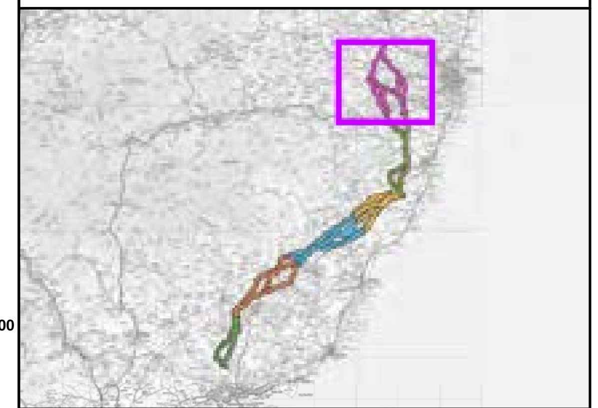
LUC



- E1 (preferred option)
- E1.2
- F1 (preferred option)
- F1.1
- F1.2
- F2
- F2.1

Listed building

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



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

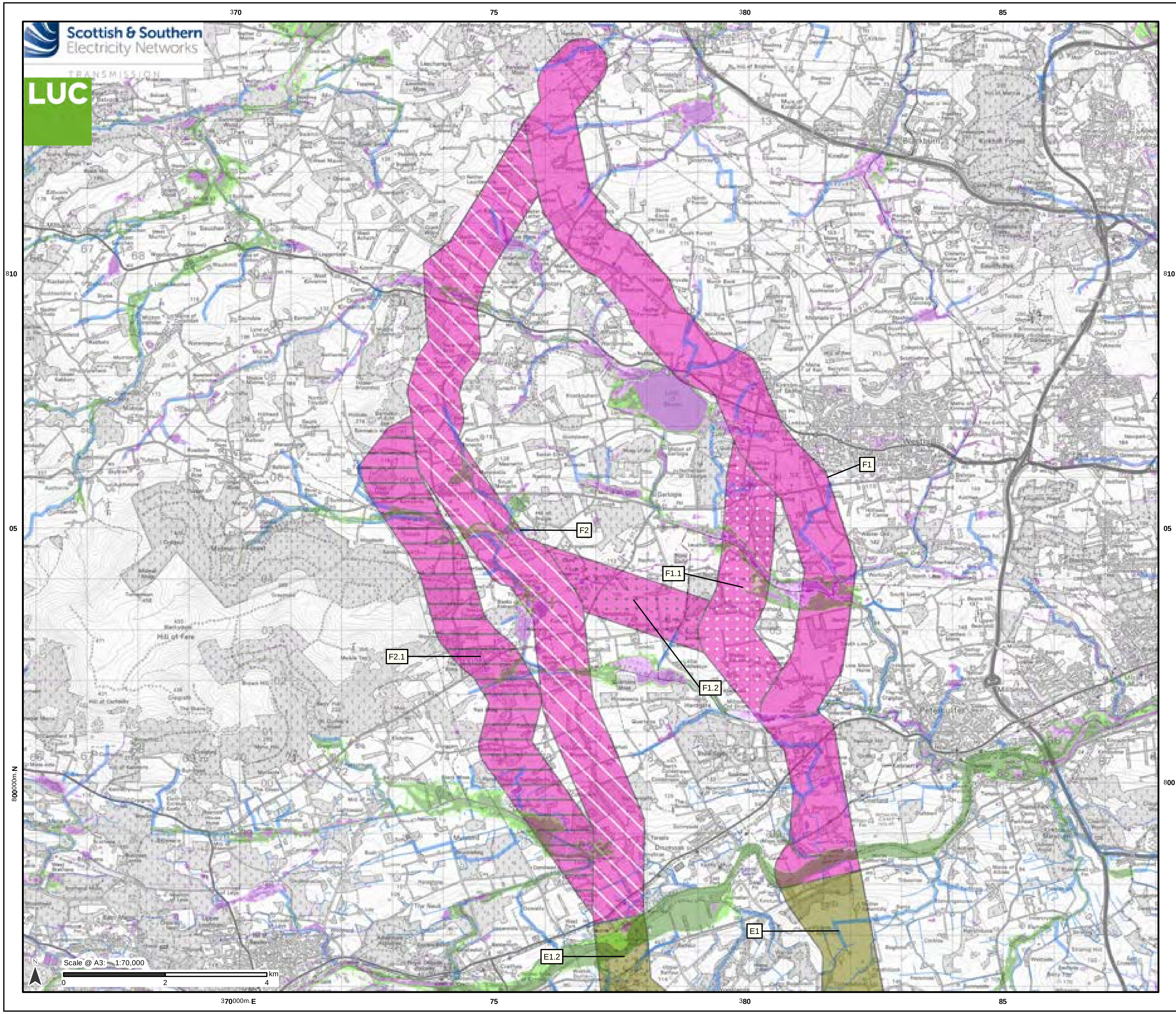
Title:

Cultural Heritage Constraints - Section F

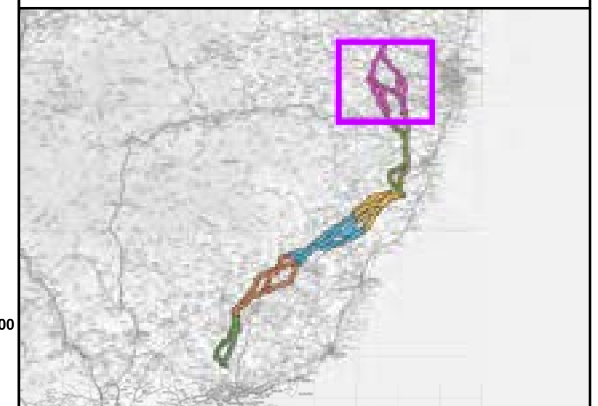
Drawn by: HW

Date: 25/04/2023

Figure: 5.6c



- E1 (preferred option)
- E1.2
- F1 (preferred option)
- F1.1
- F1.2
- F2
- F2.1
- 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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Hydrology Constraints - Section F

Drawn by: HW Date: 25/04/2023

Figure: 5.6d

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

370 75 380 85

810 05 800

F1
F2
F1.1
F1.2
F2.1
E1
E1.2

Scale @ A3: 1:70,000
N
0 2 4 km

370000m.E 75 380 85

E1 (preferred option)
E1.2
F1 (preferred option)
F1.1
F1.2
F2
F2.1

RouteType

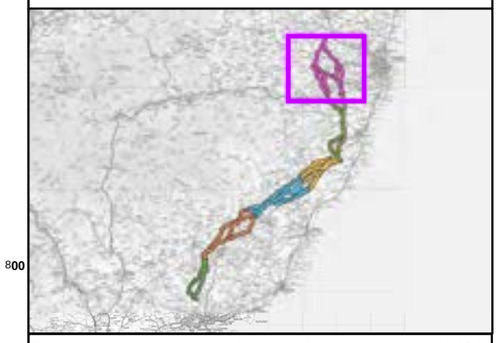
National Cycle Network (NCN)
Core path (indicative)

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 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: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Land Use Constraints - Section F

Drawn by: HW Date: 25/04/2023

Figure: 5.6e

Scottish & Southern Electricity Networks
TRANSMISSION

LUC

320 330 340 350 360 370 380 390 400

810 800 790 780 770 760 750 740

320000m.E

N

Scale @ A3: 1:300,000

0 1 2 4 6 8 10 km

F1

E1

D1

C1

B1

A1

ABERDEEN

BRECON

FORFAR

BALLATER

MOUNT KEEN

Section A (Tealing to Forfar)

A1

Section B (Forfar to Brechin)

B1

Section C (Brechin to Laurencekirk)

C1

Section D (Laurencekirk to Fiddes)

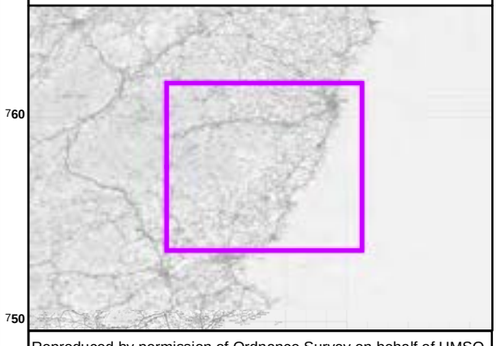
D1

Section E (Fiddes to River Dee)

E1

Section F (River Dee to Kintore)

F1



Project No: LT455

Project: Kintore - Tealing - Fiddes 400kV Overhead Line Connection

Title:

Preferred Route

Drawn by: HW Date: 25/04/2023

Figure: 6.1