Eastern Green Link 4:

Scottish Onshore Scheme

Volume 2: Main Report

Chapter 3: Site Selection and Routeing

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Table of Contents

Figures

03.

Site Selection and Routeing

3. Site Selection and Routeing

3.1 Introduction

Regulation 5(2) of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 requires EIA Reports to provide "*a description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment*".

This chapter sets out the approach to and results of siting and routeing studies identifying and assessing alternative sites and routes for each of the components of the Scottish Onshore Scheme: the landfall, underground cable route and converter station. It does so with reference to established routeing and site selection practices in line with SP Transmission's statutory duties under the Electricity Act 1989. It draws on the Routeing and Siting Consultation Document (2023) (Ref 3.1) which identified and assessed alternative options for the Scottish Onshore Scheme and concluded with a Preferred Option which was subject to non-statutory consultation. It also describes how the Preferred Option has evolved through subsequent engineering design, Environmental Impact Assessment (EIA) and statutory pre-application consultation (PAC) including landowner engagement.

3.2 The Routeing and Siting Study

Overview

SP Energy Network's approach to the development of new electricity transmission infrastructure is set out in *'Major Infrastructure Projects: Approach to Routeing and Environmental Impact Assessment'* (Ref 3.2). It describes their general approach to the routeing and siting of new electricity transmission infrastructure taking account of their statutory duties and licence obligations under the Electricity Act 1989. This requires a range of environmental, technical and economic factors to be considered and balanced including the impact on the environment and people, technical feasibility and cost recognising that these are funded by the consumer. The document also sets out established industry practices that are applied to the routeing of overhead lines and siting of substations, known as the Holford Rules and Horlock Rules respectively. While these do not make reference to landfalls, underground cables or converter stations specifically, the underlying principles of the guidance which promote careful routeing and siting as a means to avoid or reduce potential environmental impacts are applicable to the routeing and siting of the components of the Scottish Onshore Scheme.

Approach to Routeing and Siting

The approach to the identification of the Scottish Onshore Scheme is illustrated in **Figure 3.1 Routeing and Siting.** It comprised two main steps: firstly, the identification and assessment of alternative landfall and converter station sites ('Siting') and secondly the identification and assessment of alternative underground cable routes ('Routeing'). The approach to identifying and assessing alternative sites and routes has ensured the iterative consideration of potential impacts on the environment and communities, alongside technical and economic

considerations consistent with SP Transmission's statutory duties and taking account of established routeing and siting practice including the Holford and Horlock Rules. It concluded with the identification of a Preferred Option to be subject to consultation.

Siting was undertaken as the first step in order to ensure the approach was focused. The landfall requires consideration of both terrestrial and marine factors and is therefore a critical element in the overall identification of the Project. Through early identification and appraisal of potential landfalls, it ensured that onwards underground or subsea cable routeing is focused on landfall options which enabled feasible marine and terrestrial alternatives.

In line with SP Energy Network's approach to major infrastructure projects, a Routeing and Siting Objective was established: *"To identify a technically feasible and economically viable Scottish Onshore Scheme connecting to Westfield Substation which causes, on balance, least disturbance to the environment of the study area and the people who live, work and enjoy recreation within it."* Westfield Substation is chosen as the starting point for EGL4 as it a strong point on SP Energy Network's existing transmission network which is close to the Fife coast. It is currently a 275 kV substation but is being extended to include a new 400 kV substation. Suitable network connectivity at the substation is required to provide the strongest support for the HVDC link. The new Westfield Substation is the only substation in the area that provides this level of network connectivity and security with four circuit infeeds.

The Routeing and Siting Objective ensured that in considering alternative options and identifying the Preferred Option for the Scottish Onshore Scheme, appropriate consideration was given to the impacts on the environment and people alongside technical and economic factors.

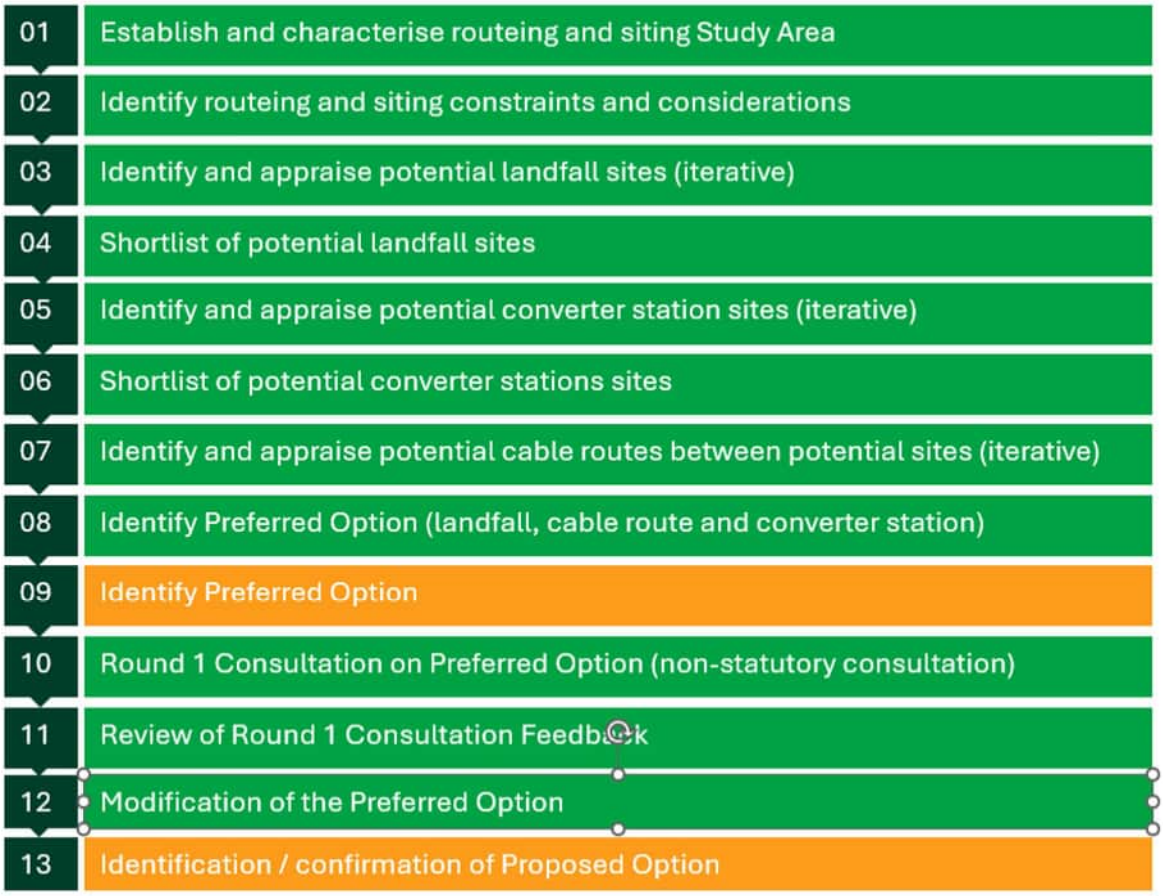

Figure 1 Approach to Identification of the Scottish Onshore Scheme

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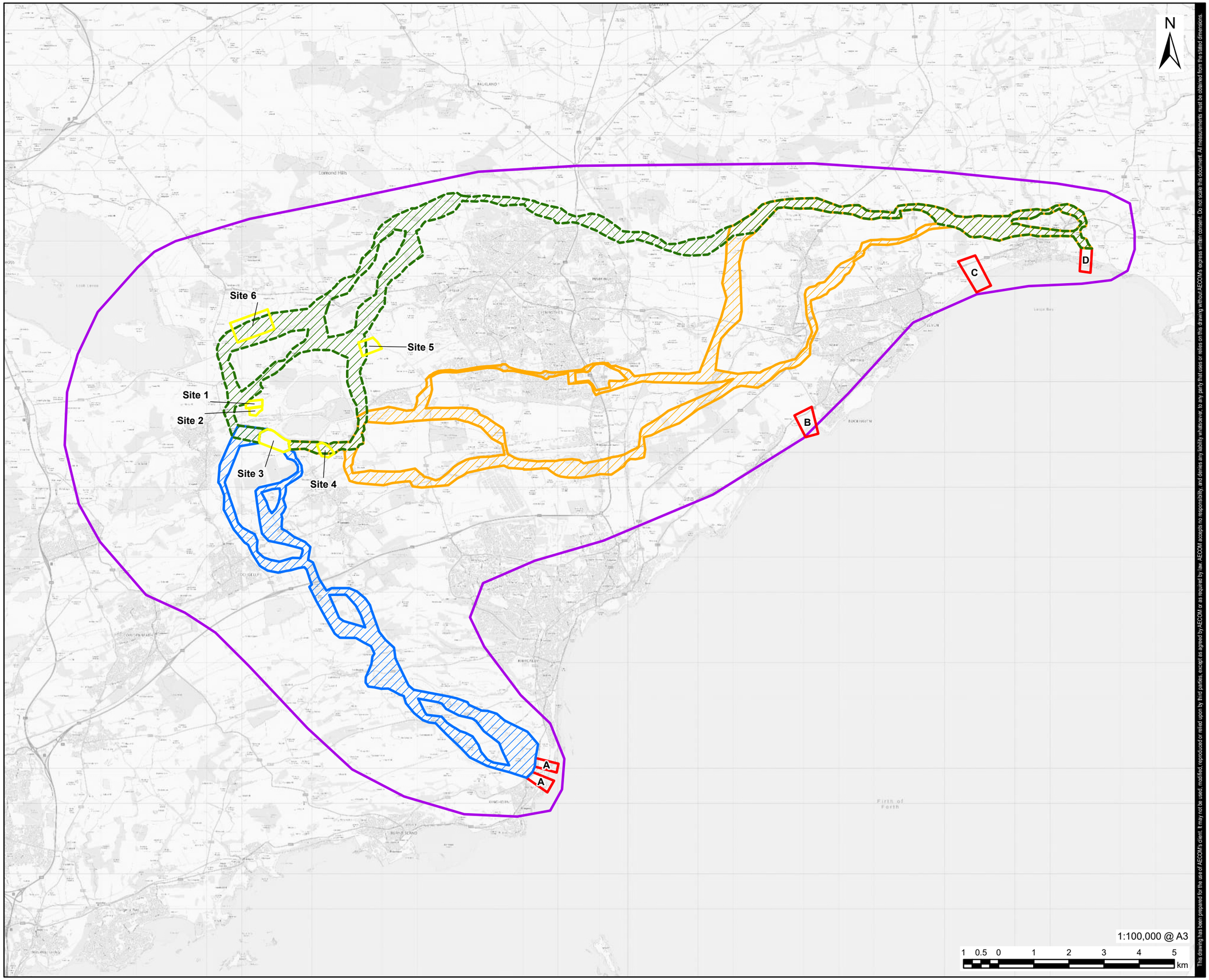

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LEGEND

- Roueting and Siting Study Area
- Landfall Option Site
- Converter Station Option Site
- Underground Cable Route Option - Blue
- Underground Cable Route Option - Orange
- Underground Cable Route Option - Green

NOTES

ISSUE PURPOSE

EIA REPORT

PROJECT NUMBER

60707131

FIGURE TITLE

Roueting and Siting

FIGURE NUMBER

Figure 3.1

3.3 Converter Station Site Selection

For the purposes of converter station site selection, a converter station siting study area was established extending out 5 km in all directions from the point of connection at the new 400kV Westfield Substation. The underlying premise for this is that at distances greater than 5 km the converter station would require additional specialist equipment to make up for power losses incurred during the transmission of electricity which would require an increase in its footprint. The majority of the converter station siting study area lies within Fife Council's administrative area, however, part of the area to the north lies within Perth and Kinross.

Six potential converter station sites were identified (**Figure 3.1 Routeing and Siting**):

- Converter Station Site 1. Located approximately 600 m north of the existing 275kV Westfield Substation and occupying an area of approximately 8.5ha.
- Converter Station Site 2. Located approximately 330 m north of Westfield on approximately 6.5ha of vacant land which was previously the Westfield Development Centre, a former gasification site.
- Converter Station Site 3. Comprising 35 ha of agricultural land to the immediate east of Westfield acquired by Forestry and Land Scotland (FLS) for tree planting.
- Converter Station Site 4. Occupying approximately 12 ha of agricultural land lying 1.7 km east of Westfield.
- Converter Station Site 5. Located to the northeast of Westfield occupying approximately 20 ha of agricultural land.
- Converter Station Site 6. Located approximately 2.5 km to the north of Westfield occupying approximately 65 ha of agricultural land north of the River Leven.

Converter Station Site 3 was identified as the preferred site as it has a number of advantages over the other sites considered, in particular its proximity to the existing substation which provides opportunities to co-locate infrastructure with similar characteristics with regard to appearance as well as a reduction in the length of AC underground cable required. While Sites 1 and 2 had some similar characteristics, these are smaller sites which would provide less flexibility for detailed converter station design and are located slightly further away, adjacent to the Westfield Restoration Project, requiring longer AC underground cable routes. Sites 4, 5 and 6 were located much further away in more characteristically rural areas or close to the outskirts of settlements or in the setting of listed buildings and were therefore discounted due to greater potential for environmental impacts.

3.4 Landfall Site Selection

For the purposes of landfall site selection, a landfall siting study area (illustrated in **Figure 3.1 Routeing and Siting**) was established comprising approximately 30 km of coastline from east of Aberdour/Silver Sands Bay to west of Lower Largo/Largo Bay. A two-stage approach was taken to identifying alternative landfall sites. The coastline was characterised into areas according to the nature of constraints or opportunities present and potential for landfall sites. Areas with no or limited potential for landfalls, as well as onwards underground cable routes were discounted and areas with potential for landfalls and onwards underground cable routes were taken forward. Following this, within those areas identified as having potential for landfall sites, a review was undertaken to identify potential landfall sites.

Based on the coastline review four potential landfall sites were identified:

- Landfall Option A – Kinghorn. Located on agricultural land between the settlements of Kinghorn to the south and Kirkcaldy to the north.
- Landfall Option B – Buckhaven. Located on agricultural land between the settlements of East Wemyss and Buckhaven.
- Landfall Option C – Lower Largo (west). An approximately 400-500m wide section between Silverburn Park and the edge of the settlement of Lundin Links.
- Landfall Option D –Lower Largo (east). Located to the east of Lower Largo on agricultural land and extending southwards to Largo Bay.

Landfall B was discounted due to marine-related constraints within the Firth of Forth including foul ground and anchorages which affect the feasibility of subsea cable routes approaching the landfall. Landfall C was discounted due to the requirement for the landfall to be constructed by trenchless methods underneath the Firth of Forth SPA and SSSI as well as Lundin Links Golf Course. The combined extent of these constraints would require a longer trenchless crossing with increased technical complexity compared to other options, so this option was discounted.

Landfalls A and D both provided opportunities for feasible landfalls. However, the former required a longer subsea cable route through the Firth of Forth with a shorter underground cable route to the Westfield area, while the latter required a shorter subsea cable route and longer underground cable route. At Landfall A, the coastline is formed by relatively tall rocky cliffs while at Landfall D, the coastline is formed by an open, sandy beach which slopes up towards agricultural fields. Both landfalls required to cross the Firth of Forth SPA and SSSI and therefore required to be constructed using trenchless methods. At Landfall A, the East Coast Railway line runs parallel to the coast and also requires to be crossed using trenchless methods. Landfalls A and D had relative advantages and disadvantages, so both were taken forward for further consideration as part of the identification of alternative route options.

3.5 Underground DC Cable Route Selection

Underground cable routes were identified based on the shortlisted landfalls (Landfalls A and D) as well as the shortlisted converter station site (Site 3). Underground cable route options were developed to be as direct as possible between the landfall and converter station while taking account of current and future land use (as far as possible), environmental and technical constraints and considerations, either avoiding or reducing impacts on the environment and people through careful route selection and/or choice of installation method.

Three potential route corridors were identified and appraised. These are also illustrated in **Figure 3.1 Routeing and Siting**:

- Blue route corridor – from landfall A north of Kinghorn to converter station site 3 east of Westfield Substation
- Orange route corridor – from landfall D east of Lower Largo to converter station site 3 east of Westfield Substation (routeing to the south of Glenrothes)
- Green route corridor – from landfall D east of Lower Largo to converter station site 3 east of Westfield Substation (routeing to the north of Glenrothes)

All of the Route Corridors largely avoided statutory nature conservation, archaeological or built heritage designations, however, some are located within the fringes of or immediately outside of the Corridors. Some temporary impacts on the setting of built heritage designations are common to each option but were not considered to prevent cable routes within the Corridors.

The Green Route Corridor crosses the Lomond Hills Regional Park and Local Landscape Area while the Blue Route Corridor crosses the Cullaloe Hills Local Landscape Area. As the cables are buried underground, permanent landscape impacts were not considered to be a significant constraint on these options, however, impacts on the Regional Park could include disturbance of or disruption to recreational activities. With regard to other areas or sites of environmental value, all of the Corridors have some potential to impact Ancient Woodland Inventory sites, however, there are opportunities to micro-route to avoid these and/or utilise trenchless methods to install cables underneath them.

With the exception of a sub-option of the Orange Route, the Route Corridors were designed to avoid settlements as much as possible. Some small residential properties or clusters of residential properties are located within or on the fringes of the Corridor, however, these are avoidable in finalising a detailed route alignment. Some disturbance, for example noise, traffic or visual impacts during construction, is unavoidable but this would be temporary. The Orange Route Corridor includes a sub-option that is routed through the south of Glenrothes following the B921. The road, including its verge, is wide enough that cables could be installed within it enabling a more direct route towards the Westfield area. The main constraint on this sub-option is where the Route Corridor meets the road to the east of Glenrothes at Coaltown of Balgonie where there is an increase in the number of residential properties.

All of the Route Corridors require a number of crossings of roads, railways and watercourses. The Blue Route Corridor is shorter so requires fewer crossings compared to the Green and Orange Routes. No crossings were considered to be unfeasible. However, more technically challenging crossings are present on the Orange Route Corridor to the east of Windygates where an underground cable route would require to cross a road, railway and watercourses including the River Leven within a short distance of one another.

The main differences between the Route Corridors related to their length and the nature of the areas which they cross. All things being equal, longer routes will have greater impacts so it is generally preferable to have a shorter, more direct route. However, this had to be considered in the context of the overall Project as a shorter underground cable route may require a longer subsea cable route or vice versa. In the case of the Project, the Blue Route Corridor (which comprises a shorter underground cable route) required a slightly longer subsea cable route compared to the Orange and Green Routes. The Blue and Orange Route Corridors were shortlisted while the Green Route was discounted. Compared to the Orange Route, the Green Route was considered to have potential for greater impacts due to crossing the Lomond Hills north of Glenrothes and was therefore discounted.

3.6 Identification of the Preferred Option

In order to identify an overall Preferred Option for the Scottish Onshore Scheme, the three key components (landfall site, underground cable route and converter station site) required to be brought together to establish an end-to-end onshore option. Based on the shortlisted components above there were two end-to-end options:

- Landfall D to Converter Station Site 3 utilising the Orange Route Corridor
- Landfall A to Converter Station Site 3 utilising the Blue Route Corridor

The landfalls both encountered the same environmental constraints in the form the of the Firth of Forth SPA and SSSI and while seal-haul out areas are present at Landfall A, these can be avoided by siting to the south of the landfall area and through the use and timing of trenchless installation methods. The Preferred Option for the Scottish Onshore Scheme does require a longer subsea cable route through the Outer Firth of Forth and St Andrews Bay Complex SPA compared to the alternative making landfall at Landfall D. However, potential impacts can be mitigated through the careful timing of installation.

Converter Station Site 3 was common to both options so is not a material differentiator between them. Both options approached the converter station site from the south or east of Site 3 crossing agricultural land, so its location did not materially influence the selection of the Preferred Option.

In relation to the underground cable routes, both end-to-end options had similar types of impacts. Both routes avoid statutory environmental designations once inland of the Firth of Forth SPA and SSSI so the main difference in impact related to the disturbance caused during installation. The shorter route length provided by the Blue Route Corridor was considered to reduce the level of disturbance which could occur as it is largely routed through rural areas to the south of the A92 and on the margins of scattered settlements to the north of the A92. In contrast the longer route utilising the Orange Route Corridor is routed closer to larger settlements including sub-options through, and south of, Glenrothes. As a result, the level of

disturbance which would be experienced by local communities is greater for the longer underground cable route. Both options were considered to be technically feasible. However, the longer route utilising the Orange Route Corridor is comparatively more constrained due to the increased number of road, rail and watercourse crossings it would require.

The Blue Route Corridor comprising Landfall A and the Converter Station Site 3 was identified as the Preferred Option. It was considered to best address the routeing and siting objective balancing technical feasibility with impacts on the environment and people. Both options are technically feasible. However, the shorter, more direct route is less technically complex as it requires fewer crossings of roads, railways and watercourses compared to the longer option. Similarly, the shorter, more direct route reduces the impact on the environment and people therefore on balance it is concluded that the shorter end-to-end option from Landfall A to Converter Station Site 3 is preferable. The Preferred Option that was taken forward to non-statutory public consultation is identified in **Figure 2.2 Cable Route and Converter Station** within **Chapter 2 Project Description**.

3.7 Non-statutory Consultation

Following identification of the Preferred Option, SP Energy Network held a round of non-statutory consultation events (also referred to as Round 1 Consultation). This included consultation with Fife Council, statutory and non-statutory consultees as well as local communities in the vicinity of the Scottish Onshore Scheme. The main purpose of this consultation was to seek feedback on the Preferred Option for the Scottish Onshore Scheme. A copy of the Round 1 Feedback Report was published in May 2025 setting out the feedback received and how this was addressed.

The Preferred Option was confirmed as the Proposed Option and taken forward for more further design development and refinement in response to detailed engineering studies, EIA and statutory consultation (referred to as Round 2 Consultation).

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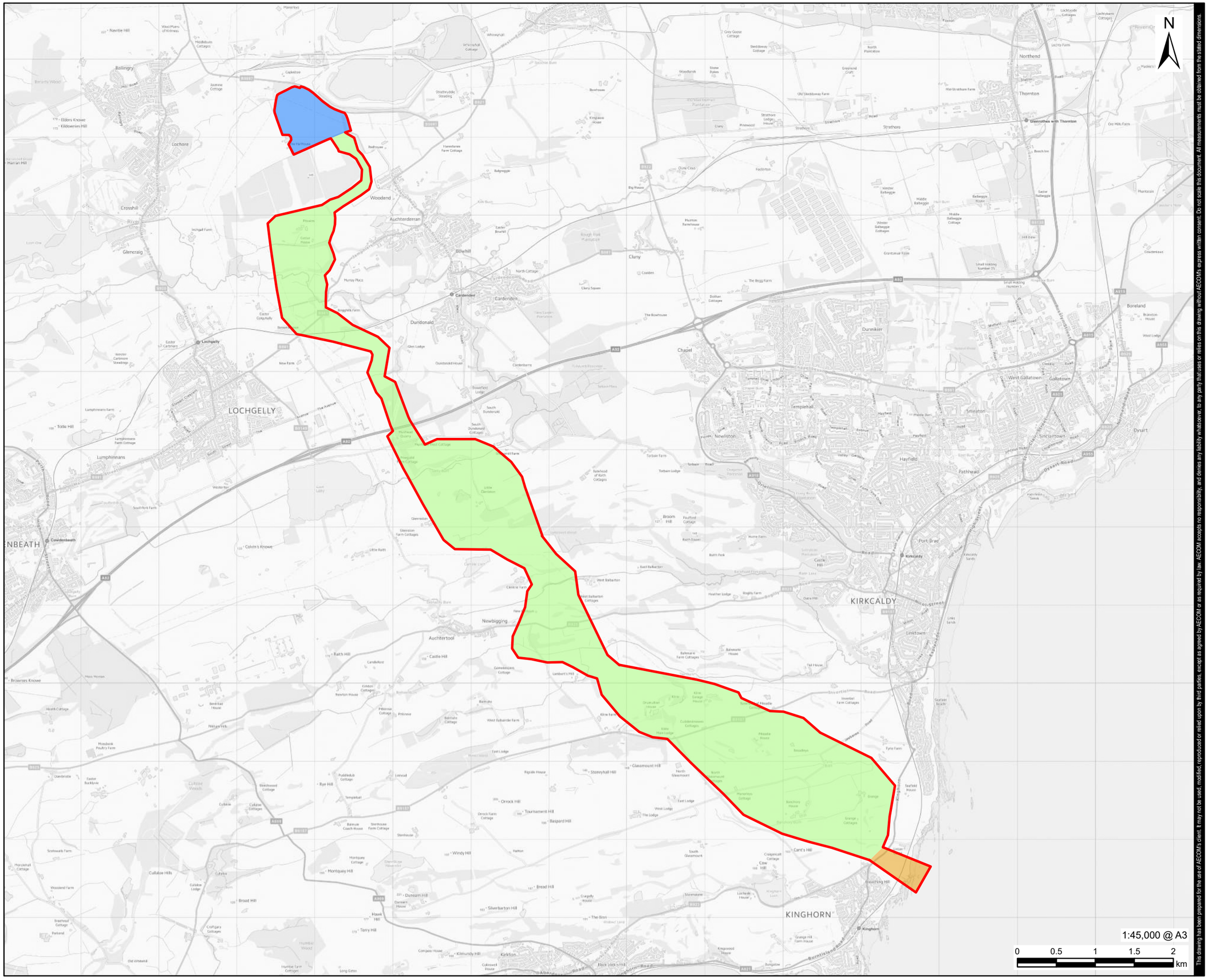

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LEGEND

- Preferred Option
- Converter Station Siting Area
- Landfall Siting Area
- Routeing Corridor

NOTES

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FIGURE TITLE

Preferred Option

FIGURE NUMBER

Figure 3.2

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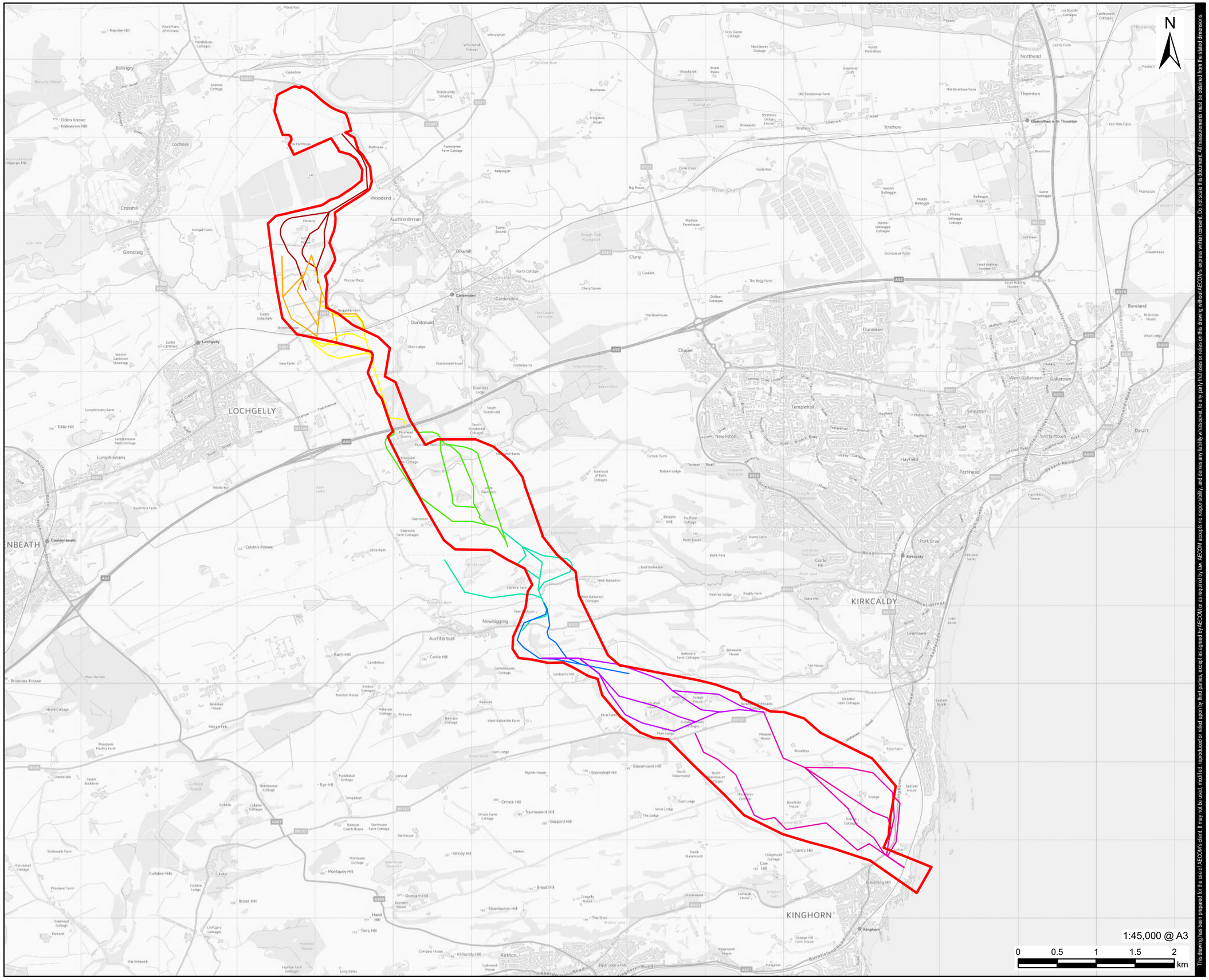

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LEGEND

- Preferred Option
- Landfall to the B9157
- B9157 to the Tiel Burn
- Auchtertool
- Auchtertool to Clentrie Wind Farm
- Clentrie Wind Farm to the A92
- A92 to the Fife Circle Railway Line
- Fife Circle Railway Line to the Disused Railway Line
- Disused Railway Line to the Converter Station Site

NOTES

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EIA REPORT

PROJECT NUMBER

60707131

FIGURE TITLE

Alternative Cable Route Alignments

FIGURE NUMBER

Figure 3.3

3.8 Design Development following identification of the Preferred Option

Overview

The following sections provide an overview of the key factors influencing more detailed development of the Scottish Onshore Scheme, following confirmation of the Preferred Option, including the design of the landfall and converter station sites and more detailed underground cable route development which included consideration of alternative alignments.

Landfall

The preferred landfall site is located on agricultural land to the north of Kinghorn. In further developing the design of the Scottish Onshore Scheme the focus has been on the design of the landfall, in particular installation methods used. The nature of the constraints present along the coastline mean that the landfall requires to be installed using trenchless methods. The underground cable route corridor is largely fixed extending out to Mean Low Water Springs (MLWS). However, consideration was given to alternative installation methods: Horizontal Directional Drilling (HDD), DirectPipe and microtunnelling.

HDD was identified as the preferred installation method. DirectPipe was discounted as it was considered to be higher risk due to underlying geology and variable rock strengths present. A microtunnel was considered to be feasible. However, compared to HDD would require more significant construction works including the sinking of a drive shaft (from which to tunnel) at depths of a least 30m. This would introduce additional environmental impacts as well as increase cost and programme and was therefore discounted.

Converter Station

The preferred converter station site occupies an area of agricultural land approximately 50 ha in size. As the converter station requires a requires a platform up to 250 m wide by 350 m long or 8.75 ha, this provides some flexibility with regard to the detailed siting and design of the converter station. To inform the design development more detailed studies were undertaken which considered the topography of the site as well as how the converter station would be integrated into the site. This is described in detail in the Design and Access Statement (DAS) which accompanies the planning application but for completeness is summarised here.

Taking into account engineering and environmental considerations the converter station platform was located to the northwest of the site. In this location it optimised the extent of ground engineering required to establish a level platform on which the converter station will be constructed by moving material for the south and east of the platform to the north and west (i.e. cut/fill balance). This helps to reduce the number of vehicle movements during construction as a result of the export of waste material or import of fill material. Siting the converter station platform in this location also avoids areas to the south of the site which are underlain by greater depths of made ground associated with past mining activity. This location was also preferable from an environmental perspective, establishing a level platform and helping to integrate the converter station into the site and its surroundings as well as reducing environmental impacts.

While the precise layout of the converter station will be subject to detailed design and an application for matters specified in conditions, the location of the platform in relation to Westfield Substation as well as underground cable routeing requirements and environmental considerations have informed the identification of zones which will constrain the detailed design and orientation of the converter station. These zones effectively split the site in two with Zone 1 comprising enclosed buildings up to 28.5 m in height containing specialist DC equipment to the east of the platform and Zone 2 comprising the AC switchyard containing outdoor electrical equipment up to 18 m in height to the west.

Underground DC Cable Route

The Preferred Option was defined by a corridor between the preferred landfall and converter station sites. The width of the corridor varied along its length in response to the engineering and environmental constraints which were present. In order to develop a detailed cable route alignment the Preferred Option was split into eight sections in which more detailed design development including consideration of alternative alignments was undertaken. Refer to **Figure 3-3 Alternative Cable Route Alignments** and the description below:

1. Landfall to the B9157

Moving west from the landfall any cable route alignment is required to cross the A921. Consideration was given to open cut and trenchless methods to cross the road. Taking account of the likely disturbance resulting from open cut methods as well as topographical differences to the west and east of the road, it was identified that the A921 should be crossed using trenchless methods.

Five alternative alignments were considered through this section.

- Option 1 – located to the south or west of the Preferred Option broadly following the U035 between Kinghorn and the B9157.
- Option 2 – located broadly within the centre of the Preferred Option extending in a northwestern direction from a crossing of the A921 to the B9157.
- Option 3 – crossing the A921 and heading north broadly parallel to the A921 on its western side before heading northwest to the B9157 routeing to the south of the Grange.
- Option 4 – following a similar alignment to Option 3 but continuing north adjacent to the A921 before turning west and heading northwest to the B9157 to the north of the Grange.
- Option 5 - heading north on the eastern side of the A921 outside of the Preferred Option for a short distance before crossing the road further north to the south of Seafield House and then following the same alignment as Option 4 to the B9157.

Option 1 and 2 were discounted due to challenging topography and underlying geology. Northwest of the A921 land is formed by a steep-sided ravine that was identified as a significant constraint to cable installation requiring greater engineering works and having a larger impact as a result. Shallow bedrock is also present in the area crossed by Options 1 and 2 further increasing the engineering works required to install underground cables.

Option 5 was discounted due to increased proximity to properties compared to the other options. It would require a crossing a private road which provides access to a cluster of

properties at Linton Court and would cross the A921 adjacent to Seafield House, a residential property.

Options 3 and 4 are similar with the exception of how they route around Grange Farm to the south and north of the farm respectively. Option 3 routeing to the south follows a slightly more direct route and is therefore shorter overall. Landowner feedback indicated that Option 4 crossed productive agricultural land and was not preferable for that reason. While the landowner indicated a preference for Option 2 due to the increased proximity of Option 3 to the residential property this was not taken forward due to the significant engineering constraints associated with Option 2. Option 3 was identified as the preferred alignment through this section. As part of developing the alignment for Option 3 it was identified that a section to the south/southeast of Grange Farm would be installed using trenchless methods to cross private access, woodland and the Banchory Burn.

2. B9157 to the Tiel Burn

The location of Kilrie Granary within the centre of the Preferred Option was a key constraint within this section largely pushing alternative alignment to the north or south of the Preferred Option. Five alternative alignments were identified:

- Option 1 to the north of and extending outside of the Preferred Option routeing across agricultural land between Kilrie Burn to the north and mature woodland to the south.
- Option 2 following a similar alignment to Option 2 but on the southern side of the mature woodland. This option requires to cross a small part of the woodland to the east of Kilrie.
- Option 3 following a more direct route but in much closer proximity to Kilrie and crossing a pond and more extensive area of mature woodland at the eastern extent of Kilrie.
- Option 4 through the centre of the Preferred Option including crossing Kilrie Granary in a more central location in closer proximity to properties.
- Option 5 a longer less direct route extending east to west across the Preferred Option and then routeing northwest on the western side of Kilrie Granary.

Option 1 was discounted due to topography challenges which would require significant earthworks to enable cable installation works. This option also requires working in close proximity to low voltage overhead lines for relatively long distances.

Options 4 and 5 were discounted due to increased proximity to properties at Kilrie Granary and the potential for disturbance during installation works as well as taking account of landowner feedback regarding routeing across agricultural land between the B9157 and Kilrie Granary.

Options 2 and 3 were comparable in terms of engineering considerations, however Option 2 was identified as the preferred alignment through this section. It is slightly more direct and provides greater separation distance from Kilrie Granary. Through development of the alignment it was identified that the section of Option 2 crossing woodland to the east of Kilrie would be installed using trenchless methods.

3. Auchtertool

This section extends from Tiel Burn to land north of the B925 east of Auchtertool. Two alternative alignments were identified in this section:

- Option 1 a direct option crossing the former Balbarton landfill to the east of Auchtertool. The alignment passes through the centre of the site with land to the west identified as the former Kinuny Quarry and land to the east made ground likely associated with the former landfill.
- Option 2 a longer route with a gradual bend enabling the area identified as the former Balbarton landfill to be avoided. This brings the route alignment in closer proximity to the eastern extent of Auchtertool.

Taking account of ground conditions and constructability issues Option 1 was discounted and Option 2 identified as the preferred alignment.

4. Auchtertool to Clentrie Wind Farm

Four alternative alignments were identified in this section:

- Option 1 extending in a western and then northern direction outside of the Preferred Option towards Glenniston Solar Farm.
- Option 2 heading in a broadly northern direction coming to the immediate east of Clentrie Farm in order to avoid an area of challenging topography.
- Option 3 a longer option routed to the east of the Preferred Option and bending around the area of challenging topography.
- Option 4 a more direct alignment heading in broadly northern direction but further east of Clentrie Farm requiring a short section crossing an area of challenging topography.

Option 1 was discounted as it would require an onwards route through Glenniston Solar Farm which was considered not to be feasible. Option 3 was discounted because of its increased length and challenging bends. Between Option 2 and Option 4, it was concluded that Option 4 was preferred as it was located further from Clentrie Farm reducing the potential to impact on the farm/property.

5. Clentrie Wind Farm to the A92

Glenniston Solar Farm lies to the west of the Preferred Option with areas of Ancient Woodland lying to the east. In combination these constrain alternative alignments. Five alternative alignments were identified in this section:

- Option 1 located to the east of the Preferred Option. This directly crosses the Ancient Woodland and extends over agricultural land to the east of Glenniston Solar Farm and the property at Little Glenniston.
- Option 2 broadly parallel to Option 1 but avoiding the Ancient Woodland site and routeing to the west of the property at Little Glenniston immediately adjacent to Glenniston Solar Farm.
- Option 3 follows the same alignment as Option 2 but extends west increasing distance to the property at Little Glenniston. It then follows the eastern boundary of Glenniston Solar Farm.

- Option 4 lies to the west of the Preferred Option and requires crossing part of the Glenniston Solar Farm before turning east and following the same alignment as Option 3 around the Gelly Burn.
- Option 5 lies to the west of the Preferred Option and partially extends outside of it. It is routed west with a large proportion of the alignment directly crossing the Glenniston Solar Farm. It reaches the A92 to the west of Muirhead compared to all others which lie to the east.

Options 3, 4 and 5 were discounted due to Glenniston Solar Farm. It received planning permission in the course of developing the Scottish Onshore Scheme and options crossing it were not considered to be feasible.

While Option 2 avoids the solar array, in order to route to the west of the property at Little Glenniston and woodland to the northwest of it, the alignment extends into the boundary of the solar farm. While Option 1 crosses Ancient Woodland to the south it was identified that this section would be crossed using trenchless methods. Option 1 was taken forward as the preferred alignment.

As part of this section consideration was given to alternative crossing points of the A92. One utilising an existing underpass and one crossing using trenchless methods. Using the underpass was discounted as it was considered installation works could impact the structure's integrity. While it would require routeing across an area of historic mining activity, crossing the A92 using trenchless methods was identified as preferred.

6. A92 to the Fife Circle Railway Line

Four alternative alignments including crossings of the Fife Circle railway line were identified in this section. From the A92 they follow the same alignment to the east of Lochgelly Raceway until Spittal Wood, Ancient Woodland Inventory site, and from there follow different alignments to and crossing points of the railway line.

- Option 1 is routed to the north of and parallel to Spittal Wood heading west outside of the Preferred Option before heading northwest to the Fife Circle railway line.
- Option 2 heads northwest from Spittal Wood towards the Fife Circle railway line where it meets Option 1.
- Option 3 follows a less direct alignment continuing north before turning west to the south of the Fife Circle railway line
- Option 4 continues north from Spittal Wood taking a direct alignment to the Fife Circle railway line crossing it to the east of the other alternative alignments.

Options 3 and 4 were discounted taking account of historical mining activity associated with Minto Colliery. Between Spittal Wood a deep ravine is present through which an unnamed watercourse flows. Option 2 involves directly crossing the ravine while Option 1 crosses to the south of the steeper and more technically challenging area and also enables a more direct crossing of the railway line. As a result, Option 1 was taken forward as the preferred alignment.

7. Fife Circle Railway Line to the disused railway line

Six alternative alignments were considered in this section:

- Option 1 to the west of the Preferred Option in close proximity existing 132 and 275kV overhead lines as well as within a consultation zone for gas transmission pipelines.
- Option 2 largely follows Option 1 before turning northeast towards the River Ore and disused railway line.
- Option 3 is located within the Preferred Option between the existing overhead lines which lie to the west and the B981 to the east. This crosses an area of community woodland and footpaths.
- Option 4 is similar to Option 3 but is routed further to the east increasing the distance from the existing overhead lines and more closely following the B981 as it crosses the community woodland.
- Option 5 to the east of the Preferred Option heading directly north to a property at Brigghills and then turning northwest and following the same alignment as Option 6 crossing the (B981 and onwards to the River Ore and disused railway
- Option 6 to the east of the Preferred Option heading north towards Brighills and then turning west towards the B9821 before following the same alignment as Option 4 from north of the community woodland towards the River Ore and disused railway.

Options 1 and 2 were considered less favourable due to their proximity to existing overhead lines and the potential constraints/impacts posed by cable installation in this area. Options 5 and 6 would require to cross areas of historic mining activity with more challenging ground conditions present. Options 3 and 4 were both feasible, however, they cross an area of community woodlands and footpaths highlighted during consultation with the local community. Option 4 is slightly more direct and was identified as preferrable. In order to avoid impacts on the community woodland and footpaths it was identified that trenchless methods could be used crossing the B981, the woodland and the River Ore.

8. Disused railway line to the converter station site

In this section three alternative alignments were identified around Pitcairn to the south of Hare Law before following the same alignment from the southeast of Hare Law into the proposed converter station site. The alternative alignments comprised:

- Option 1 routeing to the east of the Preferred Option with a more direct route to the east/southeast of Cotter House to a common point approximately 350m east of Pitcairn.
- Option 2 routeing within the Preferred Option north and then northwest between Pitcairn to the north and Cotter House to a common point approximately 350m east of Pitcairn.
- Option 3 routeing within the Preferred Option to the west and north of Pitcairn crossing arable land between Hare Law and Pit Cairn to a common point approximately 350m east of Pitcairn

Option 1 was discounted due to ground conditions crossing an area in which shallow bedrock is present as well as potential peat. Option 3 was considered to have a greater

potential impact on farming operations at Pitcairn crossing arable land and farm tracks. Option 2 was identified as the preferred alignment through this section.

3.9 Statutory Consultation including Landowner Feedback

Further statutory consultation (referred to as Round 2 Consultation) was undertaken as the design of the Scottish Onshore Scheme evolved. This has included discussions with affected landowners seeking to incorporate their feedback as much as possible while taking account of SP Energy Network's statutory duties and license obligations. The main purpose of this consultation was to seek feedback on the emerging Proposed Option for the Scottish Onshore Scheme. A copy of the Round 2 Feedback Report was published in August 2025 setting out the feedback received and how this was addressed. A copy of the report can be found within the **standalone PAC report** submitted with the Applications. Key themes from feedback included:

- The preferred cable routes and impacts on woodland;
- Converter station location and landscaping;
- Ecology and biodiversity impacts;
- Impacts due to construction from traffic and machinery;
- Impacts on the local community;
- Visual impacts;
- Safety;
- Community benefits; and
- Quality of consultation.

3.10 Summary and Conclusions

In developing the Scottish Onshore Scheme, SP Energy Network has considered a range of alternatives in the context of its statutory duties and licence obligations under the Electricity Act 1989. This has included the identification and assessment of alternatives for each component of the Scottish Onshore Scheme comprising alternative landfall and converter station sites as well as alternative underground cable routes. The latter included consideration of alternative route corridors and following identification of the Preferred Option, consideration of alternative alignments within it. In considering alternatives SP Energy Network has appraised a range of environmental, technical and economic factors as well as sought to take account of feedback received from stakeholders including landowners through two rounds of non-statutory and statutory consultation.

Overall SP Energy Network has identified a Scottish Onshore Scheme which it considers to best balance environmental, technical and economic factors in line with its statutory duties and licence obligations alongside feedback received from consultation with statutory and non-statutory consultees, landowners and members of the public.

3.11 References

Ref 3.1 Eastern Green Link 4: Scottish Onshore Scheme, Routeing and Siting Consultation Document (2023), AECOM

Ref 3.2 Approach to Routeing and Environmental Impact Assessment: 2nd version (2020) SP Energy Networks