3 NEED AND ALTERNATIVES

Introduction

3.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) provides a summary of the need for the Project and the main alternatives considered by the applicant during the EIA process. It includes a summary of the reasons for the selection of the site, together with a description of the alternative design and layout options that have been considered. Further information, and details of relevant planning policy, are provided in the Planning Statement and Design and Access Statement accompanying the application.

Need for the Project

3.1.2 This section describes the national and local context driving the need for renewable energy production, and in turn, the supply of high-voltage cables at scale to satisfy demand.

Need for increased supply of high-voltage cables

3.1.3 Increasing demand for HV cable has resulted in long lead-in timelines that risk delivery of renewable energy developments at the pace and scale required to meet climate change objectives. The XLCC cable factory at Hunterston will address this issue by producing UK manufactured HV cable suitable for interconnectors and offshore wind farms, enabling projects to procure the critical HV cable in a more expedient manner.

3.1.4 The need for HV cable manufacturing is described in Plates 1 to 3 below.

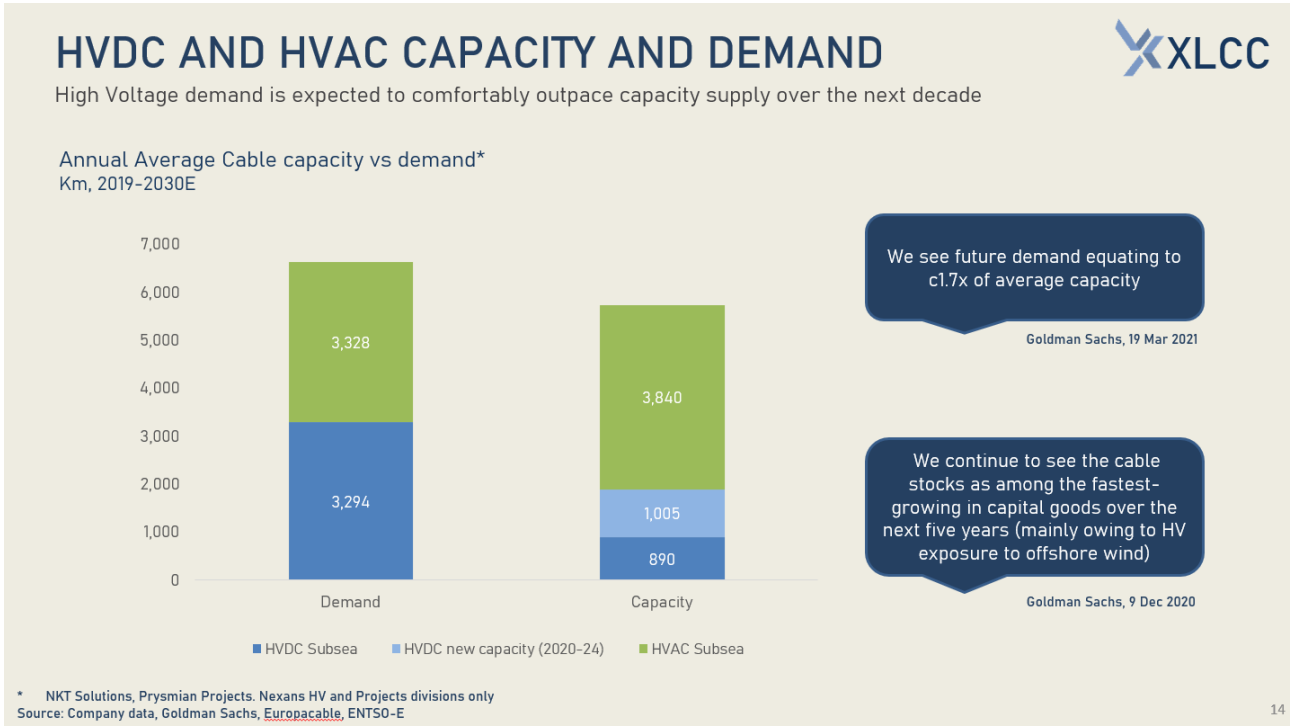

Plate 1 HVDC and HVAC Capacity and Demand

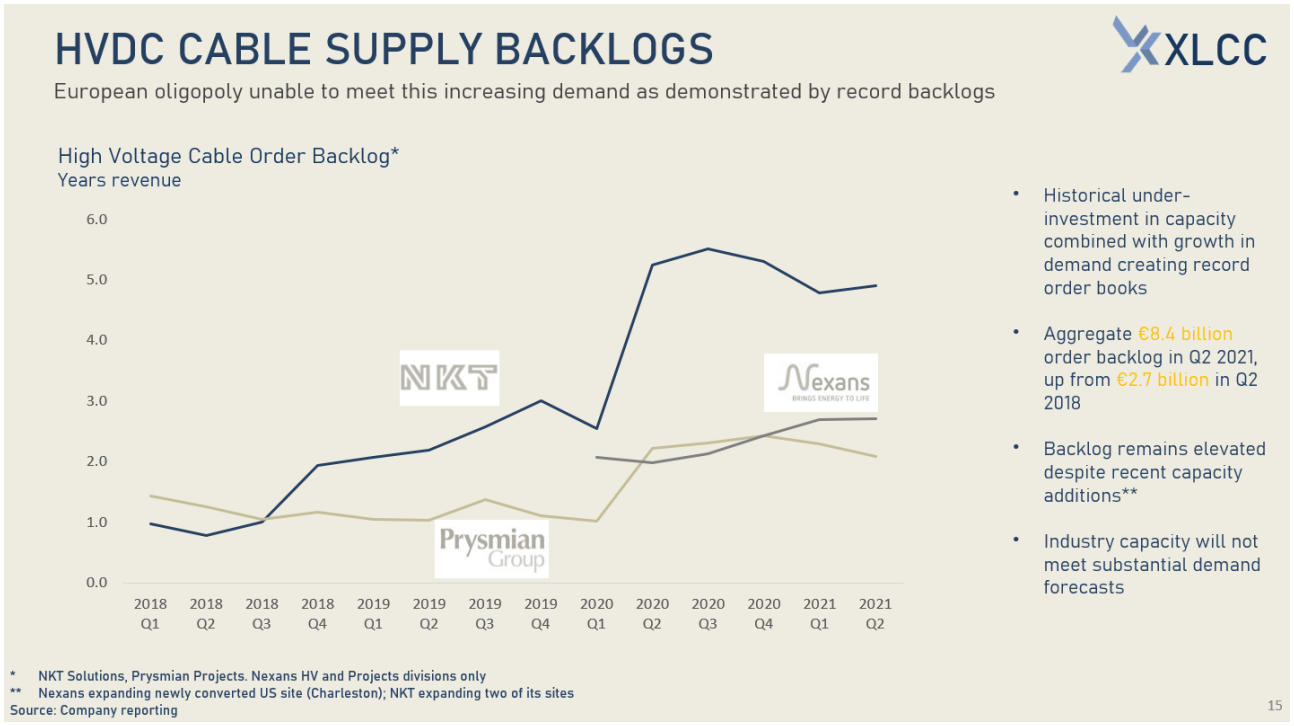

Plate 2 HVDC Cable Supply Backlogs

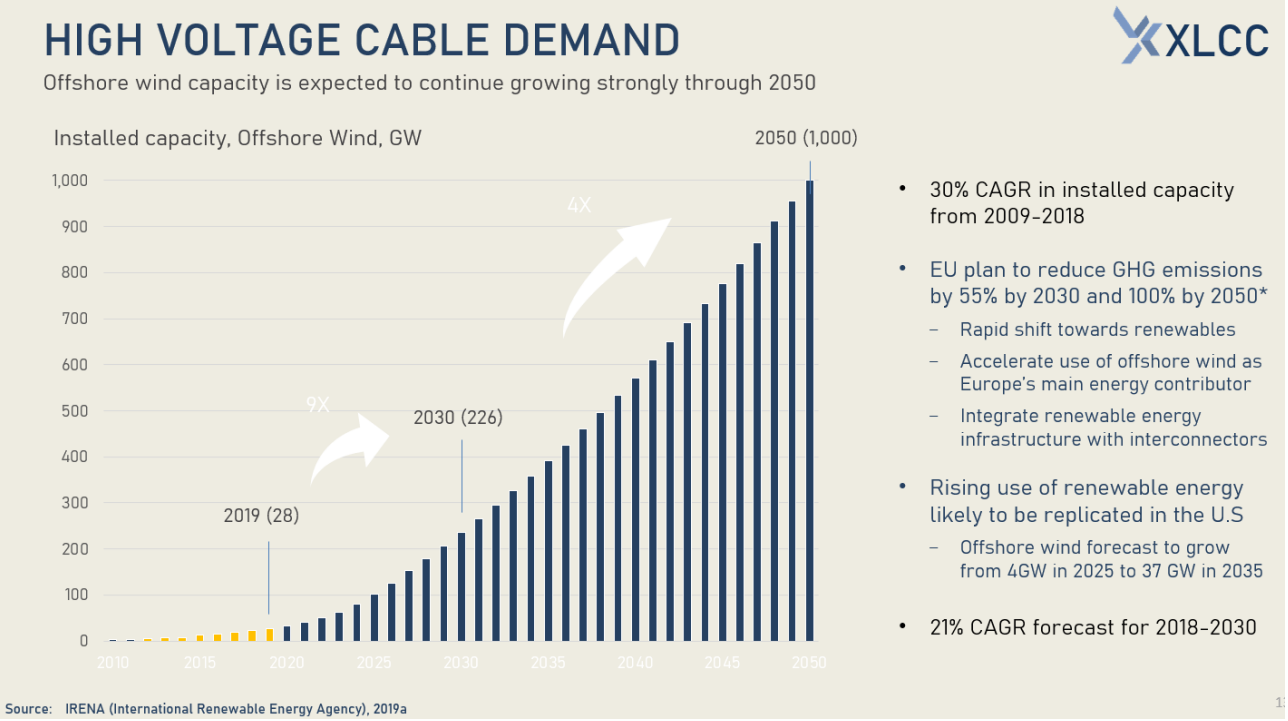

Plate 3 High Voltage Cable Demand

Overall Need - Conclusion

3.1.5 It has been demonstrated that there is a strong need for an increased supply of high-voltage cables to serve the expanding capacity of renewable energy to be generated in the UK (to reduce atmospheric emissions). National and local policy support the continued increased in renewable energy generation, in order to meet the significant challenges of climate change. However, it is clear that this rapid transition to clean energy may result in constraints in the supply of cables to the electricity transmission network if not urgently addressed.

3.1.6 The XLCC Hunterston cable manufacturing facility is therefore required to improve the supply of high-voltage cables in order that the UK can meet the Government's objectives. Once operational, the facility would have the ability to supply up to 2,600km of cable per year.

3.1.7 The specification of cables to be manufactured at Hunterston demand an advanced facility capable of adhering to the most stringent quality standards demanded by the market to reduce the number of outages (and therefore downtime for repairs). In particular, cables specified to have much larger volumes of insulation surrounding the conductor require a manufacturing process that maintains the 'centricity' of the cable and avoiding oval-shaped cables that cannot be jointed together successfully.

3.1.8 The rationale for the Project is set within the context of legislation, policy and guidance and renewable energy targets set at international, UK and Scottish Government levels. In May 2019, the Scottish Government declared a climate emergency and has pledged to drastically reduce emissions from Scotland in the next ten years. There has therefore been a focussed effort both to curb the emissions of greenhouse gases and to secure renewable sources for the generation, and secure supply of, electricity to reduce the dependence on fossil fuels.

3.1.9 Manufacture of sufficient high-voltage cable of the type to be produced at Hunterston is a critical part of the renewable energy generation and distribution supply chain which in turn will help to achieve the climate and energy targets set at international, UK and Scottish levels. The most relevant renewable energy and climate change legislation at an international, UK and national level is summarised below.

National and International Legislation and Policy Context

International and UK-Wide Energy, Climate Change, Energy and Planning Legislation and Policy

Kyoto Protocol 1997

3.1.10 The Kyoto Protocol brings the United Nations Framework Convention on Climate Change into use by committing industrialised countries and economies to limiting and reducing greenhouse gas emissions in accordance with agreed individual targets. The Convention asks those countries to adopt policies and measures on mitigation and to report periodically.

The Paris Agreement on Climate Change 2015

3.1.11 The UK is a party to the treaty to limit increases in global temperatures to well below 2°C above pre-industrial levels by 2050 and pursue efforts to limit the increase to 1.5°C.

The United Nations Adoption of the Paris Agreement (COP21)

3.1.12 Some 197 countries, including the UK, adopted the Paris Agreement at the 21st Conference of the Parties (COP21) in Paris in 2015. This is an agreement that seeks to reduce global greenhouse gas emissions and to limit the global temperature increase in this century to 2 C, while pursuing the means to limit this further to 1.5 C. This was ratified by the UK Government in November 2016 and now forms part of UK Government Policy.

Conference of Parties 26th Session (COP26)

3.1.13 At the Glasgow COP26 summit in November 2021, parties voted to adopt the draft COP26 report (UNFCC, 2021), known as the Glasgow Climate Pact. This included commitments to phase down the use of coal and supports a common timeframe and methodology for national commitments on emissions reductions. Countries were tasked to return in 2022 with more ambitious 2030 emissions reductions targets.

The UK Climate Change Act 2008 (as amended)

3.1.14 In November 2008, the Climate Change Act became law requiring the UK to reduce carbon dioxide (CO_2) emissions. This was updated in 2019 to provide a legal basis for the target of securing a 100% reduction of greenhouse gas emissions to be achieved by 2050 (compared to 1990 levels).

The UK Clean Growth Strategy 2017

3.1.15 In the context of the UK's legal requirements under the Climate Change Act, the UK's approach to reducing emissions aims to meet those requirements at the lowest possible net cost to UK taxpayers, consumers and businesses; and to maximise the social and economic benefits for the UK from this transition. The strategy includes a commitment to taking action to reduce emissions from heating the 850,000 off-grid homes in England that currently use oil for heating. The government also aims to phase out the installation of high carbon fossil fuel heating using oil and coal in new and existing off-grid buildings.

The Sixth Carbon Budget

3.1.16 In line with the recommendation from the Climate Change Committee, the UK has committed to reducing emissions by 78% by 2035 compared to 1990 levels.

The HM Government Energy White Paper - Powering our Net Zero Future

3.1.17 Following the Prime Minister's ten-point plan for a green revolution (HM Government, 2020a), and National Infrastructure Strategy (HM Government, 2020b), the White Paper (HM Government, 2020c) marks a significant milestone in the UK's net-zero transition, setting a net-zero target by 2050 and outlining how this may be achieved. It relates to the generation, supply and use of energy with the drive towards net zero by 2050 at its core, along with energy efficient buildings and lower household bills. It signals a decisive move away from fossil fuel generation and highlights how planned Government investment has the potential to leverage billions of pounds more in private sector funding and support for over 250,000 jobs in the green economy by 2030.

Scottish Energy and Climate Change Legislation,

3.1.18 Although energy policy is reserved to Westminster, climate change and planning policy is devolved to the Scottish Government and, moreover, the UK legislation, policy and guidance recognises the national contributions and separate strategies set out by devolved nations. Relevant Scottish legislation is summarised below.

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019

3.1.19 The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 received Royal Assent on 31 October 2019 and commits the Scottish Government to reducing greenhouse gas emissions by at least 100% of 1990 levels by 2045 (a net zero carbon target), and creates a framework for setting a series of interim national carbon budgets and plans for national adaptation to climate risks.

3.1.20 This Act introduces targets that exceed those set out in the preceding Climate Change (Scotland) Act 2009, seeking to commit to become a net-zero society by 2045 with interim targets of:

- at least 56% lower than baseline by 2020;
- at least 75% lower than baseline by 2030; and
- at least 90% lower than baseline by 2040.

Scottish Planning Policy

3.1.21 The National Planning Framework (NPF) for Scotland has been prepared by the Scottish Government (Scottish Government, 2014a). It is the spatial expression of the Government's economic strategy and plans for infrastructure investment. It also provides a framework for the spatial development of Scotland as a whole. The current NPF is NPF3 and sets out the Scottish Government's strategic development priorities over the next 20-30 years. It has a focus on supporting sustainable economic growth which respects the quality of the environment, place and life in Scotland and the transition to a low carbon economy.

3.1.22 NPF3 has a focus on creating a low carbon future and sets out an aim to meet at least 30% of overall energy demand from renewables by 2020 with 100% gross electricity consumption sourced from renewable energy. Provisional energy statistics indicate that in 2020 this target was almost reached, with the equivalent of 97.4% of Scotland's gross electricity consumption from renewable sources (Scottish Government, 2021). The UK as a whole has a target of 30% of electricity generated to be from renewable sources by 2020 (Department of Energy and Climate Change, 2010). In 2019 (the latest published figures) 37.1% of energy generated in the UK was from renewable sources (Department for Business, Energy and Industrial Strategy, 2020).

3.1.23 The draft Fourth National Planning Framework (NPF4) (Scottish Government, 2021c) detailing the long-term plan for Scotland by 2045 was laid in Parliament on 10th November 2021 and is now out for consultation until March 2022. The NPF4 should therefore be given weight in the determination of future proposals.

3.1.24 Policy 2 of the draft NPF4 states that significant weight should be given to the global climate emergency when considering all developments. Policy 19 requires local development plans to seek to ensure that an area's full potential for electricity and heat from renewable sources is achieved. Policy 19 also states that development proposals for all forms of renewable energy and low-carbon fuels, together with enabling works such as transmission and distribution infrastructure, and energy storage such as battery storage, should be supported in principle.

3.1.25 Scottish Planning Policy (SPP) (Scottish Government, 2014b) aligns itself with NPF3 and one of its policy principles states that the planning system should support the transformational change to a low carbon economy, including through enabling new infrastructure developments that contribute to efficient energy storage (such as energy storage facilities).

Scotland's Climate Change Plan

3.1.26 The Climate Change Plan, in its latest update (Scottish Government, 2020), provides the strategic framework for Scotland's transition to a low carbon future and states that:

'As Scotland transitions to net zero, a growing and increasingly decarbonised electricity sector is critical to enabling other parts of our economy to decarbonise – notably transport, buildings and industry.

We also want Scotland to continue to export large amounts of clean electricity to England, Northern Ireland, Wales and Europe, supporting carbon emissions reductions across the UK and beyond, and maintaining Scotland's position of a net exporter of electricity.'

3.1.27 The Climate Change plan confirms how Scotland will achieve emissions reduction targets up to 2032 and outlines the requirement to secure a green recovery from the Covid-19 pandemic. The Plan sets out a co-ordinated, collaborative approach to achieve net-zero targets. The plan includes a pathway to deliver its ambitious climate change targets and confirms that the policies mean that by 2032 there will a substantial increase in renewable generation, particularly onshore wind capacity, and a need to invest in onshore electricity. It also confirms the requirement for adoption of electricity-based solutions for heat and transport, to take advantage of the large potential for growth of onshore wind capacity in Scotland.

Scotland's Energy Strategy Position Statement

3.1.28 The Energy Position Statement (Scottish Government, 2021b) sets out how the Scottish Government intends to build upon the recent programme for Government, to focus on addressing climate change and recovering from the economic crisis brought about by Covid-19. It recognises the achievement of Scotland in reaching a 50% reduction (from 1990 levels) of greenhouse gas emissions. It follows the recent Climate Change Plan update. It also set out the pathway toward net zero ahead of the UN Framework Convention on Climate Change Conference of the Parties ('COP26').

3.1.29 The Statement emphasises the continued commitment to supporting onshore renewables in the right places to help meet net zero targets, stating that the continued growth of Scotland's renewable energy industry is fundamental to enabling Scotland to achieve its ambition of creating sustainable jobs in the transition to net-zero.

Other relevant national policy

3.1.30 Reference will also be made to the following documents in so far as they are relevant:

- Relevant Planning Advice Notes (PAN);
- Web-based Scottish Government energy policy/guidance;
- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019

- Local Policy Context

Local Policy Context

North Ayrshire Local Development Plan 2 (2019)

3.1.31 The development site is zoned as a Strategic Development Area (of national importance) under Strategic Policy 3: Strategic Development Areas within the North Ayrshire Local Development Plan 2. The site at Hunterston is also designated for Business and Industry under Schedule 5 of Policy 7- Business and Industry Employment Locations. There are a wide range of diverse uses identified as appropriate at Hunterston which include the following:

- Renewables generation, manufacture, maintenance, research and development, testing and training (including support for a renewables skills academy).
- Strategic grid connections recognising its importance as a landfall to support the offshore renewable energy sector.

THE HUNTERSTON PARC - THE NATURAL CHOICE FOR THE BLUE AND GREEN ECONOMIES DOCUMENT

3.1.32 Peel Ports has proposed a sustainable future for one of the most important industrial brownfield sites in Scotland through extensive consultation with the local community and other stakeholders. The 'blue and green economies' document consulted upon:

'The Hunterston PARC (Port and Resource Centre): The natural development choice for the Blue and Green economies' document was produced by North Ayrshire Council in conjunction with Scottish Enterprise, Ryden, JLL and Peel Ports. The vision of the document is to bring together "energy intensive industries with low cost, on-site power and heat generation, offering a unique opportunity to development, innovative, self-sustaining and cost-effective operations." As part of the Hunterston Port and Resource Centre (PARC) there is desire to "create a nationally significant Energy and Marine campus. Bringing together leading industry operators, world class universities and the latest innovators to deliver technological advances in areas such as power generation and aquaculture".

3.1.33 The document also notes that the site at Hunterston provides opportunity to support the development of new technologies. Potential uses included the following:

- Develop and integrate international and UK research and development activity on site.
- Develop skills and training facilities including parallel research programmes with Strathclyde University.
- Support links with wider Ayrshire skills, productivity and innovation programmes.
- Build a leading international centre for advanced technology.

3.1.34 Furthermore, the document notes that *"Hunterston PARC's vision is to bring together energy intensive industries with low cost, on-site power and heat generation, offering a unique opportunity to develop innovative, self-sustaining and cost-effective net zero operations aimed at supporting the delivery of Scotland's 2045 climate change targets."*

3.1.35 It is considered that the Project as proposed will assist in the delivery of the aims and visions outlined within the Hunterston PARC: The natural development choice for the Blue and Green economies document. The Project will:

- Create a world-class UK industry linked to the green revolution.
- Bring HVDC cable manufacturing to the UK for the first time.
- Provide jobs for our post-industrial communities.

- Participate in the transformational growth of the renewable energy ecosystem.

THE HUNTERSTON PARC DEVELOPMENT FRAMEWORK 2021

3.1.36 The Hunterston PARC Development Framework, Oct. 2021 became a material consideration for the Project when it was adopted by the NAC Planning Committee on 1st December 2021. The adopted framework is likely to give rise to 'daughter' supplementary planning documents (SPDs) that will coordinate a consistent approach to development in areas such as site-wide remediation, drainage and landscape strategies. XLCC will therefore work closely with Peel Ports to align the Project masterplan with the objectives of the PARC development framework going forward and during the detailed design stage.

Alternatives Considered

3.1.37 The EIA Regulations require that an ES should include:

'A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.' (Schedule 4(2)).

3.1.38 This section therefore sets out the key reasons for the selection of the Project site and the current layout, taking into account environmental effects.

3.1.39 In the absence of the Project, the national demand for renewable energy would continue to grow leading to further supply backlogs of high-voltage cable and additional delays in the delivery renewable energy developments over time. This would make meeting the Scottish Governments climate change objectives more difficult by inhibiting future reductions in greenhouse gas emissions. XLCC Ltd has therefore not considered a do-nothing scenario.

Site Location

Location Choice

3.1.40 In anticipation of the above stated demand, XLCC seeks to develop two separate UK cable manufacturing facilities at strategic locations.

3.1.41 XLCC conducted an exhaustive search of available ports in the UK that were capable of complying with the fundamental Project parameters.

3.1.42 A cable manufacturing facility of the type proposed requires a significant area of available development land adjacent to a high-quality port facility with deep water access for the cable laying vessels which will have a 10m draft, 40m beam and 200m length.

3.1.43 The site must be proximal to a power source capable of delivering the c.40MW electrical loads that the facility will demand. Excellent road and rail access for materials delivery as well as proximity to a highly skilled workforce were also important factors in site selection.

3.1.44 There are a very small number of ports in the UK that would be capable of hosting the XLCC development whilst meeting all of its requirements, two of which are being pursued.

3.1.45 Overall, the Project site is considered to be a suitable location, taking into account the following:

- land availability;
- availability of a large skilled workforce:
- suitability of the jetty and berth;
- its proximity to other energy infrastructure able to supply the necessary power requirement;

- access to the trunk road network, public transport and a rail freight opportunity;
- its location away from main settlements; and
- its location in an area of low flood risk.

Site Layout and Design

3.1.46 An evaluation of site constraints and opportunities was undertaken to inform the site layout and design. The Project presents an opportunity to provide the following:

- access to the existing jetty for cable export;
- connectivity by public transport, walk, cycle and road at the PARC entrance;
- optimum east to west arrangement of the process buildings from raw material to finished product and cable export;
- retention of the protected woodland bund to the east to retain visual screening of the Project;
- creation of a suitable drainage network; and
- provide safe and optimal access to the Project site from the adjacent road network allowing access for heavy goods vehivles (HGVs) and emergency vehicles.

3.1.47 Constraining factors that affected the evolution of the Project layout and design included:

- existing common roads and railway tracks;
- other commercial interests on adjoining plots; and
- as yet undeveloped site-wide infrastructure to support approx. 900 FTE workers.

3.1.48 The EIA process has influenced the iterative design process of the Project, through the identification of environmental constraints, responses during the consultation process, and identification of environmental effects. Therefore, there have been a number of iterations and refinements to the layout of the Project.

3.1.49 The layout and the location and size of the relevant buildings and equipment have undergone a number of iterations to ensure safe operation and optimum output. These changes have been captured in the parameters plan iterations shown in Figure 3.1 and a description of why the chosen layout emerged is provided below.

Iteration 1

3.1.50 The initial layout shown in Figure 3.1 was used to identify the broad shape and size of the buildings defined by the operation of the factory as follows:

- Working the cable manufacturing process backwards from loading the cables onto the cable laying vessels (CLVs) moored at the jetty, dictates that the finished cables need to leave the site from the northwest corner, closest to the cable export route.
- The site is then constrained on its east and west sides by the established landscape buffer that is the bund to the East, and the active rail yard to the West, beyond the rail yard is Southannan Sands Site of Special Scientific Interest (SSSI) which is designated for its intertidal marine habitats and saline lagoons.
- Completion of cable from drawing of wires to XLPE extrusion through to degassing, serving and armouring effectively progress from east to west.
- The tower is located towards the east of the site as XLPE extrusion is early in the process

Iteration 2

3.1.51 Iteration 2 built upon the initial concept design, including further detail in relation to the process buildings access and circulation within the site as follows:

- Circulation within the site was reviewed with regard to material deliveries and safety in manoeuvring between buildings.
- The truck holding area was relocated north to concentrate control of deliveries on the main gate.
- Protection (on three sides) was added to storage carousels on western edge of the site to deal with adverse winter conditions.
- Degassing Chambers were accomodated by an extension of the main factory hall.
- Material loading areas were defined and tested from a vehicular circulation point of view
- A one-way vehicle circuit was established and the process layout modified to better accommodate it.

Iteration 3

3.1.52 Further refinements to the layout were undertaken in parallel with development of the process layout and input from utilities and drainage as follows:

- Relocation of offices to achieve better relationship with storage carousels and to create a positive site frontage addressing the entrance from the north.
- Preliminary location of standby generators by utilities compound.
- Further detail of the car parking, open spaces and drainage layouts.

Illustrative masterplan

3.1.53 The indicative design layout that forms the basis of this EIA Report is shown in Figure 2.2a and 2.2b and described in Chapter 2: Project Description

3.1.54 The illustrative masterplan has been designed taking into account the candidate technology available and environmental considerations. Measures have been included within the Project design to reduce the effects on environmental receptors.

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