SP Energy Networks

Eastern Link – Torness Project

Options Appraisal Report Addendum

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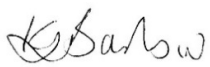
Signature		Signature	
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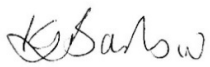
Signature	
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1 INTRODUCTION

1.1 This Document

This document forms an Addendum to the Torness Project Options Appraisal Report (dated February 2021). It provides an update on the findings of the options appraisal process undertaken to identify specific site and routeing options for the Eastern Link – Torness Project, following further consideration of options since February 2021. This Addendum should be read in conjunction with the Torness Project Options Appraisal Report (RSK, February 2021).

1.2 Consultation

As detailed in Section 2.4 of the Options Appraisal Report (February 2021), a number of consultation meetings and workshops were held with consultees during the period June 2020 and early 2021 to present the options appraisal process and to discuss site options identified. The conclusion of the options appraisal process as of February 2021 was that the preferred option comprised landfall at southern Thorntonloch, Substation Site R1 at Branxton, and Converter Station Site M2 located within an existing agricultural field to the south west of Thurston Manor, together with associated linking cable corridors.

During a meeting held with East Lothian Council on 24 February 2021 to discuss the outcomes of the options appraisal process, East Lothian Council noted that land in the vicinity of Oxwell Mains may be potentially available for development. The Council were keen that any site options for a converter station in the Oxwell Mains area were given full consideration; feedback was that the Council were not supportive of the M2 site location for the converter station. Further details provided following the meeting identified the land at Oxwell Mains as a site owned by Viridor located adjacent to the Energy Recovery Plant (and previously considered for a potential Plastic Recycling Facility).

The options appraisal process had originally identified this plot as a potential site option (Site C), however the site was not taken forward due to it being associated with a potential Plastic Recycling Facility on the land (identified during the planning search as reported in Appendix 2 of the Torness Project Options Appraisal Report).

It was agreed that SP Energy Networks would undertake discussions with the landowner to determine the potentially availability of the land.

A further meeting with East Lothian Council was held on 3 March 2021 to provide an update on the options appraisal. SP Energy Networks confirmed that discussions with Viridor had confirmed that the site was now potentially available. It was agreed that Converter Station Site C (the Viridor site) would be considered as part of the options appraisal process. A further update meeting was held with East Lothian Council on 23 March 2021 to provide an update on progress.

Further consultation is proposed with East Lothian Council and other relevant parties as the Project progresses.

2 APPRAISAL OF SITE C

An environmental appraisal of Site C (the Viridor site) as a potential converter station site has been undertaken in accordance with the methodology outlined in the Torness Project Options Appraisal Report.

Site C is located within the defined options appraisal Study Area. Constraints mapping for the Study Area is presented in Figures 3.1 – 3.9 of the Options Appraisal Report.

As noted above, the options appraisal originally identified Site C as a potential site option; Site C is shown in Figure 4.1 of the Options Appraisal Report.

The site option has been appraised against the following environmental aspects which are likely to influence the choice of a preferred location:

- Landscape and Visual;
- Ecology;
- Heritage (Historic Environment); and
- Transport and Access.

Consideration was also given to other factors including key land use issues including flood risk and contaminated land.

A detailed analysis of the Site C option is provided in Table 2.1 (presented in Appendix 1). The environmental analysis comprised a qualitative appraisal of the option, based upon the criteria defined in Section 2.3 Torness Project Options Appraisal Report and professional judgement. The criteria upon which the consideration of Site C is based is consistent with that adopted for the remaining site options (see Table 2.2 below).

A colour coded summary and assessment of the analysis undertaken by environmental specialists based on the appraisal criteria is presented in Table 2.3.

Table 2.1: Appraisal Criteria

Option	Details
PREFERRED OPTION	Greatest potential to accommodate the infrastructure required within the context of the environmental constraints identified.
SOME POTENTIAL	Some potential to accommodate the infrastructure required within the context of the environmental constraints identified.
LEAST POTENTIAL	Least relative potential to accommodate the required infrastructure within the context of the environmental constraints identified.

Note that these colour coding's represent relative weightings. A green colour code does not mean that no environmental issues have been identified, nor does an orange colour indicate an insurmountable environmental constraint. The coding enables a qualitative analysis to be undertaken, applying professional judgement and experience on an aspect-by-aspect basis for each environmental feature.

2.1.1 Technical

In parallel with the environmental appraisal of Site C, a technical review by SP Energy Networks engineers was completed in relation to engineering design requirements.

A site investigation was previously undertaken by RPS[1] adjacent to the Site C boundary as part of studies relating to the Viridor Energy Recovery Facility. Historical records detail that the site was a quarry from circa 1960 and restored to agricultural land in approximately 1993. The quarry was reported to have been backfilled with spoil, overburden and quarry reject material. The RPS site investigations indicate made ground present across the site, comprising red brown sandy clay, weathered limestone and void spaces created within sandstone and limestone boulders presumed to be quarry reject material. This extended to depths of 20.8m bgl. Sandstone/Limestone bedrock was encountered at depths of between 12 and 20.8m bgl.

Based on the RPS site investigation report and associated borehole logs, it is anticipated that a ground improvement system would be required to stabilise the quarry backfill material (e.g. deep soil mixing or polymer injection) in order to provide appropriate soil strength and compressibility characteristics to prevent bearing capacity and /or foundation settlement failure. Piling into bedrock may also be an option where piles may be installed to depths between 20m and 25m below ground level below the fractured limestone and into competent sandstone.

Further ground investigation works would be required at the site to enable the design of as suitable foundation solution. Site works would comprise of shallow and deep boreholes, as well as potential geophysical survey to identify the extent of the voids within the backfill material.

2.1.1.1 Landfall location

Advice on engineering constraints in the nearshore relating to potential landfall locations that may be closer to Site C than the preferred landfall at Thorntonloch was provided by 4C Offshore Limited. 4C Offshore undertook a review of landing options to the north of Torness Nuclear Power Station.

Any landing to the north of the Nuclear Power Station will encounter significant rock and glacial till exposures, along with a high probability of encountering extensive boulder fields. All of which will be problematic for burial and will require rock placement as cable protection. Given the generally very shallow (typically less than 5m LAT) locations of the likely Horizontal Directionally Drilled (HDD) exit this rock will need to be of significant size (potential large boulders) to ensure hydrodynamic stability as it will be required to be stable within the surf zone of a coast exposed to northerly and easterly gales.

A HDD will also be required to ensure sufficient protection and to minimise any interaction with the Barns Ness Coast Site of Special Scientific Interest (SSSI) which extends all along the intertidal area and which also extends inland in places where sand dunes and other features are present. This will also impose a number of significant constraints during installation.

[1] RPS Planning and Development (2007) Interpretative Site Investigation Report Viridor Waste Management Ltd Oxwellmains, East Lothian

In addition Neart Na Gaiothe (NnG) Offshore Wind Farm (OWF) is currently being constructed for which the export cables are landing on Thorntonloch beach to the north of the currently planned Eastern Link 1 landfall. Additionally, it is planned that the Berwick Bank and Marr Bank OWF export cables will land at Thorntonloch beach south of the NnG export cables and north of the Eastern Link 1 landfall or alternatively to the north of the Torness Nuclear Power Station at Skateraw.

It is therefore probable that up to 6 crossings (possibly more) will be required between the Eastern Link 1 cables and the three wind farm export cables if a landing to the north of the Torness Nuclear Power Station is to be considered. These crossings will likely entail the use of a significant amount of rock placement.

The outcome of the landfall options review was that a landfall location at southern Thorntonloch would remain as the preferred option when considering a converter station site at Site C.

2.1.2 Cost

As noted in Section 4.2.3 of the Torness Project Options Appraisal Report it is assumed that the capital cost of establishing a converter station at each site option would be generally similar, and hence this was not considered as a differentiator for Site C.

Table 2.2: Site C Converter Station Option – Summary of Constraints Assessment

Site	Heritage	Landscape & Visual	Ecology	Transport and Access	Land Use / Technical / Economic	Outcome
Converter Station Option						
C	Consists of a former opencast quarry that was subsequently backfilled with quarry waste material and hence the potential for any archaeological interest is significantly reduced. The site is located within the Second Battle of Dunbar inventory battlefield (Ref: BTL7), a designated heritage asset of National importance. There are no records of non-designated assets within Site C. No direct physical impacts on heritage assets would arise as a result of a development in this location.	The site is located on a former opencast quarrying site which has been backfilled and is considered a brownfield site. Visually the site benefits from its location in close proximity to the cement works and Energy Recovery Facility to the west, the existing Viridor landfill site to the east and the railway line to the immediate north of the site. When perceptible, the building would be viewed within the context of the adjacent cement	No ecological designations within the site. Site is expected to be of low value to biodiversity.	Convenient from an access perspective, due to its proximity to the A1 and the existing cement works access via a roundabout.	Nearest landfall is designated as SSSI. Potential for bedrock in nearshore waters. Reworked glacial deposits and quarry waste material are present across the site. Cable connection would need 2 crossings of the mainline railway or A1 as well as potentially negotiating the landfill site / quarry area.	Short-listed as potential preferred option

Site	Heritage	Landscape & Visual	Ecology	Transport and Access	Land Use / Technical / Economic	Outcome
		works and Energy Recovery Facility				

3 CABLE ROUTING TO SITE C

3.1 Route Corridor Options

Cable Consulting International Ltd (CCI) were engaged by SP Energy Networks to consider cable corridor options for the HVDC cable connection from landfall at southern Thonrtonloch to a converter station at Site C (the Viridor site), and for the HVAC cable connection from Site C converter station to the preferred substation site at R1.

The environmental constraints mapping, and findings of the CCI cable engineering review undertaken for the main options appraisal (as summarised in Section 5.2.2 of the Options Appraisal Report) were used to inform consideration of suitable cable corridors to Site C.

The following HVDC cable corridor options between a landfall at southern Thorntonloch and the Viridor site were identified by CCI:

Route	Length	Route Description
V-DC-RC1	4.8 km	keeps largely south but adjacent and close to East Coast Railway Line
V-DC-RC2	6.7 km	follows the previously selected preferred cable route to Branxton before heading north and passing east of Innerwick
V-DC-RC3	9.1 km	follows the previously selected preferred cable route to Thurston Manor Leisure Park before heading north and traversing Pinkerton Hill
V-DC-RC4	5.6 km	stays north of the A1 and East Coast Railway Line running in the carriageway from Skateraw
V-DC-RC5	5.8 km	stays north of the A1 and East Coast Railway Line running in quarry land from Skateraw
V-DC-RC6	5.5 km	running in A1 and quarry land from Skateraw

The following HVAC cable corridor options between the Viridor site and the R1 substation site were identified:

Route	Length	Route Description
V-AC-RC1	3.9 km	follows the same route as V-DC-RC2
V-AC-RC2	6.6 km	follows the same route as V-DC-RC3

3.2 Appraisal of Cable Corridor Options

An appraisal of cable corridor options was undertaken by CCI[2] and incorporated environmental constraints mapping (as provided by RSK) and engineering aspects. Engineering aspects included consideration of matters such as safety during both installation and operation, route distance, topographical and geological features, ground conditions including risk of contamination and ground stability, access for both the construction phase and future maintenance, crossing positions at watercourses, utility crossings (including potential impacts on cable ratings), ground suitability and elevation alignment, and flood risk. The appraisal included consideration of the recently installed NnG onshore cables and potential cable corridors associated with Berwick Bank OWF.

The main economic concerns relate to the length of the cables, with higher cost requirements associated with longer cable connections. In addition, higher costs will be associated with cable routes requiring multiple crossing of existing or proposed cables or complex crossing types.

The engineering review identified key points of engineering difficulty associated with each corridor and allocated a difficulty rating (from 5 (outside the scope of typical cable trenching but viable), 10 (practically possible but engineeringly challenging) and 25 (extremely challenging technically and/or economically). Based on this, each route was given a weighted score. Table 3.1 below summarises constraints identified as 'challenging' and 'extremely challenging' across the six DC and two AC cable route options. Plans of the individual route options and further details on the constraints are provided within the CCI Report.

The lowest weighted scores were associated with DC cable route V-DC-RC2 and AC cable route V-AC-RC1. V-DC-RC2 avoids crossing the proposed Berwick Bank OWF cable routes and the transmission circuits associated with Torness Nuclear Power Station.

V-AC-RC1 is the most direct route of the V-AC routes and avoids the least points of engineering difficulty. V-RC-AC1 follows the same route as V-DC-RC2. By adopting both routes there is potential for some advantages to be gained during installation and for future maintenance.

[2] Cable Consulting International Limited (2021) Eastern Link Cable Route Optioneering and Detailed Engineering Study Addendum (Report No. ER1196), June 2021.

Table 3.1: Site C Routeing Options - Summary of 'Challenging and Extremely Challenging' Engineering Constraints

Constraint	V – DC RC1	V-DC RC2	V-DC RC3	V-DC RC4	V-DC RC5	V-DC RC6	V-AC RC1	V-AC RC2
Proximity of railway line	✓			✓				
East Coast railway line crossing				✓	✓	✓		
Potential crossing or proximity to Berwick Bank OWF infrastructure	✓	✓	✓	✓	✓	✓		
Crossing of Torness Nuclear Power Station 400kV transmission cables	✓			✓	✓	✓		
Proximity to OHL circuits		✓	✓				✓	✓
NnG infrastructure crossing	✓	✓	✓	✓	✓	✓	✓	✓
A1 road crossing	✓	✓	✓	✓	✓	✓	✓	✓
Coal mining development				✓	✓	✓		
Cabling within A1 carriageway						✓		
Thornton Burn crossing		✓	✓	✓	✓	✓	✓	✓
Dry Burn crossing	✓	✓	✓	✓	✓	✓	✓	✓
Former landfill site crossing	✓	✓					✓	
Scheduled Monument			✓					✓
East Coast Railway line and mineral cley soils				✓	✓	✓		
Active quarry site				✓	✓	✓		

Constraint	V – DC RC1	V-DC RC2	V-DC RC3	V-DC RC4	V-DC RC5	V-DC RC6	V-AC RC1	V-AC RC2
Change in elevation		✓	✓				✓	✓

4 PREFERRED OPTION

This section of the Addendum is presented as an update to Section 4 (Preferred Option) of the Options Appraisal Report. It presents a summary comparison of the short-listed converter station siting options that were appraised as part of the main options appraisal plus the additional Site C addressed within this Addendum and identifies a preferred option to take forward to the next stage of the Project.

As noted in Section 4 of the Options Appraisal Report, consideration of technical and environmental factors relating to the shortlisted landfall and substation site options, identified southern Thorntonloch as the preferred landfall and Site R1 as the preferred substation site. A review of potential landfall options in closer proximity of Site C was undertaken as part of this Addendum, however due to issues with bedrock and cable crossings, it was concluded that southern Thorntonloch remains the preferred landfall option. There is no change to the outcome of the option appraisal process in terms of the preferred landfall and substation site options as a result of this Addendum.

4.1 Converter Station Options

4.1.1 Landscape and Visual

Of the short-listed sites (G, M1, M2 and M3, and C), none are located in internationally or nationally designated areas of the highest amenity value, or within any locally designated Special Landscape Areas. However, the M sites are adjacent to areas of ancient woodland and any development on the M sites should ensure the preservation of the ancient woodland. Development on the G and M sites would introduce new large structures into currently undeveloped arable fields which would impact landscape character and pattern. Site C is characterised by the adjacent industrial area and is the only site located on lower quality brownfield land (backfilled).

The screening afforded by landform and woodland for Sites M2 and M3, and to a lesser extent M1, is likely to limit adverse landscape and visual effects. In contrast, the lack of existing screening and the more exposed location of Site G mean that this site is less preferred to the M sites in terms of likely visual impact. The existing woodland around M2 provides a significant level of visual screening, greater than for either M1 or M3. All the M sites, but Site M2 in particular, benefits from having very few visual receptors which would be impacted by development on these sites. At Site C some properties to the south-west and south may have views of the converter station, but existing screening is already in place for these properties to help screen the cement works and adjacent landfill site. When perceptible, a converter building at Site C would be viewed within the context of the adjacent cement works and Energy Recovery Facility.

All five sites could accommodate the proposed converter station. However in terms of both landscape and visual amenity impacts, Site C is the preferred site for the reasons outlined above (characterised by the adjacent industrial area, located on lower quality brownfield land, views to the site being partially screened, and views being within the context of the adjacent cement works and Energy Recovery Facility). Should Site C not be feasible, then the likely landscape impacts on the remaining four sites would be of a

similar nature; and in terms of visual amenity, Sites M2 and M1 are preferred, with Site G the least preferred.

4.1.2 Heritage

None of the short-listed sites would give rise to direct physical impacts to a listed building, scheduled monument or Inventory Garden and Designed Landscape. However, all sites do occur in sufficient proximity to listed buildings for the potential for impacts to the setting of a listed building to be a consideration.

The M and G sites are located in previously undisturbed green field locations and have been identified as having high potential for the discovery of buried archaeological remains. Mitigation by excavation in advance of construction would be required should evaluation identify any remains of archaeological significance; this would apply to all four sites. Site C is located at the site of a former opencast quarry that was subsequently backfilled with quarry waste material. No direct physical impacts on heritage assets would arise as a result of a development in this location.

Given the above, heritage considerations are of a similar nature for Sites G and M, with Site C being considered the preferred option given that no direct physical impacts on heritage assets would arise as a result of a development in this location.

4.1.3 Ecology

All short-listed sites avoid internationally or nationally designated sites and nature conservation areas.

Sites G and M1, M2 and M3 are within agricultural fields. Sites M1, M2 and M3 have long-established woodland (of plantation origin) (ancient woodland) surrounding (but outwith) the sites. Suitable protection would be required to mitigate potential impacts to these adjacent areas. Assuming that the adjacent ancient woodland in the shelter belts surrounding Sites M1, M2 and M3 is not impacted, Site G and the M1, M2 and M3 sites are of a similar nature in terms of existing ecological habitat. Site C is considered to be of low value to biodiversity comprising rough grassland and scrub.

All sites have the potential for protected species to occur, with the confirmation of presence/absence requiring field survey. However, of the short-listed options, Site C is considered to be preferred on the basis that it is already disturbed and has adjacent industrial development present with associated noise and lighting.

4.1.4 Access

Access to Site G is constrained from the A1 due to bridges over the railway which are restricted in road alignment and width/weight. Construction access could be taken from the west at the Innerwick Junction (south of the railway), before heading east along rural lanes, passing through Crowhill. However, this route has residential receptors and potentially restricted road alignment. Further analysis would be required to assess this as a potential route for abnormal loads.

Access to Sites M1, M2 and M3 would be via Innerwick Junction on the A1. The route beyond the A1 is initially of a reasonable width, narrowing and increasing in gradient as it passes Thurston Manor Caravan Park. Local to the site, the rural road is single carriageway, although provides a two-way section at its eastern end. The route for

construction traffic avoids residential areas, with the exception of Thurston Manor Caravan Park. Abnormal loads have been transported along the route from the A1 associated with wind farms, however some adjustment to the priority junction local to the site is likely to be required.

Site C is convenient from an access perspective, particularly for construction, due to its proximity to the A1 and the existing cement works access via a roundabout. The junction from the A1 with the A1087 is a priority junction, although the central reservation is sufficiently wide to accommodate HGVs for turning right out. Abnormal loads, expected to arrive from the north, may require some amendments to the roundabout serving the cement works, but these would be relatively minor.

All site options would require mitigation measures such as a construction traffic management plan or installation of temporary passing bays to minimise temporary impacts on the transport network.

In terms of access Sites M1, M2 and M3 are preferred over Site G, with Site C being the most preferred from a transport perspective.

4.1.5 Land Use (Hydrology and Flood Risk)

In terms of flood risk, the northern portion of Site M2 is recorded as having High/Medium flood risk from surface water. Some very minor localised areas within Site M1 and M3 are also shown as having High/Medium flood risk from surface water although these are not representative of the overall sites. Two small areas of surface water flooding are associated with small waterbodies (settlement ponds) in the area adjacent to Site C.

Should development at Site M2 be pursed this would need to consider flood-resilient infrastructure and provision for alternative flood storage. Site M2 would be least preferred from a flood risk perspective.

There are no watercourses within the site options although there is potential for Site G and the M Sites to contain field drains/minor watercourses.

4.1.6 Technical

Engineering concerns include access; those issues are described under access above. Site C is preferred over Sites G, M1, M2 and M3 from an access perspective.

In terms of Site G, one of the Berwick Bank onshore substation options is potentially located in the same area and the site would not be large enough to accommodate both developments; the site size is limited and may not allow for future expansion.

Site C is a former quarry site that has been backfilled. It is anticipated that a ground improvement system would be required to stabilise the quarry backfill material to facilitate development at the site. Site C would be less preferred than Sites G, M1, M2 and M3 in terms of ground engineering.

4.1.7 Preferred Converter Station Site

Following consideration of the technical, economic and environmental factors relating to each of the converter station site options, it is concluded that the preferred option for the converter station site is Site C.

4.2 Cable Route Options

Of the Site C corridors considered, V-DC RC1 and V-DC RC3 are the least preferred in terms of technical constraints. Disadvantages of V-DC RC1 are the proximity to the railway (with potential for exposure to earth return currents associated with the railway electrification systems and vibrational disturbance) and proximity to Berwick Bank and NnG circuits and Torness Nuclear Power Station circuits (with potential to reduce the carrying capacity of the electrical cable). The route also crosses through the existing landfill site. A key disadvantage of V-DC RC3 is its length and frequent elevational change; specifically where the route crosses Pinkerton Hill and Dry Burn.

The CCI engineering review identified that the corridors providing the least technical risk are V-DC RC2 and V-AC-RC1. Corridor V-DC-RC2 avoid crossing multiple wind farm and other underground transmission circuits. Corridor V-AC-RC1 has a comparatively shorter length and has minimal elevational change along its length in comparison to the other HVAC route considered. There are still some sections of elevational change including at Thornton Burn. The CCI review noted that there could be some advantage in utilising the same cable swathe for both the HVDC and HVAC circuits in the corridor section between the converter station site and Branxton. Corridors V-DC RC2 and V-AC-RC1 offer the ability to provide a combined HVDC and HVAC corridor.

4.2.1 Cost

Third party agreements, crossing designs and engineering constructions will add project complexity and costs; all cable corridor options have some degree of engineering complexity which will influence project costs. The difficulty rating considered under technical above considered both technical and economic challenges.

4.2.2 Preferred Corridor

Following consideration of the technical, economic and environmental factors relating to the Site C cable corridor options, it is concluded that the preferred cable corridor option is V-DC RC2 and V-AC RC1.

4.3 Preferred Option

Following consideration of the technical, economic and environmental factors relating to each of the site options (Sites C, G, M1, M2 and M3) and associated cable route corridor options, it is concluded that the preferred option for the Project is: landfall at southern Thorntonloch, Substation Site R1 and Converter Station Site C with HVDC cable route V-DC RC2 5 and HVAC cable route V-AC RC1.

The conclusion of the Options Appraisal Report (February 2021) is therefore superseded by this Addendum; the February 2021 report identified the preferred converter station site as Site M2. This Addendum has identified that Site C (Viridor site) is preferred over Site M2.

The southern Thorntonloch landfall, substation at Site R1 and converter station at Site C (Viridor), with V-DC RC2 and V-AC RC1 cable corridor options is considered to offer the best balance of technical, environmental and economic considerations as far as possible.

The preferred option is shown on Figure 4.1.

5 SUMMARY

This section of the Addendum is presented as an update to Section 5 (Summary) of the Options Appraisal Report.

This study has appraised a number of siting options for a landfall and new substation and converter station required as part of the Project. The study has also appraised a number of cable route options which will facilitate the connection. The options have been considered in relation to environmental and socio-economic constraints, as well as technical and cost implications.

The aim of this study was to identify suitable sites and corridors within the Torness locality that are potentially suitable to accommodate the required electricity transmission equipment (comprising a converter station, substation and associated cable routes and landfall) required for the Project.

To meet the identified needs case and to reduce the need for new long sections of overhead transmission lines, the new substation will be ideally located in close proximity to the existing sealing end compounds and the existing 400kV overhead lines in the vicinity of Branxton.

Environmental constraints data was collated and incorporated into GIS and formed a basis for interrogating priorities and comparative analysis of siting and routeing options. A robust options appraisal was used to compare options across a wide range of criteria including environmental, socio-economic, technical and cost factors.

Based on the appraisal undertaken, landfall at southern Thorntonloch, Substation Site R1 and Converter Station Site C with cable corridors V-DC RC2 and V-AC RC1 is considered to meet the routeing objective. It meets the technical requirements of the electricity system, is economically viable and causes, on balance, the least disturbance to the environment and the people who live, work and enjoy recreation within it. This preferred option will be the basis for the next stage of the Project – public consultation. Following a review of the feedback SP Energy Networks will confirm a proposed option which will be subject to environmental impact assessment. Detailed siting and design options will feed into the proposed option and SP Energy Networks will submit applications to East Lothian Council for planning permission on this basis.

370000

380000

670000

Site C

R1

V-DC-RC2 /nnerwick Castle

V-AC-RC1

Landfall compound

Legend:

- Study Area
- Converter Station
- Substation
- Landfall Compound

Existing Infrastucture

- Transmission Substation
- Transmission Cable
- Transmission Overhead Lines

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Dundee
Firth of Forth
Edinburgh

Rev	Date	Description	Drn	Chk	App
00	02/07/2021	Preferred Option	DL	KB	KB

Eastern Link - Torness Project

RSK

TITLE: Figure 4.1: Preferred Option

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Kilometres

Scale: 1:40,000 @A3

REV 00

Path: P:\660000 - EPD Projects\661767 Eastern Link - Torness\05 GIS\P661767_Options_Appraisal.aprx\P661767_OAR_Addendum_Preferred_Option

APPENDIX 1 SITE C CONVERTER STATION OPTION – CONSTRAINTS ASSESSMENT

Torness Project Onshore Options Appraisal						
Site	**Archaeology & Cultural heritage**	**L&V Aspects**	**Ecology & Nature Conservation**	**Transport & Access**	**Key Cable Routing Implications/Land Issues**	**Plan Photographs**
Converter Station Options						
C (9.5ha)	Site C consists of a former opencast quarry that was subsequently backfilled with quarry waste material. This has been confirmed through a review of a geotechnical site investigation reports (Planning ref 08/00467), which indicates no undisturbed ground or soil layers are on the site above bedrock, which was recorded at a depth of between 12 and 20m. The site is located within the Second Battle of Dunbar inventory battlefield (Ref: BTL7), a designated heritage asset of National importance. There are no records of non-designated assets within Site C. Given that the geotechnical site investigation data indicates that no previously undisturbed soil remains within Site C, no direct physical impacts on heritage assets would arise as a result of a development in this location.	The site is characterised by the adjacent industrial areas: the cement works and Energy from Waste Plant to the west, the existing Viridor landfill site to the east and the railway line to the immediate north of the site. The site is located in Nature Scot Landscape Character Type 277 Coastal Margins - Lothains. The site is located directly to the north of Special Landscape Area 7 Doon Hill to Chesters, the boundary of which is the A1 250m south of the site boundary. The converter station would be visible from the footpath and national cycle route 76 adjacent to its northern boundary; potentially sections of Dunbar Camping and Caravanning Club Site; the southern end of the neighbouring Dunbar Golf Club course; and from Whitesands Beach (however the actual beach itself is on lower ground with views towards this site filtered by intervening landform and vegetation). Some properties to the south-west and south may have views of the converter station, but existing screening is already in place for these properties to help screen the cement works and adjacent landfill site. When perceptible, the building would be viewed within the context of the adjacent cement works and Energy from Waste Plant. Industrial development is retained to the east of the A1.	This site is of low value to biodiversity comprising rough grassland and scrub.There are no ecological designations within this site however the nearby coastline is a designated site of special scientific interest (SSSI). Potential for great crested newt in waterbodies close to site. The site is also characterised by the adjacent industrial areas: the Lafarge cement works to the west, the existing Viridor landfill site to the east and the railway line to the immediate north of the site.	This site is convenient from an access perspective, particularly for construction, due to its proximity to the A1 and the existing cement works access via a roundabout. The junction from the A1 with the A1087 is a priority junction, although the central reservation is sufficiently wide to accommodate HGVs for turning right out. Abnormal loads, expected to arrive from the north, may require some amendments to the roundabout serving the cement works, but these would be relatively minor, potentially limited to street furniture removal. There are no structures in the local area that present an obstacle for abnormal loads.	Cable connection would need 2 crossings of the mainline railway or A1 as well as potentially negotiating the landfill site / quarry area. In addition it will be necessary to confirm that there is sufficient land available for the converter station equipment with the landowner. Intrusive site works carried out in March 2007 by RPS for the Energy from Waste Facility confirmed that reworked glacial deposits and quarry waste material are present across the entire site (re-worked deposits ranged in thickness from 11.9m bgl to 20.7m bgl).	

Preferred
Some potential issues
Least Preferred