Western Link 2

Scottish Onshore Scheme

Routeing and Siting Consultation Document

October 2025

Contents

01. Introduction

1. Introduction

Introduction

RSK has been contracted by SP Energy Networks to provide environment services for the Western Link 2 Project, hereafter also referred to as the Project. This Routeing and Siting Consultation Document (RCD) has been prepared as part of the development. In order to accommodate the significant growth in wind power generation and the subsequent north to south power flows between Scotland and Wales/England, infrastructure is needed to bring electricity from Scotland through offshore waters to a connection point in Wales. The onshore elements of the project will require a Converter Station south of Kilmarnock. A cable will then connect the Converter Station to a landfall, which in turn will have cables in the water to another landfall before connecting to a T-Point Switching Station in South Ayrshire, with a further cable travelling south to Wales.

The RCD explains the background to the Project and describes the approach to and results of the first phase of the development of the routing and siting of onshore components of the Project in Scotland only. These comprise the Converter Station, underground cable routes, landfalls an, T-Point Switching Station (collectively referred to as the 'Scottish Onshore Scheme'). The objective of the routeing and siting study, described within this RCD, was to identify and assess alternative options for the Scottish Onshore Scheme and identify a Preferred Option to be taken forward.

The assessments undertaken for WL2, including the onshore cable corridor routing and converter station location analysis at Kilmarnock South and DCSS switching station at Girvan, have been developed to a level of detail that supports the evidencing of 'sufficient maturity' as defined under Ofgem's "Decision on the regulatory funding and approval framework for onshore transitional Centralised Strategic Network Plan 2 projects" document criteria 3.31 (ii) and (iii). These outputs can be directly applied to a future development scheme.

Background to the Project

The UK and Scottish Governments have set legally binding targets to reach net zero in greenhouse gas emissions and end their contributions to climate change by 2050 and 2045 in the Climate change Act 2008 and Climate Change (Scotland) Act 2009 respectively. Decarbonisation of the energy sector is a central pillar of both governments' net zero strategies meaning the way in which energy is generated, transported and used is undergoing transformational change. Traditional fossil fuel-based forms of generation are being retired and replaced by renewable and low carbon sources of energy generation including onshore and offshore wind as well as being supported by increased interconnection with Europe.

Offshore wind is a critical component of the UK Government's energy strategy with targets to increase installed capacity from around 10GW today to 40GW by 2030 originally being set in the Energy White Paper (2020), and then increased to 50GW by 2030 in the British Energy Security Strategy (2022). The scale of the offshore wind development pipeline is also reflected in the most recent seabed leasing rounds; Round 4 (2021) overseen by The Crown Estate (TCE)

and ScotWind (2022) overseen by Crown Estate Scotland (CES) have awarded seabed leasing rights for 8GW in English Waters and 25GW in Scottish Waters respectively.

To facilitate offshore wind generation as well as other renewable and low carbon forms of generation, new electricity network infrastructure is needed to ensure that energy can be transported from where it is generated to where it is used. Traditionally the electricity transmission system was developed to transport electricity in bulk from power stations to cities and towns where it is transported via the electricity distribution network, but as renewable energy sources are typically located in more geographically remote and/or disparate locations this requires new electricity network infrastructure both to connect it to the network as well as transport it to areas of demand.

With electricity demand predominantly located in the south of the country and considerable renewable energy resources in the north this leads to high north-south power flows on the electricity transmission system. Reflecting prevailing policy objectives and the pipeline of offshore wind and other renewable energy projects in Scotland this requires an increase in cross border electricity transmission capability so that energy can be transported to areas of increased demand further south in the UK.

SP Transmission (SPT) owns the transmission network in south and central Scotland. SP Energy Networks (SPEN), on behalf of SP Transmission, operates, maintains and develops the network of electricity cables, overhead lines and substations in the south and central Scotland, north west England and North Wales.

SP Energy Networks has a legal duty to develop and maintain an efficient, co-ordinated and economic electricity system. It also has obligations pursuant to its licence conditions to make offers for connection (to the system operator) and to make its transmission system available for generators wishing to connect to it and ensure that the system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity.

Significant onshore and offshore wind generation is being developed on the west coast of Scotland. The existing transmission network does not have enough capacity to cope with the level of connections required and therefore network reinforcements are required. Both the UK and Scottish governments are committed to seeing renewables increase as we aim to reach net zero carbon emissions by 2045 in Scotland and 2050 across the UK.

In July 2022 the ESO published its Network Options Assessment (NOA) Refresh entitled Pathway to 2030, which describes the major projects considered to meet the future needs of Britain's electricity transmission system as outlined in the Electricity Ten Year Statement (ETYS) 2018 and recommends which investments in the year ahead would best manage the capability of the transmission networks against the uncertainty of the future.

Using the Holistic Network Design (HND), which sets out the network requirements to facilitate connection of the offshore wind projects, the ESO produced 'Pathway to 2030' identifies a requirement for reinforcement of the west coast of Scotland and Wales/England. The recommended design is a connection through offshore waters between Scotland and Wales.

The latest ESO report 'Beyond 2030' published in March 2024 looks to facilitate the connection of an additional 21 GW of offshore wind, building on the work identified in Pathway

to 2030. Beyond 2030 includes an additional new west coast offshore circuit between Scotland and Wales.

The UK transmission system largely comprises a High Voltage Alternating Current (HVAC) network. That works well for a highly integrated system with many sources of generation and points on the network where the voltage needs to be stepped up or down to move electricity around the country and supply individual homes, businesses and premises. High Voltage Direct Current (HVDC) technology can also be an efficient option where there is a need to transport large volumes of electricity over long distance or between networks, particularly subsea connections over long distance.

HVDC has been identified as the most appropriate technology for Western Link 2 because:

- It allows for transmission of electricity over very long distance with fewer transmission losses than an equivalent AC reinforcement;
- It provides greater control over the transmission of electricity, including the ability to change the size and direction of power flow; and
- In this case, HVDC links are more cost-effective compared to AC options.

The scope of works for this phase of the project include the identification of a suitable site for a Converter Station in the Kilmarnock south area, a suitable T-Point Switching Station site in South Ayrshire, as well as cable route corridors for all identified options.

Once locations for the Converter Station, T-Point Switching Station and routes for the underground cables have been established consultation will be undertaken followed by either a statutory Environmental Impact Assessment (EIA) or a detailed environmental appraisal, depending on the EIA screening request outcome. Applications for consent will be made to the relevant local authorities under the Town and Country Planning (Scotland) Act 1997.

SP Transmission's Statutory Duties and Licence Obligations

As the holder of a transmission licence under the Electricity Act 1989 ('the Act'), SPT is subject to a number of statutory duties and licence obligations. These include a requirement "to develop and maintain an efficient, coordinated and economical system of electricity transmission". SPT is also required to provide for new electricity generators wishing to connect to the transmission system in its licence area; to make its transmission system available for these purposes and to ensure that the system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity. In addition, in formulating transmission proposals, SPT is subject to duties under Schedule 9 of the Act: "(a) to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and, (b) to do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."

These statutory duties and licence obligations underpin how SPEN approach the development of new electricity transmission infrastructure with the objective of ensuring that it is technically

feasible, economically viable and on balance, causes the least disturbance to both the environment and the people who live, work and enjoy recreation within it.

Development and Consenting Stage of the Project

The approach taken to developing the Scottish Onshore scheme of the Project is illustrated in **Figure 1** and comprises the following key phrases:

- Phase 1 Routeing and Siting: Phase 1 comprises this routeing and siting study in which alternative options for the Converter Station, landfalls and T-Point Switching Station , as well as potential underground cable routes between them have been identified and assessed taking into account a range of environmental, technical and economic routeing and siting considerations. Phase 1 has concluded with the identification of Preferred Options for the Scottish Onshore Scheme which is to be subject to consultation (referred to as Phase 1 Consultation). Responses to the consultation will be evaluated and inform confirmation of a Proposed Option to be taken forward as part of Phase 2.
- Phase 2 EIA: A formal request for an EIA Screening Opinion will be made for the Scottish Onshore Scheme to determine whether the Project will be subject to an EIA in accordance with the Town and Country Planning (EIA) (Scotland) Regulations 2017. If the Project is deemed a statutory EIA, the Preferred Options will be assessed, taking account of any modifications following Phase 1 Consultation, with the purpose of identifying any mitigation requirements recommended to prevent, reduce or offset likely significant adverse effects of the Scottish Onshore Scheme on environmentally sensitive receptors through an iterative design process. The EIA process comprises a number of steps starting with screening and concluding with the production of a full EIA Scoping Report and EIA Report. If the EIA Screening Opinion deems the Project is not a statutory EIA development, a detailed Environmental Appraisal will be prepared to support the application for consent. During Phase 2, SPEN will also undertake a second round of public consultation (referred to Phase 2 Consultation) taking account of the requirements of the Planning etc. (Scotland) Act 2006.
- Phase 3 Application for Consent: SPEN will be applying to the relevant councils for planning permission in principle (PiP) under the Town and Country Planning (Scotland) Act 1997.

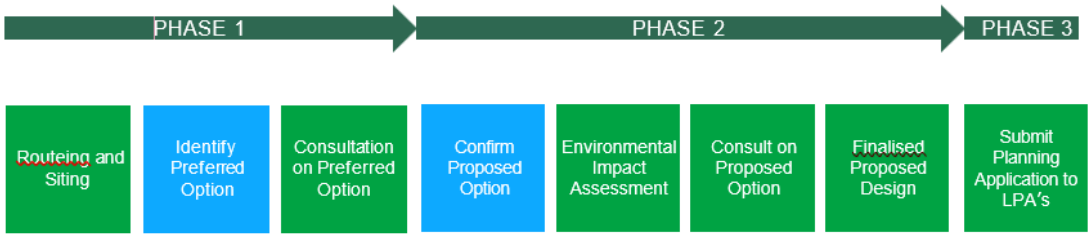


Figure 1: Scottish Onshore scheme approach

Purpose and Structure of this Document

The primary purpose of this RCD is to report on Phase 1 of the development of the Scottish Onshore Scheme; the routeing and siting study which has been undertaken in order to identify a preferred option comprises Converter Station, underground cable routes, landfalls and T-Point Switching Station.

The RCD has been published in parallel with the start of public consultation on the Scottish Onshore Scheme. The objective of this is to seek feedback on the Preferred Option from statutory and non-statutory consultees, as well as local communities and use this feedback to inform subsequent stages of the development and assessment of the Scottish Onshore Scheme ahead of making the relevant consent applications. The structure of the RCD is set in **Table 1**.

Table 1: Routeing and Consultation Document Structure and Content

Section	Description
1. Introduction	Provides an introduction to WL2, SPEN's statutory obligations and outline of the purpose and structure of the RCD.
2. Project Description	Provides an overview of HVDC technology and the key onshore components of the Project in Scotland.
3. Approach to Routeing and Siting	Describes the approach to the identification of the Scottish Onshore Scheme taking account of SPEN's approach to developing new electricity transmission infrastructure and industry best practices.
4. Converter Station Site Selection	Sets out the Converter Station parameters which have been applied to the Study and the identification and assessment of alternative Converter Station site options.
5. Landfall Site Selection	Sets out the identification and assessment of alternative landfall options.
6. T-Point Switching Station Selection	Sets out the T-Point Switching Station parameters which have been applied to the Study and the identification and assessment of alternative T-Point Switching Station site options.
7. Underground Cable Route Selection	Sets out the underground cable routeing parameters which have been applied to the study and the identification and assessment of alternative route options taking account of the outcomes of landfall, T-Point Switching Station and Converter Station siting.

8. Preferred Option	Describes the key next steps in the Project including consultation on the preferred Option as well as an overview of subsequent stages.
9. Consultation and Next Step	Describes the key next steps in the Project including consultation on the preferred Option as well as an overview of subsequent stages.

02. Project Description

2. Project Description

Overview of the Project

WL2 is a major reinforcement of the National Electricity Transmission System (NETS) which will provide additional cross-border or north-south transmission capacity between Scotland and Wales/England. The existing NETS operates using predominantly Alternating Current (AC) technology, however, the use of Direct Current (DC) technology is expanding with a number of schemes in development, construction or operation including the Western Link, Caithness Moray Link, connections to the Shetland Isles and Western Isles as well as Eastern Green Links 1 (EGL1) and 2 (EGL2), 3 (EGL3) and 4 (EGL4).

Both AC and DC are proven and reliable technologies with advantages and disadvantages depending on specific circumstances. DC systems enable electricity to be transmitted from point to point in much larger bulk volumes, over greater distances with fewer transmission losses compared to an equivalent AC system. They also provide a greater degree of control over the magnitude and the direction of the flow of electricity. Traditionally DC systems have been used for interconnectors between the NETS and other European countries including France, the Netherlands, Belgium, Norway, Denmark and Germany. This is because one of the benefits of DC systems is that they enable to connect asynchronous networks that operate at different frequencies.

In the case of WL2, the use of DC technology will allow large volumes of electricity generated in Scotland, where renewable energy generation exceeds demand, to be transmitted to demand centres in the south of the UK as part of the economic and efficient operation of the NETS.

The overall Project is illustrated in **Figure 2** and **Figure 3** (geographic overview) and comprises the following key components:

- Scottish Onshore Scheme: Converter Station, underground cable routes, T-Point Switching Station and associated landfalls where it connects to the Marine Scheme.
- Marine Scheme: comprising subsea DC cable route from 2 landfalls on the South Ayrshire coast, where it connects to the Scottish Onshore Scheme through the Irish sea to a landfall on the Welsh Coast where it connects to the Welsh Onshore Scheme.
- Welsh Onshore Scheme: comprising a Converter Station connected to the Western Link as well as underground DC cables from the Converter Station to a landfall in Wales where it connects to the Marine Scheme.

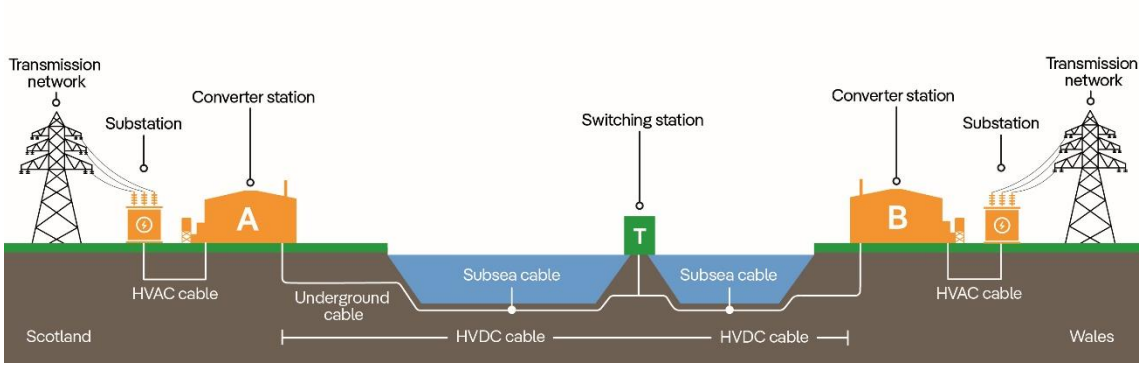


Figure 2: Key Components of the Scottish Onshore Scheme

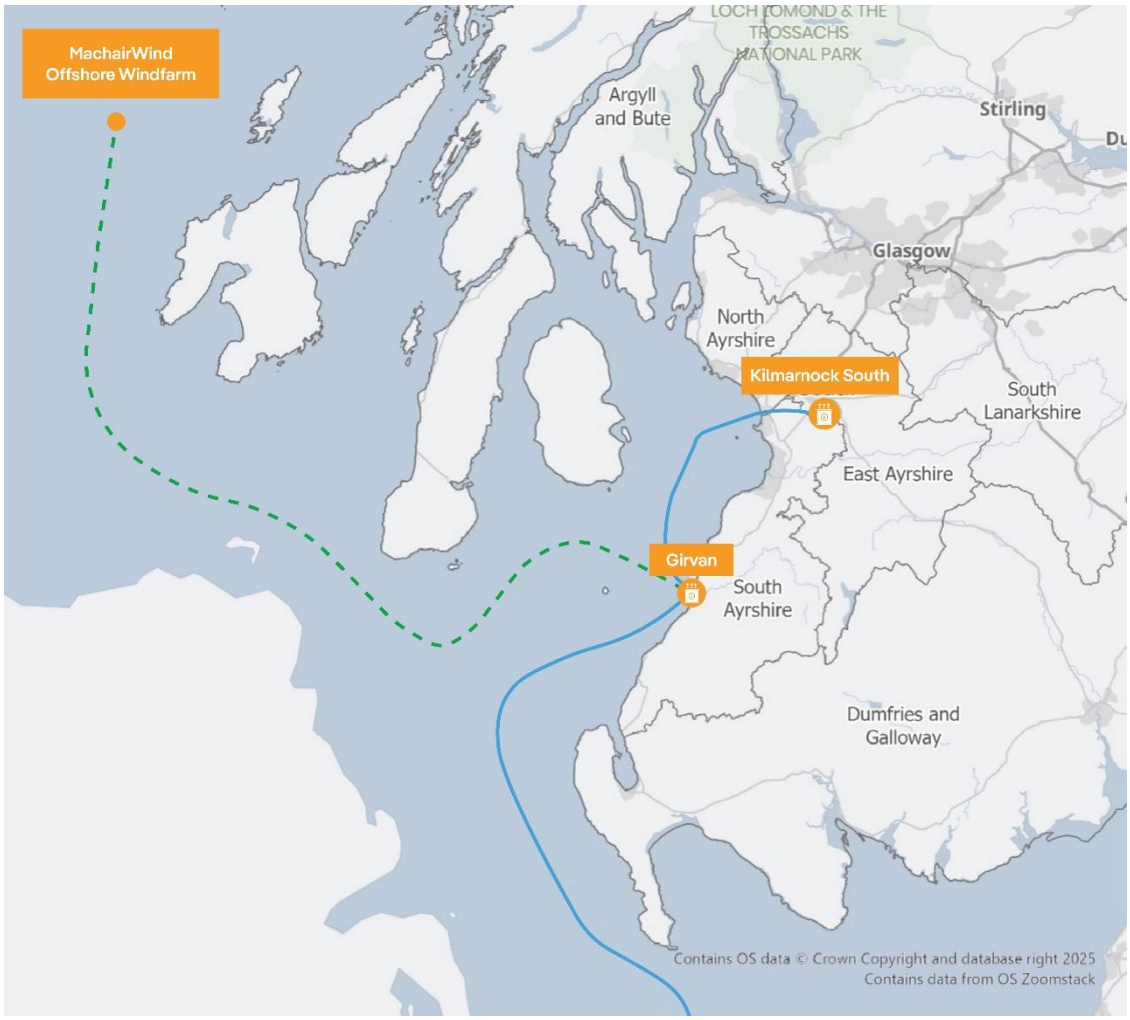


Figure 3: Geographic Overview of the Scottish Onshore Scheme

There are four key parts to the Scottish Onshore Scheme which are described in the following sections:

- Converter Station;
- Landfalls;

- T-Point Switching Station Site; and
- Underground Cable Connections from the proposed Converter Station and T-Point Switching Station Site to the Landfalls.

Converter Station Site

Converter Stations are the key components of a DC systems. They enable electricity to be converted from AC to DC or vice versa depending on the direction of operation. VSC technology is proposed for EGL4 as this provides greater control over the flow of electricity as well as having a smaller overall footprint for the Converter Station.

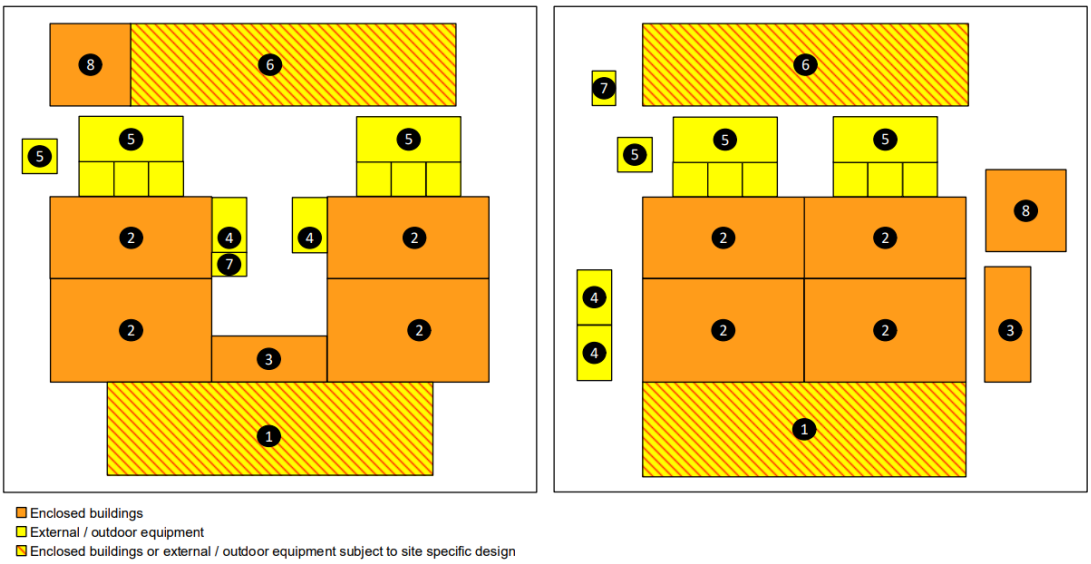
Converter Stations contain specialist electrical equipment to undertake this conversion, some of this must be located indoors within buildings in order to protect the equipment. The size and number of buildings is informed by the size of the electrical equipment which they house as well as climatic factors such as proximity to the coast and exposure to saline pollution. The largest buildings which house the converters are up to 28.5m tall, however, other equipment including transformers could be located outdoors or in smaller buildings. The exact number and layout of buildings varies by specialist supplier, however, the total operational footprint of approximately 8-9 hectares (ha) (based on 350m by 250m) is broadly the same. **Table 2** provides an overview of the types of buildings or equipment which a Converter Station comprises. This should be read with reference to **Figure 4** and **Figure 5** which provides an overview of how buildings and equipment are typically arranged.

Figure 4: Example of Converter Station

SP Energy Networks

Table 2: Typical Converter Station Components

Component	Description	Reference
DC Hall	The underground DC cables terminate inside the DC Hall. It also contains DC switchgear to connect to power electronics. This equipment will be enclosed in a building of up to 26m in height. The height requirement is a direct result of the highly specialist electrical equipment to be installed within the Hall, and the consequent need to provide the clearances necessary for that equipment to operate safely, as well as provide for the space required to enable the undertaking of maintenance.	1
Valve Halls and AC inductors	These buildings contain high voltage power electronics equipment that converts electricity from DC to AC or vice-versa depending on the direction of operation. This equipment must be located indoors in order to provide a controlled environment in buildings up to 28.5m in height. The height accounts for the space for the electrical equipment as well as clearances for safety and maintenance purposes.	2
Control building	This building contains control panels and associated operator stations, protection and communication equipment, offices and welfare facilities and other auxiliary systems. Subject to detailed design the control building may be a smaller standalone building or may be incorporated into the larger converter station buildings.	3
Cooling fans	This comprises external fan units located outside of the Valve Halls. The fans are used to cool down the valves. Power electronic valves may be cooled by water or glycol. Coolant is pumped through the fan units.	4
Transformers	These change the AC voltage to an appropriate level for transmission via the AC system/ or prior to conversion to DC. The transformers are normally sited outdoors and separated by concrete fire protection walls. Cooling fans are also required. Noise enclosures can be fitted around the transformers if required	5
AC switch gear and filters ('switchyard')	This connects the converter station to the AC transmission system. It includes a range of electrical equipment including harmonic filtration and reactive compensation equipment, circuit breakers, transformers, busbars and insulators. The main function is to allow the effective integration of the DC system into the AC system. Typically, the AC switchyard and associated equipment is located outdoors or enclosed in a building or a series of buildings between 16 and 20m high.	6
Backup generator	The converter station requires its own power typically provided at 11kV via the distribution network. The diesel back-up generator will be used to provide a backup electricity supply in the event of a failure of the low voltage electricity supply.	7
Spare parts building	A building to house spare parts and components; this will be supplemented by hardstanding areas on the proposed platform to provide storage for spare transformer and spare cable drums as required.	8



Note: (a) images are not to scale and (b) refer to Table 2 for description of numbered elements.

Figure 5: Typical Converter Station Layouts

Landfalls

The landfall is the interface between the onshore and offshore components of the Project. It is where the subsea cables come ashore and are joined to the underground cables at a buried Transition Joint Pit (TJP). The exact installation method at the landfall will depend on the nature of the coastline and the constraints which are present. For example, where the coastline comprises soft sediments with a shallow gradient open cut trenching may be used. This involves excavation of a trench in which DC cables are laid and the trench backfilled.

Alternatively, where the coastline comprises steep cliffs or designated sites are present, trenchless installation methods such as Horizontal Directional Drilling (HDD) may be used. This involves drilling seawards and installing ducts through which the subsea cables are pulled ashore. Once the works to install the landfall are completed, land will be reinstated with no permanent above ground infrastructure left in place. A working area approximately 100m x 100m will be required to accommodate joint lays, equipment for HDD and other temporary construction equipment (as illustrated in **Figure 6**). For the Scottish Onshore scheme there will be two landfalls to connect the T-Point Switching Station and Converter Station to the offshore electrical infrastructure.

Figure 6: Example of HDD Compound Setup

T-Point Switching Station Site

An important element of the Project will be to provide a connection onto the transmission network for the MachairWind Offshore Windfarm (OWF). A new T-Point Switching Station will be required which will allow the OWF to connect into the new north-south link. The equipment is large and needs space for safety clearances, and so requires three buildings approximately 85m × 30m in size and around 25m in height. A worst case of 360 x 360 has been used for the total area in the siting study. The T-Point Switching Station will not need to connect into the existing transmission network and only provides a point of connection for the OWF. It does however need to be located on land rather than in the marine environment to allow this connection to be made.

Underground Cables Connections

DC underground cables will be required between the landfall, T-Point Switching Station and Converter Station. A DC system comprises two cables (i.e. a single pair is one circuit), generally installed in ducts, typically up to 300mm in diameter. These are laid side by side within a trench typically 1.0 m wide by 1.4 deep. To enable DC cable installation a working corridor approximately 40m wide will be required comprising temporary access, haul road, cable trench, drainage and topsoil and subsoil storage. A cross section of a typical working width is illustrated in **Figure 7.**

Typically, cable installation will be undertaken using open trenching methods. In this method, cables could either be directly laid into the trench and backfilled, or a duct could be laid into the trench after which cables will then be pulled through the pre-laid duct. At some locations where obstacles or constraints such as roads, railway lines or watercourses require to be

crossed trenchless methods such as HDD, augur boring or micro-tunnelling could be used and the working corridor may increase locally to enable these specialist engineering works.

DC cables are typically laid in sections with cables pulled off cable drums into trenches or through ducts. DC cable sections are typically between 800 m and 1.0 km long between joint bays, however, the exact length of sections will take into account a range of factors including the constraints which are present, installation methods and cable pulling requirements. Adjacent cable sections are joined together at joint bays on buried concrete pads, which are set at the base of the cable trench.

On completion of installation the working corridor would be fully reinstated. Generally, there would be no permanent above ground infrastructure with the exception of potentially marker posts at key locations.

AC Underground Cables

AC underground cables will be required between the Converter Station and Kilmarnock South Substation. The exact configuration and requirements will depend on the length of the connection (i.e. the proximity of the Converter Station to existing Kilmarnock South Substation). It will comprise of up to 6 cables, generally installed in ducts, typically up to 300mm in diameter, laid 3 per trench; with each trench typically 1.5 m wide by 1.6 m deep (i.e. up to two trenches). As above, to enable cable installation a typically 40 m wide working corridor will be required comprising temporary access, haul road, cable trench, drainage and topsoil and subsoil storage. The increased width is due to the increased spacing required for AC cables.

Installation methods for AC cables are the same as those described above for DC cables. They will typically be installed by open cut trenching methods unless obstacles or constraints require trenchless methods to be used.

AC cables are laid in sections typically between 700 m and 1 km. Adjacent sections are joined together at joint bays. At each joint bay location there will be a requirement for an earthing link pillar, similar in scale and appearance to a telecommunication kiosk.

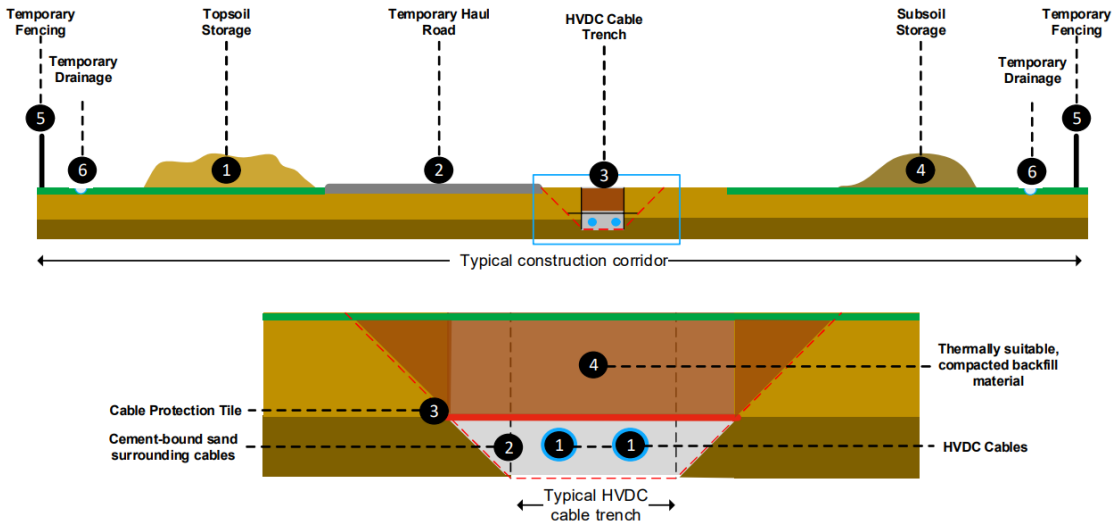


Figure 7: Cross section of a typical working width

03. Approach to Routeing and Siting

3. Approach to Routeing and Siting

SPEN's Approach to Routeing and Siting

In 2022 as part of preparing their RIIO-T2 Business Plan, SPEN undertook a review of their approach to developing major infrastructure projects. SPEN consulted on and published an updated version of 'Major Infrastructure Projects: Approach to Routeing and Environmental Impact Assessment'. It describes the approach taken to identifying and assessing alternative site and route options in a clear, systematic manner in accordance with SPEN's statutory duties and licence obligations; taking into account industry-recognised approaches.

The focus of this document is mainly on the routeing of new overhead lines however; it also describes how SPEN approach the development of underground cable routes. The underlying premise of the approach is that the most significant effects of underground cables are likely to result from the level of ground disturbance required for the construction of cable trenches and associated works. While the document makes no specific reference to T-Point Switching Station and Converter Stations, it does outline SPEN's approach to the siting of substations, with reference to the Horlock Rules, which is considered to be applicable to the siting of T-Point Switching Station and Converter Station which have similar characteristics.

Established Routeing and Siting Practice

Overview

Guidance on the routeing of overhead lines and the siting and design of substations is set out in the Holford Rules and Horlock Rules respectively. While these do not make reference to landfalls, underground cables T-Point Switching Station s or Converter Stations 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 Scottish Onshore Scheme.

Holford Rules

The Holford Rules were developed in the 1950s and set out a series of guidelines on the routeing of overhead lines. The Rules were reviewed in the early 1990s by the National Grid Company (NGC) Plc. (now National Grid Electricity Transmission (NGET)) with notes of clarification added to update them and reflect up to date circumstances. A subsequent review of the Rules including the NGC clarification notes was undertaken by Scottish Hydro Electric Transmission Limited (SHETL, now SSEN Transmission) in 2003 to reflect Scottish circumstances. A copy of the Holford Rules as well including notes added through subsequent reviews by NGC, SHETL and most recently by SPEN is contained in Appendix A.

The Rules are broadly hierarchical with Rules 1 and 2 placing considerable emphasis on avoiding areas of the highest or high amenity value. Rule 1 states "Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence" while Rule 2 states "Avoid smaller areas of high amenity value or scientific interest, by deviation; provided that

this can be done without using too many angle towers (i.e. the more massive structures which are used when lines change direction)." While Rule 2 refers to angle tower the same underlying principle regarding changes of direction applies to underground cables as there are limitations on their bending radii.

The term "amenity" has generally been interpreted as designated areas or sites of scenic, landscape, nature conservation, scientific, architectural or historical interest. This is consistent with SPT's duties under Schedule 9 to the Electricity Act 1989. For the purposes of this study, the term 'amenity' has been replaced by 'environmental' to more appropriately reflect the intrinsic environmental, social and cultural value of such designated areas.

The review undertaken by SHETL in 2003 provides examples of areas "highest" or "high" amenity or environmental value and states that such areas "require to be established on a project-by-project basis considering Schedule 9 of the Electricity Act 1989". For the purposes of this study, such areas include international and national designations such as sites designated for nature conservation or cultural heritage/archaeological interests.

The Rules do not identify what constitutes "major areas" or "smaller areas" but indicate that consideration should also be given to the spatial extent of areas of highest or high amenity or environmental value. Value is not considered to be related to the size of an area, so for the purposes of this study this has been interpreted as the extent to which areas of the highest or high amenity or environmental value are avoidable in routeing or siting options.

The notes and clarifications provide guidance with regard to areas of moderate or low amenity or environmental value noting that regional or local designated areas or sites should be identified from development plans. For the purposes of this study, such areas are considered to comprise local wildlife sites or reserves, woodland and outdoor recreational areas such as country parks.

While the Rules do not address residential areas, the subsequent notes and clarifications provide guidance stating, "avoid routeing close to residential areas as far as possible on grounds of general amenity". For the purposes of this study, settlements have been defined as areas of the highest amenity or environmental value. Smaller clusters or individual properties are considered to be a deviation issue in finalising the route design within a Preferred Option.

The reviews of the Rules also included guidelines on the siting substations, referred to as 'Supplementary Notes on the Siting of Substations'. These also emphasise the need to consider areas of high amenity or environmental value but also highlight that consideration should be given to the screening or containment provided by woodland or landform as well as landscape character.

Horlock Rules

The Horlock Rules were devised in 2003 and updated in 2006 by National Grid Company (NGC) plc. They contain guidelines to inform the siting and design of substations with the objective of mitigating the environmental effects of such developments as far as reasonably possible. A copy of the Horlock Rules is contained in Appendix B. While developed for substations, they are considered to be applicable to T-Point Switching Stations and Converter Stations as they have similar characteristics. The guidelines cover a range of aspects of site

selection and design including, of particular relevance to this study, guidelines with respect to:

- Avoiding sites of amenity, cultural or scientific value (including international, national and local designated sites) in site selection.
- Local context taking account of existing features such as landform or woodland to screen sites and reduce intrusion into surrounding areas as much as possible.
- Design including the size of building or other structures as well as consideration of colours and materials in order to integrate with surrounding development or features.

Approach to the Identification of the Scottish Onshore Scheme

The approach to the identification of the Scottish Onshore Scheme is illustrated in **Figure 8.** It has comprised two main steps; firstly, the identification and assessment of alternative landfalls, T-Point Switching Station sites 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 SPT's statutory duties and taking account of established routeing and siting practice including the Holford and Horlock Rules described above. It concludes with the identification of a Preferred Option to be subject to consultation.

Siting has been undertaken as the first step in order to ensure the approach is 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 has ensured that onwards underground or subsea cable routeing is focused on shortlisted landfall options which enable feasible marine and terrestrial alternatives.

In line with SPEN's approach to major infrastructure projects, a Routeing and Siting Objective has been established which underpins the approach illustrated in **Figure 8**, it is: "*To identify a technically feasible and economically viable Scottish Onshore Scheme connecting to Kilmarnock South 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.*"

The objective ensures that in considering alternative options and identifying the Preferred Option for the Scottish Onshore Scheme appropriate consideration has been given to impacts of it on the environmental and people alongside technical and economic factors.

Figure 8: Approach to Identification of the Scottish Onshore Scheme

Stakeholder Engagement

At key stages during the study, targeted consultation has been undertaken with stakeholders and statutory consultees including East Ayrshire and South Ayrshire Council and NatureScot. F The purpose of this has been to provide stakeholders with information on the Project, in particular the Scottish Onshore Scheme, as well as seek feedback on:

- The approach to routeing and siting, in particular regarding specific routeing or siting constraints or considerations which stakeholders wish to see addressed as part of the study, and
- Emerging Converter Station, landfalls and T-Point Switching Station options as well as underground cables routes options in order to identify and address potential constraints or concerns as part of an iterative approach to identifying and refining options.

  Further engagement will be undertaken with Historic Environment Scotland (HES) and the Scottish Environment Protection Agency (SEPA) along with other consultees during the consultation.

Constraints Mapping

In order to accommodate all the potential site and route corridor options, whilst taking into consideration existing land use and topography, a large Study Area was drafted. Covering Hunterston to the north, the Study Area extends approximately 60 km east and 90 km south to Auchencrosh. The Study Area was agreed with SPEN to ensure that all potential landfall locations, potential cable routeing options, Converter Station sites and T-Point Switching Station sites were included. Potential Converter Station sites were located within a 5 km buffer of existing substations. The Study Area is presented in **Figure 9** (refer to **Appendix C**).

A constraints mapping exercise was undertaken to identify relevant environmental, technical and other interests within the Study Area. This includes environmental constraints such as designated sites, settlement including towns, villages and individual properties, technical constraints such as other infrastructure or ground conditions as well as planning considerations including planning allocations or designations.

Table 3 provides an overview of the constraints information collated to inform the routeing and siting study.

Topic/Sub-topic	Environmental constraints and considerations
Ecology and Ornithology	Special Protection Areas (SPA's), Special Areas of Conservation (SAC's), Sites of Special Scientific Interest and Wildlife Sites
Cultural Heritage and Archaeology	Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Conservation Areas
Landscape	Local Landscape Areas, landscape character and Registered Parks and Gardens
Settlements	Towns, villages and other residential dwellings
Recreation	Country Parks, Regional Parks, Core Paths and other open space or amenity areas
Land Use	Notable land uses including agricultural land and other major development including notable planning applications
Woodland	Ancient Woodland Inventory sites, native woodland and commercial forestry
Water Environment	Flood risk areas and major waterbodies
Technical, Economic constraints and considerations	
Other Infrastructure	Other infrastructure including roads and railway line as well as existing transmission and distribution overhead lines and gas pipelines
Other Infrastructure	Underlying geology including historic coal mining activities
Topography and Landform	Slope, gradient and elevation
Topography and Landform	Ensure viability – As far as reasonably possible – avoid areas where technical difficulty or compensatory requirements would render the scheme unviable on economic grounds

Table 3: Environmental constraints to inform the routing and siting study

04. Converter Station Site Selection

4. Converter Station Site Selection

Converter Station Siting Parameters

Converter Station siting parameters have been established to inform the identification and appraisal of alternative Converter Station sites. The final detailed design of the Converter Station will vary by specialist supplier, so a degree of flexibility is required. The parameters that have been used to inform the identification of potential Converter Station site are:

- Operational footprint: For the purposes of the study, it has been assumed that any Converter Station would utilise VSC technology requiring an operational area of up to 350m by 250m (8-9ha).
- Scale and massing: The maximum height of buildings within the Converter Station site will be no greater than 28.5m. No assumption has been regarding the number of buildings and whether some equipment is enclosed within buildings or located outdoors.
- Temporary construction area: A temporary working area in the order of up to 200m by 160m (3.2ha) will be required to accommodate temporary construction facilities including offices, welfare, storage and laydown.
- Mitigation land: The requirement for land for mitigation, for example landscape planting, drainage, biodiversity net gain or compensatory planting will be site-specific. As appropriate to alternatives sites, potential mitigation requirements have been highlighted.

Identification and Assessment of Alternative Converter Station Sites

For the purposes of Converter Station site selection, a Converter Station siting study area (illustrated in **Figure 10**, refer to **Appendix C**) was established extending out 5km in all directions from the point of connection at Kilmarnock South substation. The underlying premise for this is that at distances greater than 5km 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 East Ayrshire Council's administrative area, however, part of the area to the south lies within South Ayrshire.

Potential Converter Station Sites

Converter Station Site 1 (KS-S1)

Converter Station Site 1 is illustrated on 10. It is located approximately 1.1km north of Kilmarnock South substation. It is likely that constraints in the intervening area would increase the length of the AC connection required. Site 1 is located on agricultural land. The site is convenient from an access perspective due to its proximity to the A67(T). According to the Land Capability for Agriculture (LCA) 50k map, the site is comprised mostly of grade 3.2 and 5.3 land. The Site is located on flat ground and currently consists of grassland pasture. The site is also located partly within Coal Authority Development High Risk Area.

The Site appears in open views from the A76, A77 and the A71 to a lesser degree. Residential properties to the south have open views toward the option area through there is a degree of visual separation. The site is exposed from all directions, with visibility extending to settled areas at Hurlford and across dispersed settlement to the south. The proposed development would be viewed as a new occurrence of infrastructure, though not entirely separate from the existing substation and OHL in the area. There is little intervening vegetation associated with the site, though small blocks of woodland are common, with the potential for mitigation planting to aid in integrating the proposed development into the landscape.

Ecologically, there is evidence of geese utilising the site, presenting potential Breeding Bird implications. Cessnock Water lies directly south/south-east of the site, the watercourse provides suitable habitat for otter, evidenced by otter spraints being recorded along the banks.

Converter Station Site 2 (KS-S2)

Converter Station Site 2 is located approximately 700m north of Kilmarnock South on agricultural land. This site consists mostly of Grade 3.2 land.

One heritage asset is located along the north-west boundary of the proposed Converter Station location. This is the site of an 18th century building named 'Greenhead' on the 1st Ed. OS map (1860). Nothing is visible today. This heritage asset will be impacted by any proposed development at this location. However, any impacts could be mitigated through further archaeological investigation.

The Site is located on sloping land to the west of the A76 and the east of the Cessnock Water. There would be open views across the site from properties to the south, and from the A76. Topography is steeper in the Lowland River Valleys compared to the surrounding Agricultural Lowlands. A large OLH passes the site to the south connecting to the Kilmarnock South Substation which would lower sensitivity to the proposed development to a degree, with the proposed development viewed in the context of existing infrastructure. There would be some opportunity for mitigation planting though this may be limited by the presence of the OHL.

The site is adjacent to Cessnock Water but there is no flooding risk.

From an ecological perspective, the habitat is similar in composition to KS-S1, but less variation in soil condition. There are no real ecological concerns for this site.

This site is convenient from an access perspective with the A67(T) to the north and established access route to the Kilmarnock South Substation (Treeswoodhead Road) to the south.

Converter Station Site 3 (KS-S3)

Converter Station Site 3 is located approximately 1km to the north west of Kilmarnock South substation on existing agricultural land, immediately to the east of the A77. No heritage assets are located within the proposed Converter Station location. It is sited within the southeastern outlook from residential properties and would be clearly visible from the A77. Dispersed residential properties across the agricultural areas to the east and south would be less effected than residents at Bellfield due to intervening distance. There is potential for mitigation planting on all sides of the site, though the proposed development would directly border the A77 to the northwest and present as a large, new feature in the landscape. This site is seen in

the context of existing infrastructure at the Kilmarnock South substation and Battery Energy Storage System (BESS), though is visually separated to a degree.

Some drains run through the area with associated surface water flood risk; this is mainly confined to within 10 m of the drains. Class 5 peatland over ~20% of area, towards the northern margin; indicates carbon-rich soils with deep peat but no peatland habitat. National Soils Map of Scotland show some of this area as peat soil, with the rest being mineral soil. Land is mostly classified as grade 3.2 and comprises of a number of grassland fields.

Plant species recorded all common and abundant within the local area. Unmanaged hawthorn hedgerows across the site with suitability for nesting birds. Areas of waterlogged soil and pools of surface water, providing suitable habitat for waders.

In general terms, this site is convenient from an access perspective with the established access route to the Kilmarnock South Substation (Treeswoodhead Road) to the south.

Converter Station Site 4 (KS-S4)

Converter Station Site 4 is located approximately 200m west of Kilmarnock South substation. No Heritage Assets are located within the proposed Converter Station location. This site is located opposite the Kilmarnock Substation and BESS, in agricultural lowland. There is a gentle slope to the south, with landform rising to the north and south of the site. This site benefits from visual separation which would limit effects from the A77 and larger settlements, though some dispersed properties have clear views across the area from the north and south. Of the Kilmarnock South site options, this is the closest to existing infrastructure. There is good potential for effective mitigation given the established woodland surrounding the substation which would screen views from the east. Further planting would be seen as an extension of existing planting, surrounding a tight group of infrastructural development that would be readable together as one large facility.

Muggersland Burn flows through area with some medium surface water flood risk nearby. A large part in the SE of the area is distant from the watercourse. Very similar habitat to previous site options, grazed, modified grassland. The development footprint overlaps with the burn and may negatively impact the watercourse. Lapwing were noted in close proximity to the site, utilising an area of surface water. A managed hawthorn hedgerow associated with the burn was also noted.

This site is convenient from an access perspective with the established access route to the Kilmarnock South Substation (Treeswoodhead Road) immediately to the north. The site consists of both Grade 3.2 and 4.2 land.

Converter Station Site 5 (KS-S5)

Converter Station Site 5 is located immediately to the south east of Kilmarnock South substation on existing agricultural land. This site is located on low lying land to the west of the A76 and the west of the Cessnock Water. There would be open views across the site from properties to the south and north, from neighbouring properties immediately north and from the A76. Topography is steeper in the Lowland River Valleys compared to the surrounding Agricultural Lowlands. Two 400kV OLHs with steel lattice towers cross part of the site to the

north connecting to the Kilmarnock South Substation which would lower sensitivity to the proposed development to a degree, though may also limit the extent of potential mitigation planting.

There is localised surface water flood risk along drainage around field margins.

No heritage assets are located within the proposed Converter Station location. No heritage impacts are anticipated.

The land is flat and arable in character; the only observable ecological constraints are hedgerows along field margins which may be suitable for nesting birds and lines of trees which may have bat roosting potential.

This site is convenient from an access perspective with the established access route (Treeswoodhead Road) to the Kilmarnock South Substation, both to the southwest. An unnamed road lies along the southeastern boundary of the site option which connects the Treeswoodhead Road with the A719 further to the southeast.

Summary of Converter Station Siting Appraisal

In general terms it is preferable for a Converter Station to be located as close to the point of connection as possible in order to co-locate infrastructure which has similar characteristics and reduce the length of the AC connection required. Converter Station Sites 1, 2 and 3 are the most distant from the point of connection at Kilmarnock South. In combination with this, there are other factors which result in them being discounted.

While there may be opportunities to reduce some of these effects to through mitigation and design, alternative sites (Converter Station Sites 4 and 5) are not affected by the issues to the same degree. These sites benefit from being located closer to the point of connection at Kilmarnock South as well as existing and planned energy infrastructure which is similar in scale and appearance. The main constraints affecting Converter Station Sites 4 and 5 relate to potential landscape and settings impacts.

Converter Station Site 1 contains significant ecological constraints, including geese using the site and evidence of otter present. As a result. Converter Station Site 1 has been discounted.

In the case of Converter Station Site 2, one heritage asset is located along the north west boundary of the proposed site. Whilst nothing is visible today, it is considered that the asset would be impacted by any proposed development at this location.

Converter Station Site 3 is considered to be within the southeastern view of residential properties and would have clear views from the A77, presenting as a large, new feature in the landscape. For these reasons, Converter Station Site 3 has been discounted.

The Muggersland Burn runs through the footprint of Converter Station Site 4 and has the potential for ecological impacts. The burn also presents some medium surface water flood risk. Therefore Converter Station Site 4 been discounted.

On balance and considering the overall constraints, Converter Station Site 5 (KS-S5) is the option brough forward to the next stage, as shown on **Figure 10** (refer to **Appendix C**). A summary of the Converter Station siting appraisal is presented in **Table 4.**

Table 4: Summary of Converter Station Siting Appraisal

Converter Station	Summary	
Converter Station Option 1 (KS-S1)	• No heritage assets located within the proposed Converter Station area • Located approximately 1.1 km north of Kilmarnock South substation • Proximity to residential properties, potential visual impacts • Field drains present, areas of high and medium flood risk • Approximately 40% of area is classified as Class 5 peatland but no peatland habitat • Immediate surrounding habitat is modified grassland. Potential breeding bird implications • Cessnock Water is located directly south/southeast, which provides suitable habitat for otter • Site comprises mostly of Grade 3.2 and 5.3 land • Proximity to A67	Discounted
Converter Station Site 2 (KS-S2)	• 18th century heritage asset located along the northwest boundary • Proximity to existing energy infrastructure (OHL and Kilmarnock Substation) • Proximity to residential properties, potential visual impacts • Adjacent to Cessnock Water but no flooding risk • 40% of the area is classified as alluvial soils which have a peaty soil component. • No significant environmental constraints	Discounted

Converter Station	Summary	
	• Site classified as mostly Grade 3.2 land • Proximity to A67	
Converter Station Site 4 (KS-S4)	• No heritage assets • Proximity to existing energy infrastructure (Kilmarnock Substation and BESS) • Proximity to residential properties • Medium surface water flood risk • Only mineral soils, land is mostly classified as Grade 3.2 and 4.2 • Muggersland Burn runs through the site. Potential breeding birds and badger implications • Existing substation access (via Treeswoodhead Road) can be utilised	Discounted
Converter Station Site 5 (KS-S5)	• No heritage assets • Proximity to existing energy infrastructure (Kilmarnock Substation and OHL) • Proximity to residential properties • Localised surface water risk along field drainage • 15% of area classified as alluvial soils (which has have a peaty component) • No significant environmental constraints • Access via Treeswoodhead Road	Preferred

05. Landfall Site Selection

5. Landfall Site Selection

Landfall Siting Parameters

Landfall siting parameters have been established to inform the identification and appraisal of alternative landfall sites. The installation method at the landfall will be influenced by a range of site-specific factors so site selection requires a degree of flexibility. The parameters that have been used to inform the identification of potential landfall locations are:

- Temporary construction area: A working area of up to 100 m by 100 m (1 ha) will be required to accommodate construction facilities and laydown space necessary to enable installation. The exact area will depend on the installation method (i.e. open cut or trenchless); however, this is considered to be representative of a realistic worst case. For the purposes of the constraints assessment an area measuring 100 m x 300 m has been used in order to provide flexibility for siting of the construction compound.
- Transition Joint Pit: The transition joint pit (TJP) is where the subsea and underground cables are jointed together. It typically comprises a rectangular area with a concrete base which is buried below ground level. The exact area is subject to detailed design but will be up to 50 m^2 which can be accommodated within the temporary construction area
- Landfall installation method: The exact method of installation will depend on the location of the landfall. In identifying and assessing landfall options consideration has been given to open cut and trenchless methods such as Horizontal Directional Drilling (HDD), however, where the constraints indicate one method is more feasible or preferable this is highlighted.

Identification and Assessment of Potential Landfall Sites

Following the assessment of alternatives in line with the marine element of the scheme, a number of potential landfall sites were identified. As the landfall is the interface between the terrestrial and marine elements of the Project, landfall siting has considered both terrestrial and marine constraints in so far as they influence the feasibility of landfalls. Only the Onshore Constraints are considered here. The landfall options are illustrated in **Figure 11.1** (refer to **Appendix C**).

Landfall

Kilmarnock South – Option A (Barassie – North of Troon)

A strip of sandy beach extends from the water, with a tidal zone approximately 250m wide. Inland from the beach are sand dunes, followed by a golf course that stretches for about 0.5km. This golf course presents a key constraint for any drilling operation due to the considerable difficulties in securing access to the shore. The Ayrshire Coastal railway line, which runs parallel to the shore, also intersects this area.

This landfall option is itself relatively free of direct environmental constraints. However, it is located near sensitive sites: the Western Gailes SSSI (Site of Special Scientific Interest) is

directly north and continues along the coast for 2.2km, while the Troon North Foreshore LNCS (Local Nature Conservation Site) is situated to the south where the Gailes Burn meets the sea. The Ayrshire Coastal Path also crosses the area parallel to the shore. The landfall is illustrated in **Figure 11.2** (refer to **Appendix C)**.

Kilmarnock South – Option B (Monkton – Northwest of Prestwick)

This landfall option features a sandy beach and dunes at the shoreline, crossing the Pow Burn. The area is constrained by the Ayrshire Coastal railway line approximately 700m inland, local roads to the south and east, and Prestwick Golf Club immediately to the south. A key consideration is the site's proximity, just 200m west of the Prestwick Airport Masterplan boundary. The tidal zone extends roughly 150m from the shore. Many of these constraints could be avoided by employing Horizontal Directional Drilling (HDD) from a location slightly further inland, with an estimated 700m drill to connect offshore.

The site is also surrounded by several environmental and land-use features. It is located directly west of land designated for FGS Target Woodlands for Riparian Benefits, with the Troon Golf Links and Foreshore SSSI about 260m to the north. A core path borders the site to the south and east. A historic landfill encroaches on the northern side of the landfall and occupies a significant portion of the peninsula to the north, while St. Andrews Caravan Park is situated directly northeast of the site. Option B landfall option is illustrated in **Figure 11.3** (refer to **Appendix C**).

Option B – Monkton is the preferred option based on the constraints

T-Point Switching Station

Given the close proximity of the T-Point Switching Station to the coast, the assessment of the cable corridors and landfalls is considered alongside the T-Point Switching Station siting parameters in Section 6.

06. T-Point Switching Station Site Selection

6. T-Point Switching Station Selection

T-Point Switching Station Siting Parameters

The T-Point Switching Station parameters have been established to inform the identification and appraisal of alternative sites. The final detailed design of the T-Point Switching Station will vary by specialist supplier, so a degree of flexibility is required. The parameters that have been used to inform the identification of sites are:

- Operational footprint: For the purposes of the study, it has been assumed that any T-Point switching station would require an operational area of up to 360m by 360m.
- Scale and massing: The maximum height of buildings will be no greater than 25m. No assumption has been regarding the number of buildings and whether some equipment is enclosed within buildings or located outdoors.
- Temporary construction area: A temporary working area in the order of up to 200m by 160m (3.2ha) will be required to accommodate temporary construction facilities including offices, welfare, storage and laydown.
- Mitigation land: The requirement for land for mitigation, for example landscape planting, drainage, biodiversity net gain or compensatory planting will be site-specific. As appropriate to alternatives sites, potential mitigation requirements have been highlighted.
- Following review by engineering consultants, the footprint of the T-Point switching station site was altered to 400m by 250m, which encompasses a smaller area than covered by our initial 360m by 360m.

Identification and Assessment of Alternative T-Point Switching Station Sites, Cable Corridors and Landfalls

The potential T-Point Switching Station locations at Girvan have been identified through the initial engineering study. The locations have been confined to the area surrounding Girvan in order to limit distance from the coast, as illustrated in **Figure 12** (refer to **Appendix C**). Given the close proximity of the T-Point Switching Station to the coast, the assessment of the cable corridors and landfalls is considered alongside the T-Point Switching Station siting parameters. The landfall and corridor options for these sites are considered effectively together given the narrow distance from the coast. All potential options lie within South Ayrshire Council's administrative area.

T-Point Switching Station – Girvan 1 (GS-S1)

There are no designated heritage assets located within the GS-S1 footprint, however there are a number of recorded assets which are likely to be physically impacted by any proposed development within GS-S1. Potential impacts to the setting and significance of two Scheduled Ancient Monuments are considered likely.

This site is located on raised ground between the A77 and the Grangestone Industrial Estate. It is highly visible from the road in the centre of the view when travelling north from Girvan, with visibility extending into the northern part of the town, the Girvan Community Hospital and the base of the Girvan Water valley. Though closely associated with the industrial area, development in this location would be exposed and form a prominent new feature along with any proposed mitigation planting.

A large area of the site near the railway is classified high surface water flood risk.

The site largely comprises a large, modified grassland field with a well-established line of trees to the south. Areas of standing water were present within the field, providing suitable habitat for waders. Grassland is modified and lacks botanical diversity; plant species recorded all common and abundant within the local area.

In general, this site is convenient from an access perspective, due to its proximity to the A77(T). This site consists of Grade 2 land. and sits directly adjacent to the A77 road to the west. A railway line is situated to the south east of the site boundary and an industrial site is located to the north.

The GS-S1-1 cable corridor is approximately 2.4 km in length and 200 m in width. It would be located through open fields and coastal landscapes (sand dune system); intersecting with the A77 and the Ayrshire Coastal Path. Within the GS-S1 cable corridor there is one scheduled monument, three HER heritage assets and two NRHE assets.

The GS-S1-2 cable corridor is approximately 2.3 km in length and 200 m in width. It would be located through open fields and coastal landscapes (sand dune system); intersecting with the A77 and the Ayrshire Coastal Path. Within the GS-S2 cable corridor there is one scheduled monument, two HER heritage assets and two NRHE assets.

T-Point Switching Station – Girvan 2 (GS-S2)

There are no recorded heritage assets located within this proposed site.

Views to and across this site area are widely available from the north off the B741 and associated residential properties, from the south off local roads and from residential properties, and from the southwest on the approach from Girvan. Any development and associated mitigation would be in contrast to the existing open landscape. There is some high and medium risk of surface water flooding in the south and south east, as well as a large area of high and medium risk of river flooding in the south.

The site is comprised of arable fields of limited botanical diversity. Plant species recorded common and abundant within the local area. The site is close to the Water of Girvan, with a small tributary of the burn running through the site.

In general, this site is convenient from an access perspective, due to its proximity to the B741 to the north. The site consists entirely of grade 2 land.

The GS-S2-1 cable corridor is approximately 3.9 km in length and 200 m in width. It would be located through open fields and coastal landscapes; intersecting with the A77, B714, the Ayrshire Coastal Path, the Glasgow-Ayr/Stranraer rail line and sewage treatment works. Within the GS-S2-1 cable corridor there is one scheduled monument, five HER heritage assets and two NRHE assets.

The GS-S2-2 cable corridor is approximately 3.8 km in length and 200 m in width. It would be located through open fields and coastal landscapes; intersecting with the A77, B714, the Ayrshire Coastal Path, railway and two minor roads. The southern extent of this corridor intersects with the Water of Girvan. Within the GS-S2-2 cable corridor there is one scheduled monument, three HER heritage assets and two NRHE assets.

T-Point Switching Station – Girvan 3 (GS-S3)

There are no recorded heritage assets located within this proposed site.

This site is located on open pasture between the Grangestone Industrial Estate and the A77. Industrial buildings contain the area from the southeast, east and northeast. Close range views into the area are available form a core path on the edge of the industrial area to the southeast and east, and from Burnside Farm, though outbuildings on the property provide some screening. There are also clear views into the area form the Ayrshire Coastal Path to the west.

The site is located on a relatively steep sloping field, with the habitat comprising modified grassland. Plant species recorded were common and abundant in the local area.

Generally speaking, this site is convenient from an access perspective, due to its proximity to the A77. The nearby industrial estate is served from the B741, though general traffic access is not available through the industrial site. Site consists entirely of Grade 3.2 land.

The GS-S3-1 cable corridor is approximately 2.6 km in length and 200 m in width. It would be located through open fields and coastal landscapes; intersecting with the A77 and the Ayrshire Coastal Path. There are no recorded heritage assets within the corridor.

The GS-S3-2 cable corridor is approximately 3.1 km in length and 200 m in width. It would be located through open fields and coastal landscapes; intersecting with the A77, the Ayrshire Coastal Path and a local Core Path. There are no recorded heritage assets within the corridor.

T-Point Switching Station – Girvan 4 (GS-S4)

This site is located on open pasture between the A77 and Grangestone Industrial Estate, comprised predominantly of a large arable field. The area is elevated above the industrial buildings which have been cut into the topography to the southeast. A buffer of scrub woodland separates the area from the A77 and the coastline. There is a single core path to the east which is aligned to a hedgerow boundary to the north of the industrial area. Where visible from the north, any development would be seen in the context of the industrial estate, with the opportunity for robust mitigation in the northern and eastern boundaries, whilst room for enhancing and extending existing roadside buffer vegetation to the west.

There is one HER heritage asset record within the southern corner of the site. This heritage asset will be impacted by any proposed development at this location. However, any impacts could be mitigated through further archaeological investigation.

As with GS-S3, the site is located north of William Grant Distillery bonded warehouses to the north of the Grangestone Industrial Estate which is served from the B741. General traffic access is not available through the industrial site. Generally speaking, this site is convenient from an access perspective, due to its proximity to the A77. The site consists of a mixture of grade 3.1 and 3.2 land. This site is taken forward.

The GS-S4-1 cable corridor is approximately 325m in length and 200 m in width. It would be located through open fields and coastal landscapes; intersecting with the A77, the Ayrshire Coastal Path and a strip of roadside woodland. There are no recorded heritage assets within the corridor.

The GS-S4-2 cable corridor is approximately 450m in length and 200 m in width. It would be located through open fields and coastal landscapes; intersecting with the A77, a restricted road, the Ayrshire Coastal Path and a strip of roadside woodland. There are residential properties to the immediate south of the corridor. There are no recorded heritage assets within the corridor.

GS-S4-1 and GS-S4-2 cable corridors are illustrated in **Figure 13** (refer to **Appendix C**).

T-Point Switching Station – Girvan 5 (GS-S5)

This site is located to the south of the B741 in the Girvan Water valley in open pasture with rising ground to the north and south. There is some visual containment afforded from nearby settlement and garden vegetation, as well as the industrial complex to the north. There would be clear views at close range from two residential properties, though they would be separated by the railway cutting. Development in this location would form a notable feature from the east, south and southwest. This area forms an open foreground in front of the Ayrshire foothills when viewed from coastal areas and is characteristic of pastoral nature of the Lower Dales LCT. Any development and associated mitigation would be in contrast to the existing open landscape.

There are no designated heritage assets within the site location, however the HER records one non-designated heritage asset on the eastern boundary. This heritage asset will be impacted by any proposed development at this location. However, any impacts could be mitigated through further archaeological investigation.

A burn runs through the site, there is some river flood risk along the southern boundary along with some surface water flood risk according to SEPA mapping.

The site is comprised of arable fields, with limited botanical diversity and plant species recorded as common and abundant within the local area. However, the site is close to the Water of Girvan, with a small tributary of the burn running through the site and the site of GS-S2. The tributary is well vegetated, unmanaged banks, with relatively shallow water. Potential suitability for otter.

The site is generally land locked with the Glasgow – Ayr and Stranraer rail line to the north with the B741 beyond. As with GS-S2 access options are limited. The entire site comprises Grade 2 land and is a mixture of both arable and grassland fields.

The GS-S5-1 cable corridor is approximately 1.6 km in length and 200 m in width. It would be located through open fields and coastal landscapes; intersecting with the A77, B714 and the Ayrshire Coastal Path. It would also cross access to private properties and the sewage treatment works. Within the GS-S5-1 cable corridor there is one scheduled monument, five HER heritage assets and two NRHE assets.

The GS-S5-2 cable corridor is approximately 1.8 km in length and 200 m in width. It would be located through open fields and coastal landscapes; intersecting with the A77, B714 and the Ayrshire Coastal Path. It would also cross access to private properties and the sewage treatment works. Within the GS-S5-2 cable corridor there is one scheduled monument, five HER heritage assets and two NRHE assets.

Summary of T-Point Switching Station Siting Appraisal

All potential T-Point Switching Station sites were located within 2km of the coast, with T-Point Switching Station – Girvan 2 and T-Point Switching Station – Girvan 5 located the furthest away. All sites present a similar level of difficulties from a transport and access perspective.

T-Point Switching Station – Girvan 1 presented potential significant heritage and landscape impacts given its proximity to designated assets and its location on raised ground leaving it exposed. Therefore it been discounted.

The location of T-Point Switching Station – Girvan 2 means that views are widely available of the site and as a result any development and associated mitigation would be in stark contrast to the existing open landscape. In conjunction with the potential for both surface water and river flooding across the site, means that this site has also been discounted.

T-Point Switching Station – Girvan 3 – This site presets no significant difficulties from a heritage, hydrology or ecology perspective. However, with regards to landscape, the location of the site in open pasture between the Grangestone industrial estate and the A77 corridor means that close range views are present from the Ayrshire Coastal Path and another core path on the edge of the industrial area to the southeast and east. Access would also present a difficulty as traffic access is not available through the industrial site.

T-Point Switching Station – Girvan 5 presents significant difficulties from a landscape perspective given that there would be clear views at close range from two residential properties. This area forms an open foreground in front of the Ayrshire foothills when viewed from coastal areas and is characteristic of pastoral nature of the Lower Dales LCT. Any development and associated mitigation would be in contrast to the existing open landscape. The site also presents both surface water and river flood risk and for these reasons has been discounted.

Considering all constraints, T-Point Switching Station – Girvan 4 has been taken forward as the preferred, given that from a landscape perspective a buffer of scrub woodland separates the site from the A77 and coastline. Any visibility of the site from the north would be seen in the

context of the existing industrial estate, with opportunities for robust mitigation from the northern, eastern and western boundaries.

In addition Cable Corridor GS-S4-1 is the preferred cable corridor to T-Point Switching Station – Girvan 4 as GS-S4-2 is located adjacent to residential properties.

A summary of the T-Point Switching Station siting appraisal is presented in **Table 5.**

Table 5: Summary of T-Point Switching Station Siting Appraisal

T-Point Switching Station	Summary	
T-Point Switching Station – Girvan 1 (GS-S1)	• No heritage assets within the T-Point Switching Station footprint • Likely physical impact to a number of recorded assets • Likely potential impact to the setting and significance of two Scheduled Ancient Monuments • Located on raised ground between the A77 and Grangestone Industrial Estate • Highly visible; from the road when travelling north from Girvan. • Development would form a prominent new feature along with proposed mitigation planting. • Large area of high surface water flood risk near railway • Site largely comprises a modified grassland field with a well-established line of trees • Areas of standing water in field provide suitable habitat for waders • Grassland lacks botanical diversity • Proximity to A77(T) makes access convenient • Grade 2 land • Situated near a railway line and industrial site	Discounted
GS-S1-1 Cable Corridor 2.4 km x 200 m	• Located through open fields and coastal landscapes	Discounted

T-Point Switching Station	Summary	
	• Intersect the A77 and a core path • Contain one scheduled monument and several heritage assets	
GS-S1-2 Cable Corridor 2.3 km x 200 m	• Located through open fields and coastal landscapes • Intersect the A77 and a core path • Contain one scheduled monument and several heritage assets	Discounted
T-Point Switching Station – Girvan 2 (GS-S2)	• Located on open pasture between Grangestone Industrial Estate and the A77 • Close range views are available from; a core path of the industrial area, Burnside Farm • Clear views from the Ayrshire Coastal Path • Located on a relatively steep sloping field with modified grassland habitat • Proximity to A77 makes access convenient • Entirely grade 3.2 land	Discounted
GS-S3-1 Cable Corridor 2.6 km x 200 m	• Located through open fields and coastal landscapes • Intersect with key roads, a core path and rail line • GS-S2-1 intersects a sewage treatment works • Contain one scheduled monument and various heritage assets	Discounted
GS-S3-2 Cable Corridor 3.1 km x 200 m	• Located through open fields and coastal landscapes • Intersect with key roads, a core path and rail line • GS-S2-2 intersects the Water of Girvan • Contain one scheduled monument and various heritage assets	Discounted

T-Point Switching Station	Summary	
T-Point Switching Station – Girvan 3 (GS-S3)	• Located on open pasture between Grangestone Industrial Estate and the A77 • Close range views are available from; a core path of the industrial area, Burnside Farm • Clear views from the Ayrshire Coastal Path • Located on a relatively steep sloping field with modified grassland habitat • Proximity to A77 makes access convenient • Entirely grade 3.2 land	Discounted
GS-S3-1 Cable Corridor 2.6 km x 200 m	• Located through open fields and coastal landscapes • Intersect with A77 and core path • Have no recorded heritage assets	Discounted
GS-S3-2 Cable Corridor 3.1 km x 200 m	• Located through open fields and coastal landscapes • Intersect with A77 and core path • Have no recorded heritage assets	Discounted
T-Point Switching Station – Girvan 4 (GS-S4)	• Impact to HER heritage asset can be mitigated through further archaeological investigation • Located on open pasture between Grangestone Industrial Estate and the A77 • Predominantly large arable field • Elevated above industrial buildings • Buffer of scrub woodland separated the area from the A77 and coastline • Where visible from the north, any development would fit the context of the industrial estate • Opportunity for robust mitigation in the northern and eastern boundaries	Preferred

T-Point Switching Station	Summary	
	• Room for enhancing and extending existing roadside buffer vegetation to the west • Proximity to A77 makes access convenient • Mixture of grade 3.1 and grade 3.2 land	
GS-S4-1 Cable Corridor 2.6 km x 200 m	• Located through open field and coastal landscapes • Intersect with A77, core path, and roadside woodland • No Heritage assets	Preferred
GS-S4-2 Cable Corridor 3.1 km x 200 m	• Located through open field and coastal landscapes • Intersect with A77, core path, and roadside woodland • Adjacent to residential properties • No Heritage assets	Discounted
T-Point Switching Station – Girvan 5 (GS-S5)	• Impact to non-designated heritage asset can be mitigated through further archaeological investigation • Located south of the B741 in the Girvan Water valley in open pasture with rising ground to the north and south • Development would form a notable feature from the east, south and southwest • Forms an open foreground for the Ayrshire foothills • Development and mitigation would contrast existing open landscape • A burn and tributary runs through site – potential suitability for otters • Some river and surface water flood risk along southern boundary • Arable fields with limited botanical diversity • Access options are limited	Discounted

T-Point Switching Station	Summary	
	• Entirely grade 2	
GS-S5-1 Cable Corridor 3.1 km x 200 m	• Located through open fields and coastal landscapes • Intersect with main roads, a core path, private properties and a sewage treatment works. • Contain one scheduled monument and various heritage assets.	Discounted
GS-S5-2 Cable Corridor 3.1 km x 200 m	• Located through open fields and coastal landscapes • Intersect with main roads, a core path, private properties and a sewage treatment works. • Contain one scheduled monument and various heritage assets.	Discounted

07. Underground DC Cable Routing

7. Underground DC Cable Routeing

Underground DC Cable Routeing Parameters

Underground cable routeing parameters have been established to inform the identification and appraisal of alternative cable route corridors within which the detailed route design could be developed. The installation methods along the route will be influenced by a range a factors and constraints including the nature of land being traversed and any natural or man-made features or obstacles that require to be crossed. The parameters that have been used to inform the identification of underground cable routes are:

- Temporary working width: A temporary working width approximately 40 m wide will be required to enable DC cable installation. The exact width may respond to site specific constraints as well as installation methods used but will include sufficient space for the cable trench, haul road, drainage and topsoil and subsoil storage.
- Cable installation method: The exact method of installation will depend on factors like land use, the presence of natural or man-made features or obstacles as well as environmental constraints. While the main method of installation is likely to be open cut trenching, in identifying and assessing route options constraints or other considerations which may require trenchless methods such as HDD, have been highlighted.

Identification and Assessment of Alternative Cable Routes

Converter Station Cable Route Options

Underground cable routes have been identified based on the shortlisted landfalls (at Barassie-North of Troon and Monkton-Northwest of Prestwick) as well as the shortlisted Converter Station (KS-S5). Underground cable route options have been developed to be as direct as possible between the landfall and Converter Station while taking account of 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.

Five potential route corridors have been identified and have been appraised, as listed below and illustrated in **Figure 14.1** (refer to **Appendix C**):

- KS-A1 – from Barassie to KS-S5;
- KS-A2 – from Barassie to KS-S5;
- KS-B1 – from Monkton to KS-S5;
- KS-B2 - from Monkton to KS-S5; and
- KS-B3 - from Monkton to KS-S5.

KS-A1 – from Barassie to KS-S5

This route option is approximately 30 km in length. Though the corridor contains heritage assets, given it will be underground it is anticipated that there will be no impacts to the setting or significance of either the scheduled monuments or listed buildings. The proposed cable route will cross the Kilmarnock & Troon Railway line (94795). It would be preferable if the route corridor could be moved south to avoid the Treesbank designed landscape, and south between Fairlie and Newfield designed landscapes.

This corridor passes through the well populated agricultural lowlands. The Dundonald Castle Garden and Designed Landscape is to the south of this routing option. There are no large areas of woodland or notable landscape features within this corridor area.

The corridor is crossed by various burns including Simon's Burn, Todrigs Burn, Harperland Burn, Dundonald Burn, which are generally associated with localised surface water flood risk. River flood risk is particularly notable around the Dundonald Burn near Irvine and the Todrigs Burn near Kilmarnock. Coastal flood risk is limited to the coastal strip.

The route corridor predominantly crosses arable land, and what appears to be blocks of mixed woodland, hedgerows, areas of scrub, and Slough Burn. The corridor also crosses the A77.

The route crosses multiple minor, principal public and trunk roads (A77 and A78), the Glasgow-Ayr/Stranraer and Kilmarnock branch rail lines, the Ayrshire Coastal Path, the National Cycle network route and Core Paths. Landfall access from Beach Road to the south but access would need to be extended. The route crosses through a Coal Authority High Risk area and intersects with SPEN OHL transmission lines and through Meadowhead industrial Estate closer to landfall. Close to the shoreline the corridor cuts through golf courses and another railway line.

The landfall lies within close proximity to the Western Gailes SSSI. Development works may impact the stability and integrity of the sand dune system. Several sea/coastal bird species were recorded at this location.

KS-A2 – from Barassie to KS-S5

This route option is approximately 31 km in length. Though the corridor contains heritage assets, given it will be underground it is anticipated that there will be no impacts to the setting or significance of either the scheduled monuments or listed buildings. The proposed cable route will cross the Kilmarnock & Troon Railway line (94795).

Similarly to KS-A1, the corridor passes through the well populated agricultural lowlands. The Dundonald Castle Garden and Designed Landscape is to the south of this routing option. There are no large areas of woodland or notable landscape features within this corridor.

The corridor is crossed by various burns including Simon's Burn, Todrigs Burn, Harperland Burn, Dundonald Burn, which are generally associated with localised surface water flood risk.

River flood risk follows similar patterns, localised to larger rivers but more extensive. River flood risk is particularly notable around the Dundonald Burn near Irvine and the Todrigs Burn near Kilmarnock. Coastal flood risk is limited to the coastal strip. As with KS-A1, the route crosses arable land, and what appears to be blocks of mixed woodland, hedgerows, areas of scrub, Slough Burn and the A77.

The corridor intersects Coal Authority High Risk development area, as well as a large number of local roads, the A77, A78, the Glasgow-Ayr/Stranraer and Kilmarnock branch rail lines, the Ayrshire Coastal Path, the National Cycle network route and Core Paths.

The landfall lies within close proximity to the Western Gailes SSSI. Development works may impact the stability and integrity of the sand dune system. Several sea/coastal bird species were recorded at this location.

KS-B1 – from Monkton to KS-S5

This route option is approximately 27 km in length. Though the corridor contains heritage assets, given it will be underground it is anticipated that there will be no impacts to the setting or significance of either the scheduled monuments or listed buildings.

This corridor covers a broad area of agricultural lowlands and an area of Lowland Hills. There are few areas of linear woodland aligned to minor roads. There are no notable landscape features within this corridor.

The corridor is crossed by various burns including Muggersland Burn and Pow Burn (twice) which are generally associated with localised surface water flood risk. One notable area is by junction of A79 and B739 at Monkton where surface water flood risk is high and medium. River flood risk follows similar patterns, most notably around the Pow Burn near the coast. Coastal flood risk is limited to the coastal strip.

As with the previous routes, KS-B1 crosses multiple minor, principal public and trunk roads (A77, A78), the Glasgow-Ayr/Stranraer rail line, the Ayrshire Coastal Path, National Cycle network route and Core Paths. This route cuts directly through Hansel Village.

Closer to the landfall, the corridor lies within close proximity to Troon Golf Links and Foreshore SSSI.

KS-B2 - from Monkton to KS-S5

This corridor is approximately 28 km in length. Though the corridor contains heritage assets, given it will be underground it is anticipated that there will be no impacts to the setting or significance of either the scheduled monuments or listed buildings.

The corridor covers a broad area of agricultural lowlands and an area of Lowland Hills There are few areas of linear woodland aligned to minor roads. There are no notable landscape features within this corridor.

The corridor will cross various burns including Muggersland Burn and Pow Burn (twice) which are generally associated with localised surface water flood risk. One notable area is by junction of A79 and B739 at Monkton where surface water flood risk is high and medium. River flood

risk follows similar patterns, most notably around the Pow Burn near the coast. Coastal flood risk is limited to the coastal strip.

The route also crosses multiple minor, principal public and trunk roads (A77, A78), the Glasgow-Ayr/Stranraer rail line, National Cycle network route and three Core Paths (one of which is the Ayrshire Coastal Path).

As per KS-B1, this option crosses arable fields and woodland blocks, and lies within close proximity to the Troon Golf links SSSI.

KS-B3 - from Monkton to KS-S5

This corridor is approximately 28km in length. Though the corridor contains heritage assets, given it will be underground it is anticipated that there will be no impacts to the setting or significance of either the scheduled monuments or listed buildings.

The route covers a broad area of Agricultural lowlands and an area of Lowland Hills. There are few areas of linear woodland aligned to minor roads. There are no notable landscape features within this corridor.

The corridor will cross various burns including Muggersland Burn and Pow Burn (twice) which are generally associated with localised surface water flood risk. One notable area is by junction of A79 and B739 at Monkton where surface water flood risk is high and medium. River flood risk follows similar patterns, most notably around the Pow Burn near the coast. Coastal flood risk is limited to the coastal strip. There is one private water supply within 500 m of edge of corridor. The corridor crosses the same arable fields and woodland blocks as KS-B3, and also comes within close proximity of Troon Golf Links SSSI.

The route crosses multiple minor, principal public and trunk roads (A77, A78), the Glasgow-Ayr/Stranraer rail line, National Cycle network route and three Core Paths (one of which is the Ayrshire Coastal Path).

As per KS-B1, this option crosses arable fields and woodland blocks, and lies within close proximity to the Troon Golf links SSSI.

T-Point Switching Station

Given the close proximity of the T-Point Switching Station to the coast, the assessment of the cable corridors and landfalls is considered alongside the T-Point Switching Station siting parameters in Section 6.

Summary of Routeing Appraisal

All the shortlisted Converter Station corridors cross a large number of local roads, the A77 and A78. Both KS-A1 and KS-A2 are located to the south of Dundonald Castle Garden and Designed Landscape. Any residential properties closer to the corridors would experience short term effects during construction. There is no preference from a landscape perspective.

With the cable being routed underground, it is not anticipated there would be any impacts to the setting or significance of either the scheduled monuments or listed buildings, however

physical impacts must be minimised or avoided. Targeted watching briefs are recommended across all options.

Both routes KS-A1 and KS-A2 cross predominantly arable land and what appears to be blocks of mixed woodland, hedgerows, areas of scrub, and Slough Burn. The corridors also crosse the A77. Similarly, KS-B1 and KS-B2 cross the same arable fields and woodland blocks.

Route KS-B2 has the smallest number of crossing points and is the preferred route from an ecology perspective.

Route KS-A1 intersects Meadowhead Industrial Estate closer to landfall. KS-A2 Intersects Coal Authority High Risk development area. Both of the aforementioned routes cut through golf courses close to the shore. KS-B1 crosses multiple minor, regional and national roads and a railway line and intersects SPEN OHL close to the substation site, KS-B2 crosses several SPEN OHL's as does KS-B3.

Given it has the lowest number of crossing points and overall distance from key constraints, route **KS-B2** is the preferred option. A summary of the cable route appraisal is presented in **Table 6**.

Table 6: Summary of Converter Station Cable Route Appraisal

Underground Cable Route	Summary	
KS-A1 – from Barassie to KS-S5	• Approx 30 km • No impact anticipated to setting or significance of scheduled monuments or listed buildings • Proposed cable route will impact the Kilmarnock & Troon Railway line (94795). • Preferable if route corridor could be moved south to avoid the Treesbank designed landscape, and south between Fairlie and Newfield designed landscapes. • Passes through populated Agricultural lowlands, crossing local roads, A77, A78 and Ayrshire Coastal Path • The Dundonald Castle Garden and Designed Landscape is to the south of this routing option. • Notable flood risk around the Dundonald Burn near Irvine and the Todrigs Burn near Kilmarnock	Discounted

Underground Cable Route	Summary	
	• Landfall lies within close proximity to the Western Gailes SSSI. • Potential impact to the stability and integrity of the sand dune system. • Several sea/coastal bird species - concerns regarding breeding populations. • Landfall access from Beach Road to the south but access would need to be extended. • Route goes through Coal Authority High Risk area • Route intersects SPEN OHL transmission lines	
KS-A2 – from Barassie to KS-S5	• No impact anticipated to setting or significance of scheduled monuments or listed buildings • Proposed cable route will impact the Kilmarnock & Troon Railway line (94795) • Preferable if route corridor could be moved north to avoid the Coodham designed landscape, and north between Fairlie and Newfield designed landscapes. • Passes through populated Agricultural lowlands, crossing local roads, A77, A78 and Ayrshire Coastal Path • The Dundonald Castle Garden and Designed Landscape is to the south of this routing option. • Localised water flood risk associated with burns crossing corridor • River flood risk follows similar patters but more extensive • Coastal flood risk is limited to the coastal strip	Discounted

Underground Cable Route	Summary	
	• Intersects Coal Authority High Risk development area, Glasgow-Ayr/Stranraer and Kilmarnock branch rail lines, National Cycle network route and Core Paths.	
KS-B1 – from Monkton to KS-S5	• No impact anticipated to setting or significance of scheduled monuments or listed buildings • Covers Agricultural lowlands and Lowland Hills • Crosses the A77, A78, local roads, and three core paths. • There are few areas of linear woodland • High and medium surface water flood risk by junction of A79 and B739 at Monkton • River flood risk follows similar patterns, notably around Pow Burn • Coastal flood risk is limited to coastal strip • Close proximity to Troon Golf Links and Foreshore SSSI • Cuts directly through Hansel Village	Discounted
KS-B2 - from Monkton to KS-S5	• No impact anticipated to setting or significance of scheduled monuments or listed buildings • Covers Agricultural lowlands and Lowland Hills • Crosses the A77, A78, local roads, and three core paths. • There are few areas of linear woodland • High and medium surface water flood risk by junction of A79 and B739 at Monkton • River flood risk follows similar patterns, notably around Pow Burn • Coastal flood risk is limited to coastal strip	Taken Forward

Underground Cable Route	Summary	
	• Crosses arable fields and woodland blocks • Close proximity to Troon Golf Links and Foreshore SSSI	
KS-B3 - from Monkton to KS-S5	• No impact anticipated to setting or significance of scheduled monuments or listed buildings • Covers Agricultural lowlands and Lowland Hills • Crosses the A77, A78, local roads, and three core paths. • There are few areas of linear woodland • High and medium surface water flood risk by junction of A79 and B739 at Monkton • Riverflood risk follows similar patterns, notably around Pow Burn • Coastal flood risk is limited to coastal strip • Crosses arable fields and woodland blocks • Close proximity to Troon Golf Links and Foreshore SSSI	Discounted

08. The Preferred Option

8. The Preferred Option

Summary of Options Considered

Overview of Approach

The approach to the identification of the Scottish Onshore Scheme comprised of two main steps; firstly, the identification and assessment of alternative landfall, T-Point Switching Station sites and Converter Station Sites and secondly the identification and assessment of alternative underground cable routes.

The approach has drawn on that set out by SPEN in its guidance document Major Infrastructure Projects: Approach to Routeing and Environmental Impact Assessment' as well as established routeing and siting practice set out in the Holford and Horlock Rules. This has ensured the iterative consideration of potential impacts on the environment and communities, alongside technical and economic considerations consistent with SPT's statutory duties while seeking to identify a Preferred Option which meets the objective set out in **Section 3** "*To identify a technically feasible and economically viable Scottish Onshore Scheme connecting to Kilmarnock South 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.*"

Converter Station Site Selection

Five Converter Station sites have been identified and subject to appraisal. This resulted in one Converter Station site (Converter Station Site 5) being shortlisted and four sites (Sites 1, 2, 3, and 4) being discounted. Converter Station Site 5 was identified as the preferred site as it has a number of advantages over the other sites considered, in particular the proximity to the existing Kilmarnock South substation and OHL which provides opportunities to co-locate infrastructure with similar characteristics with regard to appearance. **Table 9** summarises the key considerations influencing the Converter Station site selection.

Table 9: Converter Station Siting – Key Conclusions

Converter Station	Key Conclusions
Converter Station Site 1	**Discount.** The site is located approximately 1.1 km north of the Kilmarnock South substation; which would increase the length of the AC connection required. Significant ecology constraints including evidence of geese and otter.
Converter Station Site 2	**Discount**. The site is located approximately 700 m north of the Kilmarnock South Substation One heritage asset is located along the north-west boundary of the proposed site. This would be impacted by any proposed development at this location.
Converter Station Site 3	**Discount.** The site is located approximately 1km northwest of the Kilmarnock South substation; which would increase the length of the AC connection required. The site would be within the

Converter Station	Key Conclusions
	southeastern view of residential properties and have clear views from the A77, resulting in a large, new feature in the landscape.
Converter Station Site 4	**Discount.** The site is located approximately 200 m west of the Kilmarnock South Substation, However, the Muggersland Burn runs through the footprint of Converter Station Site 4 and has the potential for ecological impacts. The burn also presents some medium surface water flood risk.
Converter Station Site 5	**Preferred**. This site is located immediately to the south east of Kilmarnock South substation on existing agricultural land. The proximity to similar energy infrastructure provides opportunities to integrate the site into its surroundings.

T-Point Switching Station

Five T-Point Switching Station sites have been identified and subject to appraisal. This resulted in one T-Point Switching Station (T-Point Switching Station – Girvan 4) being shortlisted and four sites (T-Point Switching Station – Girvan Sites 1, 2, 3, and 5) being discounted. T-Point Switching Station – Girvan 4 was identified as the preferred site, as from a landscape perspective, there is scrub woodland that separates the site from the A77 and coastline and any visibility from the north would be seen in the context of the existing industrial estate.

Table 10 summarises the key considerations influencing the T-Point Switching Station site selection.

Table 10: T-Point Switching Station Siting – Key Conclusions

T-Point Switching Station Site	Key Conclusions
T-Point Switching Station – Girvan 1 (GS-S1)	**Discount.** The site presents potential significant heritage and landscape impacts given its proximity to designated assets and location on raised ground.
T-Point Switching Station – Girvan 1 (GS-S2)	**Discount.** Views are widely available across the site, therefore any new development would be in stark contrast to the existing open landscape. There is also potential for surface water and river flooding across the site.
T-Point Switching Station – Girvan 1 (GS-S3)	**Discount.** The site is located on pasture between the industrial estate and the A77, resulting in close range views from the Ayrshire Coastal Path and a Core Path. Access to the site would be difficult as traffic access is not available through the industrial estate.

T-Point Switching Station Site	Key Conclusions
T-Point Switching Station – Girvan 1 (GS-S4)	**Preferred.** From a landscape perspective, there would be a buffer of scrub woodland which would separate the site from the A77 and the coastline. From the north, the T-Point Switching Station would be seen in the context of the existing industrial estate.
T-Point Switching Station – Girvan 1 (GS-S5)	**Discount.** There would be clear views at close range from two residential properties. When viewed from coastal areas it would be viewed in front of the Ayrshire foothills. The site also presents surface water and river flood risk.

Landfall Sites and Underground Cable Routes

Based on the T-Point Switching Station sites and Converter Station sites, five underground cable routes have been identified to connect the landfall with the proposed Converter Station sites and two underground cable routes have been identified to connect the landfall with the proposed T-point Switching Station.

As detailed in Chapter 6, the preferred cable corridor to the T-Point Switching Station is GS-S4-1 as it is the shortest route, furthest from residential properties. Table 7 summarises the key considerations influencing the landfall and underground option selection.

Table 7: Landfall Sites and Underground Cable Routeing – Key Conclusions

Underground Route Option	Key Conclusions
KS-A1 – from Barassie to KS-S5	**Discount.** This route is approximately 30 km in length and would cross the Kilmarnock & Troon Railway line, a number of watercourses, golf courses and the A77.
T KS-A2 – from Barassie to KS-S5	**Discount.** This route is approximately 31 km in length and would cross the Kilmarnock & Troon Railway line, a number of watercourses and the A77. The landfall would like within the close proximity to the Western Gailes SSSI.
KS-B1 – from Monkton to KS-S5	**Discount.** This route is approximately 27 km in length and would cross a number of burns, roads, the Glasgow-Ayr/Stranraer rail line, the Ayrshire Coastal Path, National Cycle network route and Core Paths. This route also cuts directly through Hansel Village.
KS-B2 - from Monkton to KS-S5	**Preferred.** This route is approximately 28 km in length and would cross a number of burns, roads, the Glasgow-Ayr/Stranraer rail line, the Ayrshire Coastal Path, National Cycle network route and Core Paths.

Underground Route Option	Key Conclusions
KS-B3 - from Monkton to KS-S5	**Discount.** This route is approximately 28 km in length and would cross a number of burns, roads, the Glasgow-Ayr/Stranraer rail line, the Ayrshire Coastal Path, National Cycle network route and Core Paths.

As detailed in Chapter 4 and Chapter 7 the preferred landfall is Monkton 7, and the preferred cable corridor to the Converter Station site is KS-B2 as it has the lowest number of crossing points and its relative distance from key environmental constraints. **Table 8** summarises the key considerations influencing the landfall and underground routeing option selection.

Table 8: Landfall Sites and Underground Cable Routeing – Key Conclusions

Underground Route Option	Key Conclusions
KS-A1 – from Barassie to KS-S5	**Discount**. This route is approximately 30 km in length and would cross the Kilmarnock & Troon Railway line, a number of watercourses, golf courses and the A77.
T KS-A2 – from Barassie to KS-S5	**Discount**. This route is approximately 31 km in length and would cross the Kilmarnock & Troon Railway line, a number of watercourses and the A77. The landfall would like within the close proximity to the Western Gailes SSSI.
KS-B1 – from Monkton to KS-S5	**Discount**. This route is approximately 27 km in length and would cross a number of burns, roads, the Glasgow-Ayr/Stranraer rail line, the Ayrshire Coastal Path, National Cycle network route and Core Paths. This route also cuts directly through Hansel Village.
KS-B2 - from Monkton to KS-S5	**Preferred**. This route is approximately 28 km in length and would cross a number of burns, roads, the Glasgow-Ayr/Stranraer rail line, the Ayrshire Coastal Path, National Cycle network route and Core Paths.
KS-B3 - from Monkton to KS-S5	**Discount**. This route is approximately 28 km in length and would cross a number of burns, roads, the Glasgow-Ayr/Stranraer rail line, the Ayrshire Coastal Path, National Cycle network route and Core Paths.

The Preferred Option

Following environmental appraisal outlined above, an engineering technical review was undertaken of the options. This review resulted in a number of changes which affected the preferred options. The Converter Station Underground Cable Route – KS-B2, was merged with

a route corridor developed by as a result of the engineering study. The T-Point Switching Station was also slightly moved to the north east and the shape of the site altered to a 400m by 250m rectangle, in order to accommodate technical issues encountered by the engineers. This also resulted in the preferred route corridor being altered to accommodate the movement of the site.

The overall preferred option is:

- Converter Station: Converter Station Site 5; **Figure 14.2**
- Converter Station Underground Cable Route: KS-B2 - from Monkton to KS-S5. **Figure 14.2**
- Converter Station Landfall: Monkton **Figure 11.2**
- T-Point Switching Station Landfall: GS-S4-1; **Figure 13.2**
- T-Point Switching Station Underground Cable Route: GS-S4-1; **Figure 13.2**
- T-Point Switching Station : Girvan 1 (GS-S4); **Figure 13.2**

The Preferred Option is considered to best address the routeing and siting objective set out in Section 3 balancing technical feasibility with impacts on the environment and people.

09. Consultation and Next Steps

9. Consultation and Next Steps

Consultation on the Scottish Onshore Scheme

As set out in section 1 there are three key phases to the development and consenting of the Scottish Onshore Scheme. The current phase is Phase 1 and comprises the routeing and siting study to identify Preferred Options for the Scottish Onshore Scheme which are described in this Routeing and Siting Consultation Document. Phase 1 concludes with consultation (referred to as Phase 1 Consultation) on the Preferred Options which are identified at the end of each chapter on Landfalls, Converter Stations, T-Points and Underground cables.

SPEN will be required to apply to the local planning authorities for planning permission for the Scottish Onshore Scheme. It will need to be determined whether the Scottish Onshore Scheme is to be classed as 'major development' under the Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009. If deemed a 'major development' the scheme would be subject to statutory pre-application consultation (PAC).

However, prior to this statutory PAC (referred to as Phase 2 Consultation) SPEN is undertaking Phase 1 Consultation. The purpose of this is to seek feedback from stakeholders including statutory consultees, members of the public and other stakeholders regarding the Scottish Onshore Scheme, in particular the Preferred Options. Responses to the Phase 1 Consultation will be evaluated and inform confirmation of a Proposed Options to be taken forward to Phase 2 of the development and consenting of the Scottish Onshore Scheme. It should be noted that following submission of an application for planning permission of the local planning authorities will undertake further statutory consultation on the application.

Approach to and Objective of Phase 1 Consultation

SPEN attaches great importance to the effect that its works may have on the environment and local communities and is very keen to hear the views of local people to help it inform the development of the Scottish Onshore Scheme and Western Link 2 in the most effective way.

The overall objective of the consultation process is to ensure that all parties with an interest in the Project have access to accurate and up to date information and are provided with the opportunity to inform SPEN's proposals during the pre-application stage. In addition, it is intended that the key issues identified through this process can be recorded and presented to decision makers in order to assist the planning process.

SPEN has taken steps to identify stakeholders and interested parties prior to this Phase 1 Consultation and is committed to continuing engagement with all stakeholders and communities to share our plans, and this will continue to take place at all levels, both during and outside consultation periods

Consultees

As noted in section 3 SPEN has already undertaken targeted stakeholder engagement with East Ayrshire and South Ayrshire Councils and NatureScot during this routeing and siting study. This has helped to inform the identification and assessment of options considered within

this study. SPEN will continue to engage with other organisations such as Historic Environment Scotland, Scottish Environment Protection Agency, the Coal Authority and Scottish Forestry.

To ensure that other residents and stakeholders potentially affected by the Scottish Onshore Scheme are consulted, SPEN has defined a consultation zone which includes all residential and business addresses within 1km of the Preferred Options. However, any member of the public (whether living within or outside the consultation zone) is welcome to participate in the consultation and comment using one of the channels outlined within this document.

The consultation will include the following broad groups:

- Statutory and non-statutory consultees, including community councils;
- Elected members of whose constituencies are within the consultation zone;
- Homes and businesses within the consultation zone;
- Known local interest and community groups operating within the consultation zone; and
- The public in general.

Phase 1 Consultation Launch and Duration

Phase 1 Consultation will run until Friday 28th November 2025. Prior to the consultation, adverts will appear in local weekly newspapers at least seven days before the first exhibition. A press release will be issued to local media announcing the impending start of the consultation. Information explaining the Project, in particular the Scottish Onshore Scheme will be made available on the SPEN website. The consultation will be posted out to homes, businesses, and known local interest and community groups within the local area, making them aware of the start of the Phase 1 Consultation and inviting them to take part.

Sources of Information about the Consultation

In addition to this Routeing and Siting Consultation Document, a Project Leaflet has been prepared which provides a summary of the Project and how to participate in Phase 1 Consultation. A project website has also been set up which provides information about the Project and hosts a library of publicly available documents for viewing or downloading.

To aid the consultation process the following terminology (in brackets) has been used to describe the preferred options alongside a series of consultation figures (**Figure 15** and **Figure 16**):

- Converter Station: Converter Station Site 5 (Kilmarnock converter station)
- Converter Station Underground Cable Route: KS-B2 - from Monkton to KS-S5 (Underground cable route)
- Converter Station Landfall : Monkton (Monkton landfall point)
- T-Point Switching Station Landfall: GS-S4-1 (Cable landfall point)
- T-Point Switching Station Underground Cable Route: GS-S4-1 (Underground cable route)
- T-Point Switching Station : Girvan 1 (GS-S4) (Grangetown switching station)

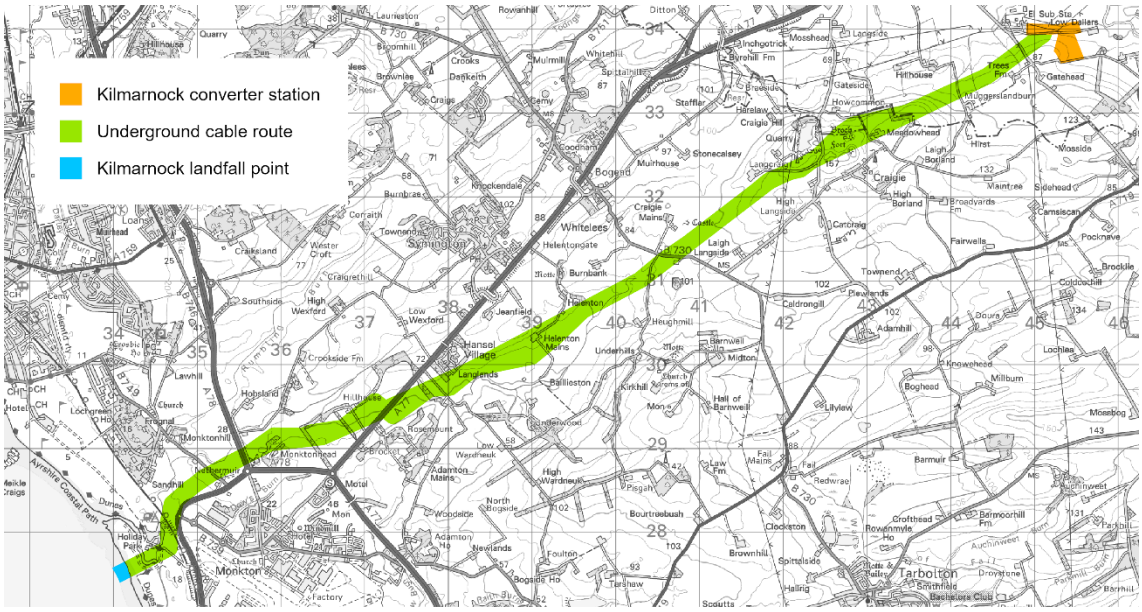


Figure 15: Location Plan - Kilmarnock

Figure 16: Location Plan - Grangestone

A consultation feedback form can also be completed or downloaded on the website.

Providing Feedback

There will be a number of ways for people to make comments:

- At one of the in-person consultation events;
- Online, using the feedback form on the website
- By post, using a paper feedback form, or by letter;
- By emailing the feedback form or in the body of an email ; or
- By phone to the SPEN Project Consultation Contact Centre.

In-Person events

Online - www.spenergynetworks.co.uk/pages/western_link_2.aspx

Post - FREEPOST SPEN WL2

Email - wl2@communityrelations.co.uk

Phone - 08000 336103

Responding to Feedback

The responses received to the Phase 1 Consultation will be evaluated by SPEN and published in the form of a Consultation Feedback Report. Although SPEN may not be able to respond to all individual comments, people will be able to request to be kept informed by email as and when there are developments in the Project, including the availability of the Consultation Feedback Report and confirmation of the Proposed Option. People interested in being kept informed in this way can register on the website or send an email to: wl2@communityrelations.co.uk.

Appendices

Appendix A The Holford Rules

Rule 1

Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence.

Note on Rule 1

(a) Investigate the possibility of alternative routes, avoiding altogether, if possible major areas of highest amenity value. The consideration of alternative routes must be an integral feature of environmental statements. If there is an existing transmission line through a major area of highest amenity value and the surrounding land use has to some extent adjusted to its presence, particularly in the case of commercial forestry, then effect of remaining on this route must be considered in terms of the effect of a new route avoiding the area.

(b) Areas of highest amenity value require to be established on a project-by-project basis considering Schedule 9 to The Electricity Act 1989, Scottish Planning Policies, National Planning Policy Guidelines, Circulars and Planning Advice Notes and the spatial extent of areas identified.

Examples of areas of highest amenity value which should be considered are:

- Special Area of Conservation (SAC);
- Special Protection Area (SPA);
- Ramsar Site;
- National Scenic Areas (NSA);
- National Parks;
- National Nature Reserves (NNR);
- Protected Coastal Zone Designations;
- Sites of Special Scientific Interest (SSSI);
- Schedule of Ancient Monuments;
- Listed Buildings;
- Conservation Areas;
- World Heritage Sites; and
- Historic Gardens and Designed Landscapes.

Rule 2

Avoid smaller areas of high amenity value or scientific interest, by deviation; provided that this can be done without using too many angle towers (i.e. the more massive structures which are used when lines change direction).

Note on Rule 2

Small areas of highest amenity value not included in Rule 1 as a result of their spatial extent should be identified along with other areas of regional or local high amenity value identified from development plans.

Impacts on the setting of historic buildings and other cultural heritage features should be minimised.

If there is an existing transmission line through an area of high amenity value and the surrounding land uses

Rule 3

Other things being equal, choose the most direct line, with no sharp changes of direction and thus fewer angle towers.

Note on Rule 3

Where possible choose inconspicuous locations for angle towers, terminal towers and sealing end compounds.

Too few angles on flat landscape can also lead to visual intrusion through very long straight lines of towers, particularly when seen nearly along the line

Rule 4

Choose tree and hill backgrounds in preference to sky background wherever possible and when the line has to cross a ridge, secure this opaque background as long as possible and cross obliquely when a dip in the ridge provides an opportunity. Where it does not, cross directly, preferably between belts of trees.

Rule 5

Prefer moderately open valleys with woods, where the apparent height of the towers will be reduced and views of the line will be broken by trees.

Notes on Rules 4 and 5

Utilise background and foreground features to reduce the apparent height and domination of towers from main viewpoints.

Minimise the exposure of numbers of towers on prominent ridges and skylines.

Where possible follow open space and run alongside, not through woodland or commercial forestry, and consider opportunities for skirting edges of copses and woods. Where there is no reasonable alternative to cutting through woodland or commercial forestry, the Forestry Commission Guidelines should be followed (Forest Landscape Design Guidelines, second edition, The Forestry Commission 1994 and Forest Design Planning – A Guide to Good Practice, Simon Bell/The Forest Authority 1998). Protect existing vegetation, including woodland and hedgerows, and safeguard visual and ecological links with the surrounding landscape.

Rule 6

In country which is flat and sparsely planted, keep the higher voltage lines as far as possible independent of smaller lines, converging routes, distribution lines and other masts, wires and cables so as to avoid a concatenation or 'wirescape'.

Note on Rule 6

In all locations minimise confusing appearance.

Arrange wherever practicable that parallel or closely related routes are planned with tower types, spans and conductors forming a coherent appearance. Where routes need to diverge allow, where practicable, sufficient separation to limit the impacts on properties and features between lines.

Rule 7

Approach urban areas through industrial zones where they exist and where pleasant residential and recreational land intervenes between the approach line and substation, go carefully into the costs of undergrounding, for lines other than those of the highest voltage.

Note on Rule 7

When a line needs to pass through a development area, route it so as to minimise as far as possible the effect on development.

Alignments should be chosen after consideration of impacts on the amenity of existing development and on proposals for new development.

When siting substations take account of the impacts of the terminal towers and line connections that will need to be made and take advantage of screening features such as ground form and vegetation.

Supplementary Notes

a. Residential Areas: Avoid routeing close to residential areas as far as possible on grounds of general amenity.

b. Designations of Regional and Local Importance: Where possible choose routes which cause the least disturbance to Areas of Great Landscape Value and other similar designations of Regional or Local Importance.

c. Alternative Lattice Steel Tower Designs: In addition to adopting appropriate routeing, evaluate where appropriate the use of alternative lattice steel tower designs available where these would be advantageous visually, and where the extra cost can be justified.

[Note: SHETL have reviewed the visual and landscape arguments for the use of lattice steel towers in Scotland and summarised these in a document entitled Overhead Transmission Line Tower Study 2004]

Further Notes on Clarification to The Holford Rules

Line Routeing and People

The Holford Rules focused on landscape amenity issues for the most part. However, line routeing practice has given greater importance to people, residential areas etc. The following notes are intended to reflect this.

d. Avoid routeing close to residential areas as far as possible on grounds of general amenity.

e. In rural areas avoid as far as possible dominating isolated house, farms or other small scale settlements.

f. Minimise the visual effect perceived by users of roads, and public rights of way, paying particular attention to the effects of recreational, tourist and other well used routes

Supplementary Notes on the Siting of Substations

a. Respect areas of high amenity value (see Rule 1) and take advantage of the containment of natural features such as woodland, fitting in with the landscape character of the area.

b. Take advantage of ground form with the appropriate use of site layout and levels to avoid intrusion into surrounding areas.

c. Use space effectively to limit the area required for development, minimizing the effects on existing land use and rights of way.

d. Alternative designs of substations may also be considered, e.g. 'enclosed', rather than 'open', where additional cost can be justified.

e. Consider the relationship of towers and substation structures with background and foreground features, to reduce the prominence of structures from main viewpoints.

f. When siting substations take account of the effects of line connections that will need to be made.

Appendix B The Horlock Rules

Overall System Options and Site Selection

1. In the development of system options including new substations, consideration must be given to environmental issues from the earliest stage to balance the technical benefits and capital cost requirements for new developments against the consequential environmental effects in order to keep adverse effects to a reasonably practicable minimum.

Amenity, Cultural or Scientific Value of Sites

2. The siting of new NGC substations, sealing end compounds and line entries should as far as reasonably practicable seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections.

Notes:

i. Internationally and nationally designated areas of highest amenity, cultural or scientific value are:

- National Park
- Areas of Outstanding Natural Beauty
- Heritage Coasts
- World Heritage Sites
- Ramsar Sites
- Sites of Special Scientific Interest
- National Nature Reserves
- Special Protection Areas
- Special Areas of Conservation.

ii. Care should be taken in relation to all historic sites with statutory protection e.g. Ancient Monuments, Battlefields and Listed Buildings.

iii. Account should be taken of Government Planning Policy Guidance and established codes of practice.

iv. Account should be taken of any development plan policies relevant to the siting or design of substations.

3. Areas of local amenity value, important existing habitats and landscape features including ancient woodland, historic hedgerows, surface and ground water sources and nature conservation areas should be protected as far as reasonably practicable

Local Context, Land Use and Site Planning

4. The siting of substations, extensions and associated proposals should take advantage of the screening provided by land form and existing features and the potential use of site layout and levels to keep intrusion into surrounding areas to a reasonably practicable minimum.

Notes:

i. A preliminary study should be undertaken to identify the extent of land required to meet both operational and environmental needs.

ii. In some instances it may be possible to site a substation partially or fully enclosed by existing woodlands.

iii. Topographical information should be obtained at an early stage. In some cases a geotechnical survey may be required

5. The proposals should keep the visual, noise and other environmental effects to a reasonably practicable minimum.

Notes:

i. Allow sufficient space for screening of views by mounding or planting.

ii. Consider appropriate noise attenuation measures where necessary.

iii. Use security measures which minimise visual intrusion from lighting.

iv. Consider appropriate on-site water pollution prevention measures.

v. Consider adjoining uses and the amenity of local inhabitants

6. The land use effects of the proposal should be considered when planning the siting of substations or extensions.

Notes:

i. Issues for consideration include potential sterilisation of nationally important land, e.g. Grade 1 agricultural land and sites of nationally scarce minerals.

ii. Effects on land drainage

Design

7. In the design of new substations or line entries, early consideration should be given to the options available for terminal towers, equipment, buildings and ancillary development appropriate to individual locations, seeking to keep effects to a reasonably practicable minimum.

Notes:

i. With outdoor equipment, a preference should be given normally to a low profile design with low height structures and silhouettes appropriate to the background.

ii. Use lightweight narrow section materials for taller structures especially for gantries over about 6 metres in height

iii. Commission exterior design and colours appropriate to the surroundings.

iv. Materials and colours for buildings, equipment and fencing should be chosen to harmonise with local surroundings.

v. Where possible avoid the use of prominent insulators by consideration of available colours appropriate to the background.

vi. Where possible site buildings to act as visual screens for switchgear.

vii. Ensure that the design of high voltage and low voltage substations is coordinated by early consultation between NGC and its customers.

viii. Where there are particular technical or environmental constraints, it may be appropriate to consider the use of Gas Insulated Switchgear (GIS) equipment which occupies less space and is usually enclosed within a building.

ix. Early consideration should be given to the routeing of utility service connections.

8. Space should be used effectively to limit the area required for development consistent with appropriate mitigation measures and to minimise the adverse effects on existing land use and rights of way, whilst also having regard to future extension of the substation.

Notes:

i. Assess the benefit of removing redundant substation equipment from existing sites where this would improve their appearance.

9. The design of access roads, perimeter fencing, earthshaping, planting and ancillary development should form an integral part of the site layout and design to fit in with the surroundings.

Line Entries

10. In open landscape especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance.

11. The inter-relationship between towers and substation structures and background and foreground features should be studied to reduce the prominence of structures from main viewpoints. Where practicable the exposure of terminal towers on prominent ridges should be minimised by siting towers against a background of trees rather than open skylines.

Appendix C Figures

180000 190000 200000 210000 220000 230000 240000 250000 260000 270000 280000 290000

660000 650000 640000 630000 620000 610000 600000 590000 580000 570000

Kilmarnock South

Girvan

Legend:

- Study Area
- Kilmarnock Converter Station Siting Area (5km)
- Kilmarnock South Substation
- Indicative T-Point Location

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

Edinburgh
United Kingdom
Leeds

Rev	Date	Description	Drn	Chk	App
00	10/09/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

RSK

TITLE: Figure 9:
Western Link 2 Study Area

ID: P664337_StudyArea_A3L

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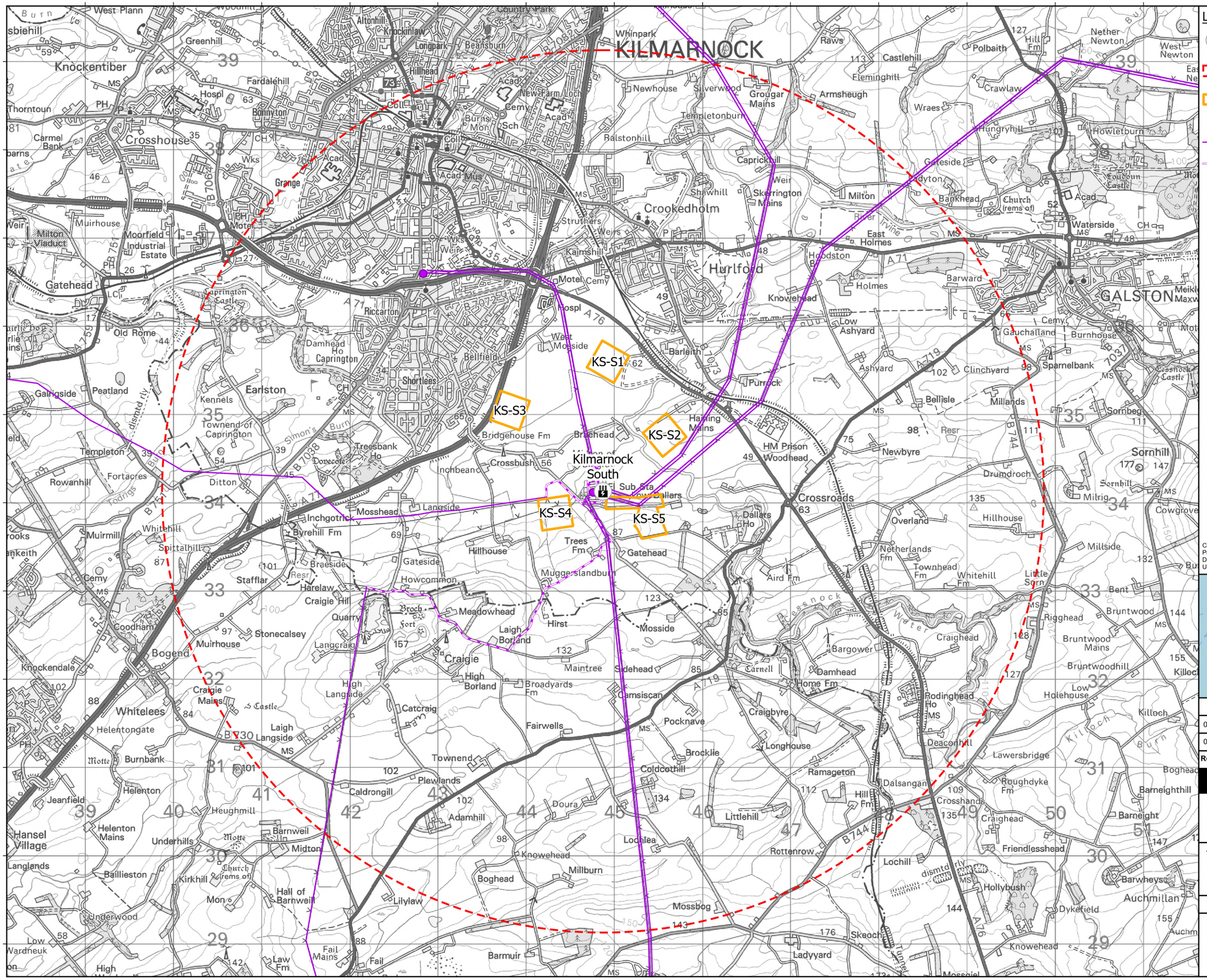
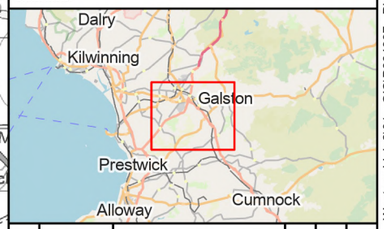


Legend:

- Kilmarnock South Substation
- Kilmarnock Converter Station Siting Area (5km)
- Converter Station Site Options
- Substation
- Overhead Line Transmission
- Cable Transmission

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



Rev	Date	Description	Drn	Chk	App
01	29/09/2025	Siting Area	CJ	WH	WH
00	10/09/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

RSK

TITLE: Figure 10:
Converter Station Site Options

ID: P664337_SiteOptions_ConverterStation_A3L

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Scale: 1:40,000 @ A3

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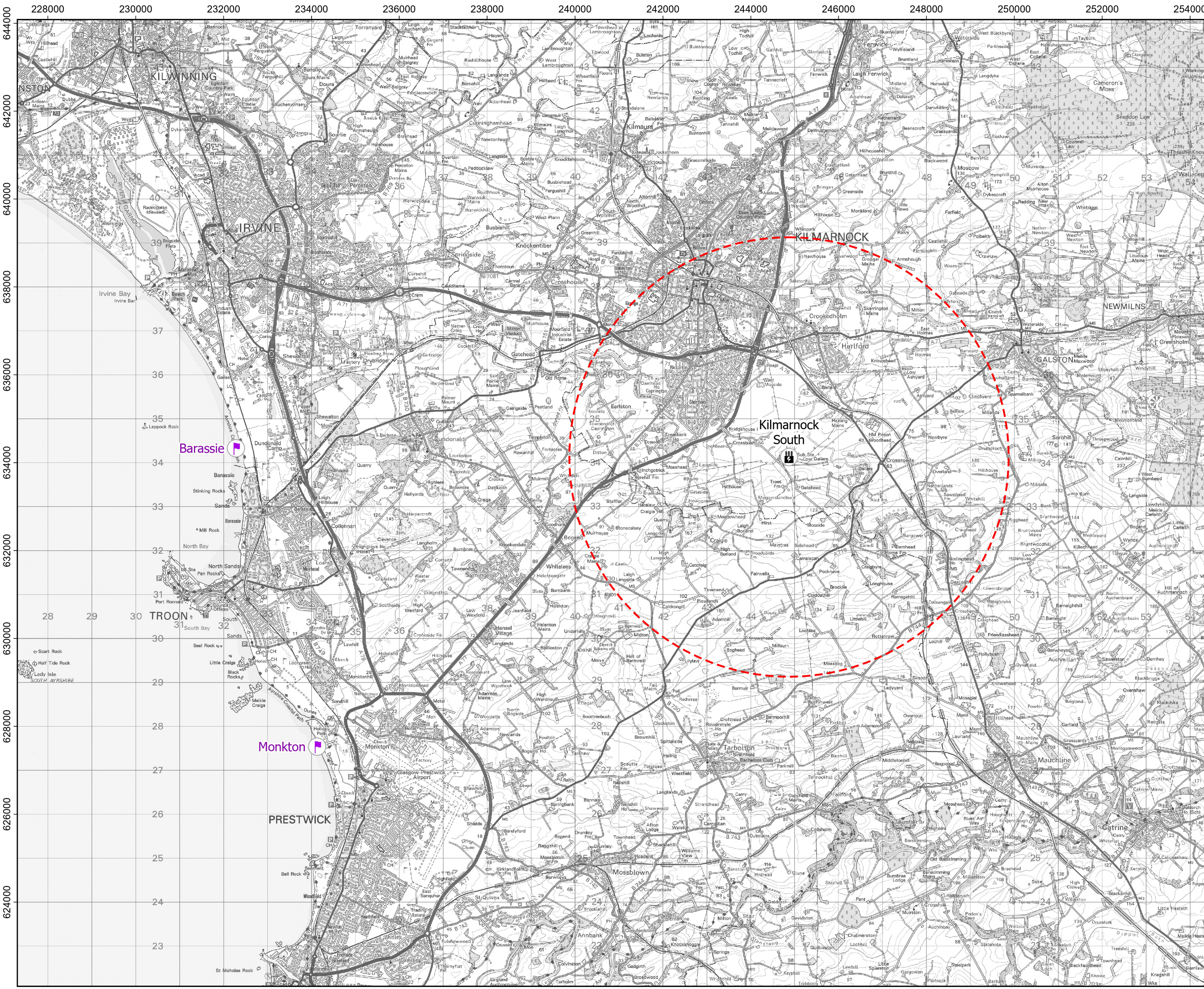

Legend:

- Kilmarnock Converter Station Siting Area (5km)
- Kilmarnock South Substation
- Indicative Landfall Location Options

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

Rev	Date	Description	Drn	Chk	App
02	14/10/2025	Updated Landfall Extents	CJ	CC	WH
01	29/09/2025	Updated Title	CJ	WH	WH
00	10/09/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

RSK

TITLE: Figure 11.1:
Kilmarnock South Landfall Options (Monkton and Barassie)

ID: P664337_LandfallOptions_Kimarnock_A3L

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Scale: 1:80,000 @ A3

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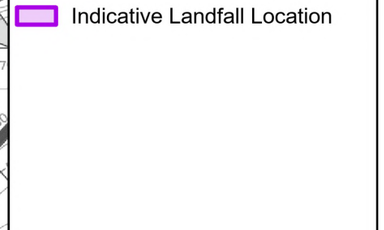
Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri Community Maps contributors, Map layer by Esri

Legend:

Indicative Landfall Location

Monkton

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



Rev	Date	Description	Drn	Chk	App
02	14/10/2025	Updated Landfall Extents	CJ	CC	WH
01	29/09/2025	Updated Title	CJ	WH	WH
00	10/09/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

TITLE: Figure 11.2:
Kilmarnock South Landfall Options
(Monkton)

ID: P664337_LandfallOptions_Kimarnock_A3L

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Kilometres

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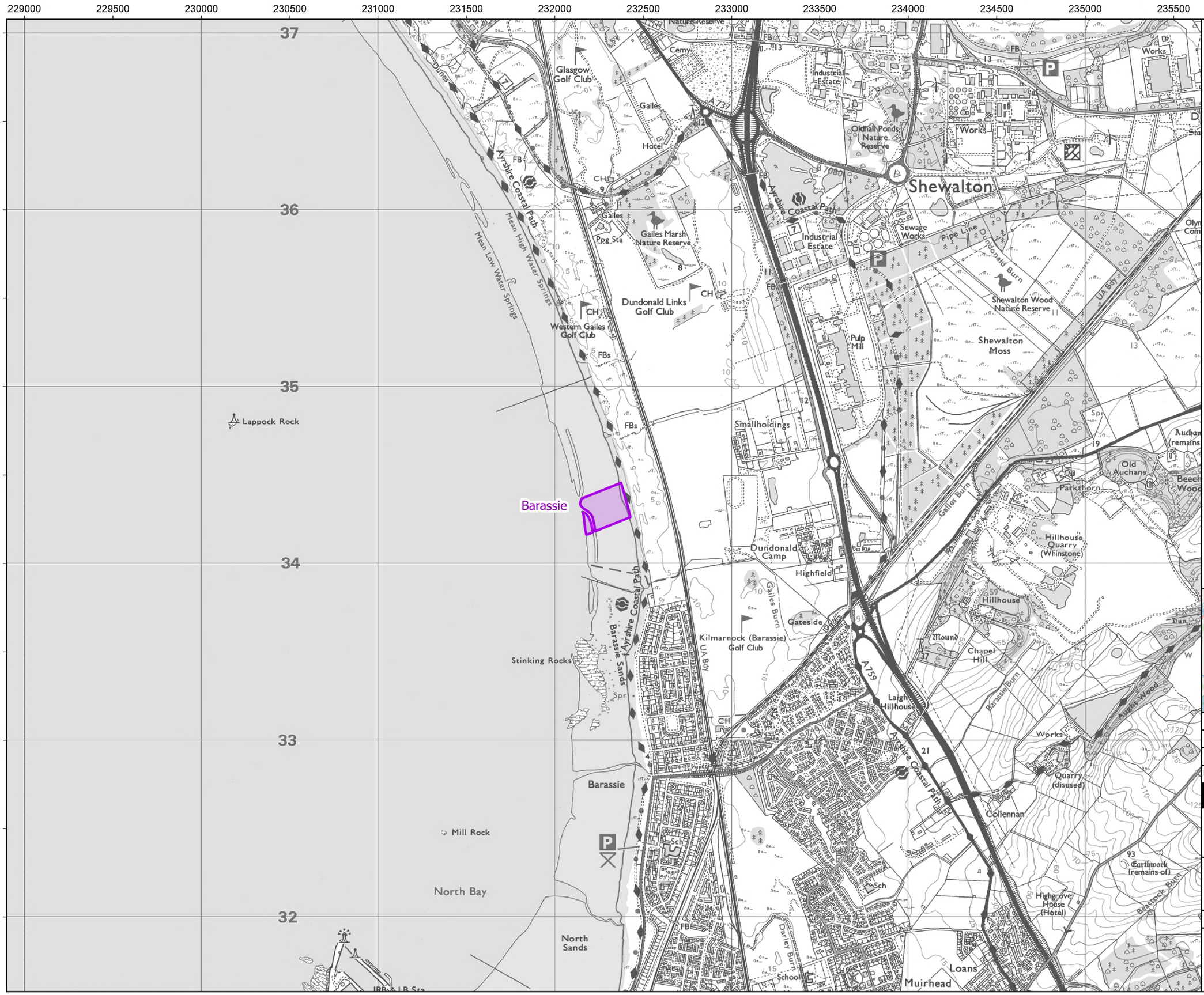

Rev	Date	Description	Drn	Chk	App
02	14/10/2025	Updated Landfall Extents	CJ	CC	WH
01	29/09/2025	Updated Title	CJ	WH	WH
00	10/09/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

RSK

TITLE: Figure 11.3:
Kilmarnock South Landfall Options (Barassie)

ID: P664337_LandfallOptions_Kimarnock_A3L

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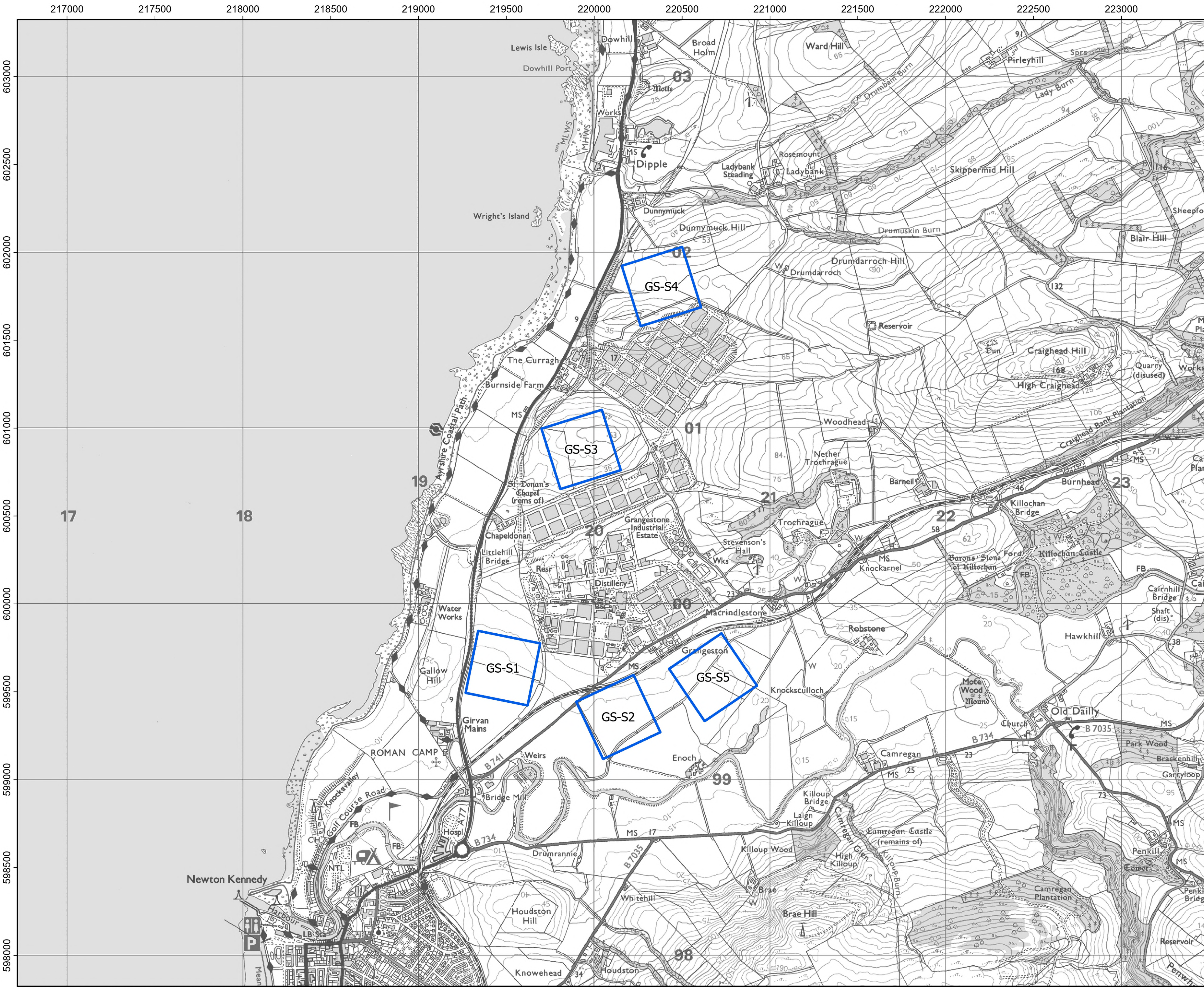

Legend:

T-Point Switching Station Site Options

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

Rev	Date	Description	Drn	Chk	App
02	15/10/2025	Updated Site	CJ	CC	WH
01	14/10/2025	Updated Site	CJ	CC	WH
00	10/09/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

TITLE: Figure 12:
T-Point Site Options

ID: P664337_SiteOptions_TPoint_A3L

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Kilometres
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602000 601000 600000 599000

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GS-S4-2
GS-S4
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GS-S1
GS-S1-2
GS-S2-1
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GS-S5-1
GS-S5
GS-S5-2

Wright's Island · Dunnymuck · Dunnymuck Hill · Drumuskin B · Drumdarroch · Drumdarroch Hill · Reservoir · The Curragh · Burnside Farm · Ayrshire Coastal Path · MS · Woodhead · Nether Trochrague · Barnell · St. Donan's Chapel (rems of) · Trochrague · Chapeldonan · Littlehill Bridge · Resr · Grangestone Industrial Estate · Stevenson's Hall · Wks · Knockarnel · Distillery · Water Works · Macrindlestone · Robstone · Grangeston · Gallow Hill · Knocksculloch · Girvan Mains · ROMAN CAMP · B741 · Weirs · Enoch · Camregan · Bridge Mill · Killoup Bridge · Knockavalley · Road

Legend:

- T-Point Switching Station Site Options
- Cable Route Corridor Options (200 m wide)

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

Rev	Date	Description	Drn	Chk	App
03	15/10/2025	Added GS-S4 Site	CJ	CC	WH
02	14/10/2025	Numerous Map Frames	CJ	CC	WH
01	29/09/2025	Updated Title	CJ	WH	WH

664337 - Western Link 2

RSK

TITLE: Figure 13.1:
Alternative Girvan Landfall Options

ID: P664337_CorridorOptions_Girvan_A3L

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Scale: 1:25,000 @ A3

REV 03

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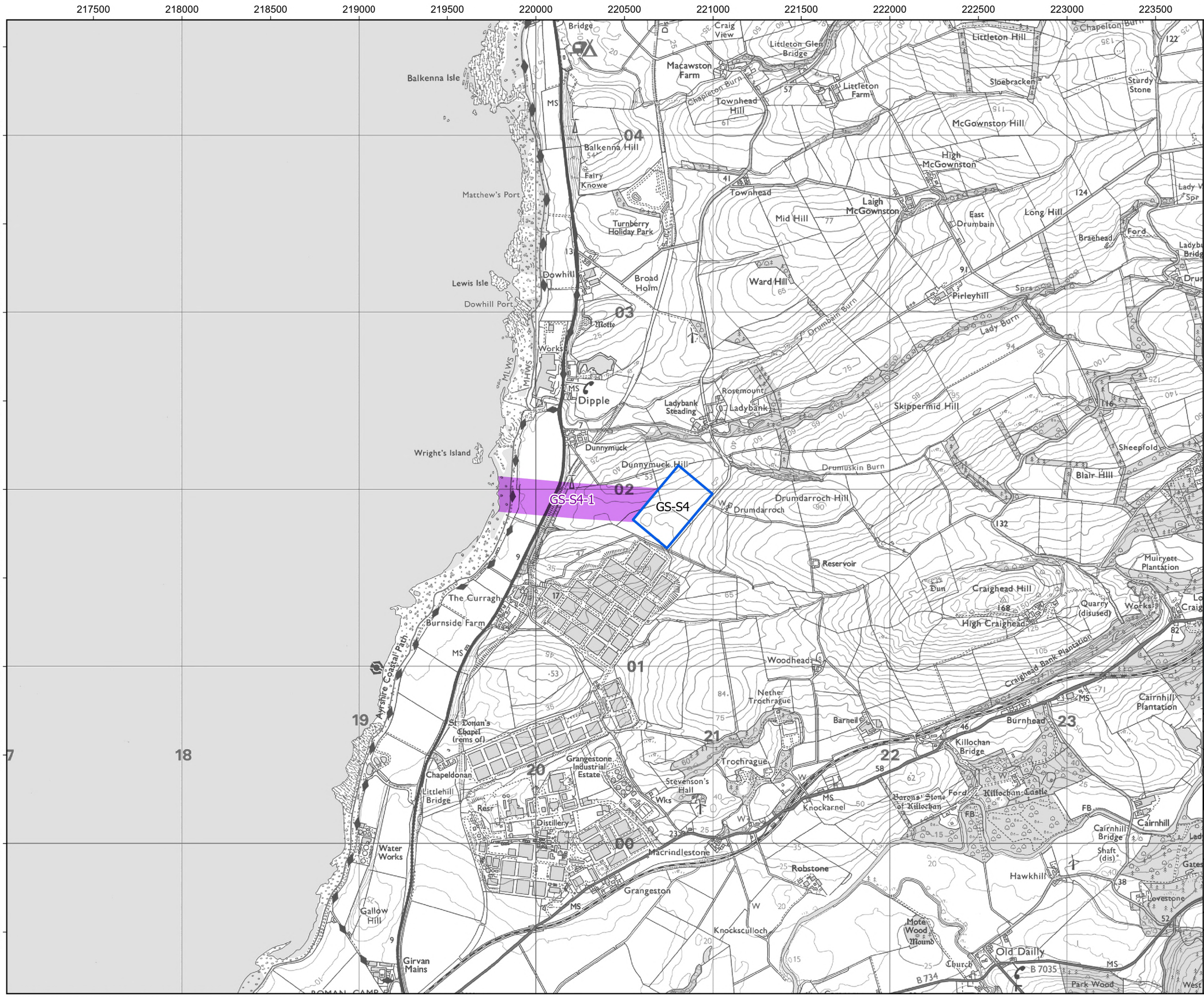

Legend:

- Preferred T-Point Switching Station Site Option
- Preferred Cable Route Corridor Option

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

Rev	Date	Description	Drn	Chk	App
01	15/10/2025	Removed Alternative Sites	CJ	CC	WH
00	14/10/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

RSK

TITLE: Figure 13.2: Preferred T-Point Site and Girvan Landfall Option

ID: P664337_CorridorOptions_Girvan_Preferred_A3L

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Kilometres

Scale: 1:20,000 @ A3

REV 01

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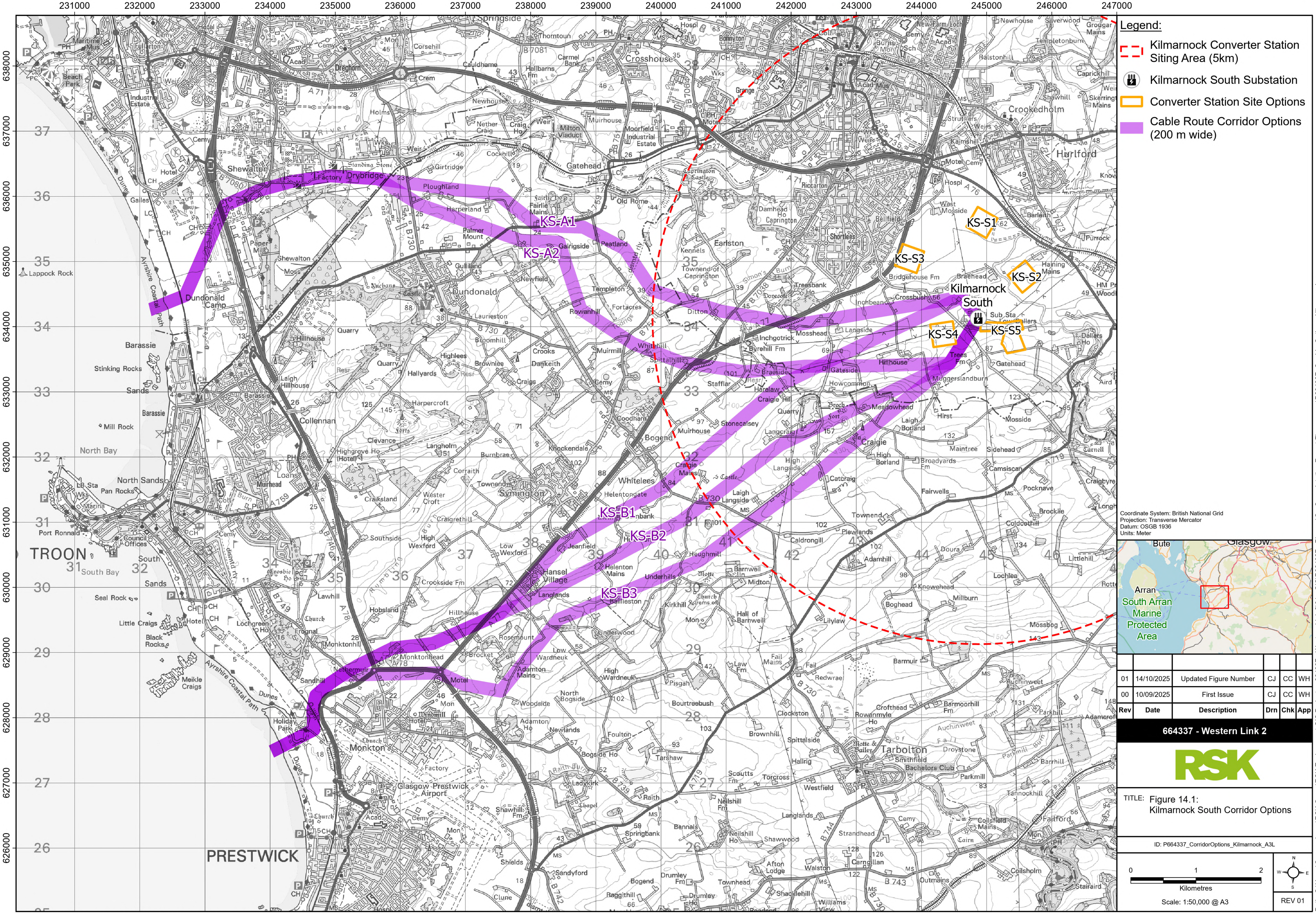

Rev	Date	Description	Drn	Chk	App
01	14/10/2025	Updated Figure Number	CJ	CC	WH
00	10/09/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

RSK

TITLE: Figure 14.1: Kilmarnock South Corridor Options

ID: P664337_CorridorOptions_Kilmarnock_A3L

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Scale: 1:50,000 @ A3

REV 01

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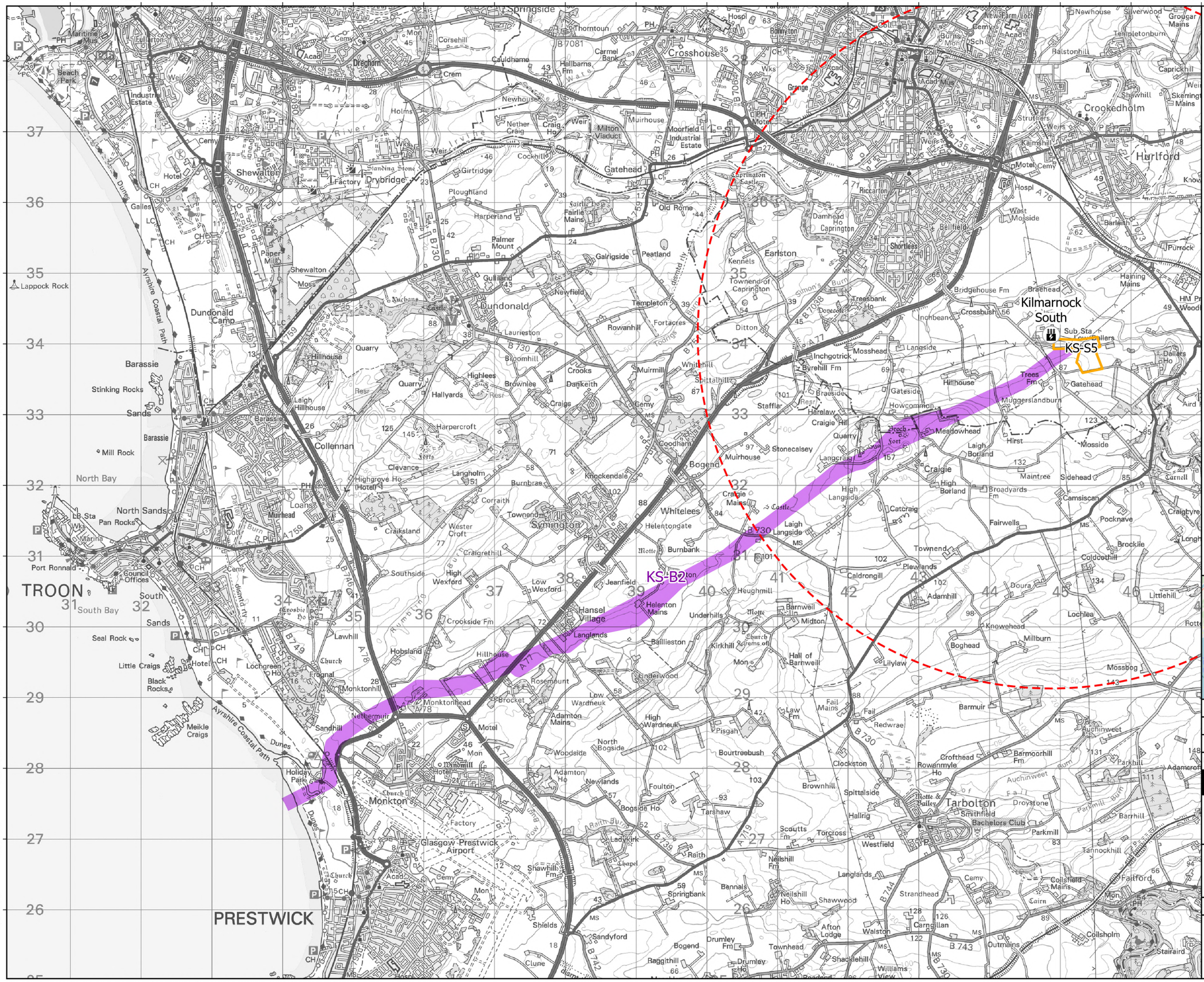

Legend:

- Kilmarnock Converter Station Siting Area (5km)
- Kilmarnock South Substation
- Preferred Converter Station Option
- Preferred Cable Route Corridor Option

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

Rev	Date	Description	Drn	Chk	App
01	15/10/2025	Updated Legend & Title	CJ	CC	WH
00	14/10/2025	First Issue	CJ	CC	WH

664337 - Western Link 2

TITLE: Figure 14.2:
Kilmarnock South Preferred Corridor and Converter Station Option

ID: P664337_CorridorOptions_Kilmarnock_Preferred_A3L

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Kilometres
Scale: 1:50,000 @ A3

REV 01

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