



Version 0.0

LionLink

Design Principles

January 2026

nationalgrid

Contents

1. Introduction	1
2. Design Vision	3
3. Design Principles	4
3.1 Purpose of the Design Principles	4
3.2 National Infrastructure Commission Design Principles for National Infrastructure	4
3.3 Proposed Scheme-level Design Principles	6
3.4 Next steps	7
4. References	16
Table 1 Addressing the NIC Design Principles for National Infrastructure	5
Table 2 Proposed Scheme-Wide Design Principles	8
Table 3 Site Specific Proposed Scheme-level Design Principles	12

1. Introduction

This document sets out the design vision and Design Principles for LionLink (“the Proposed Scheme”). It is informed by best practice guidance, national and local planning policy and has been developed through collaborative working across disciplines. This document forms part of the consultation material provided for the Proposed Scheme’s statutory consultation being undertaken in the first quarter of 2026. The Design Principles have been developed for use during design development of the Proposed Scheme, both preliminary design set out in the Development Consent Order (DCO) application and detailed design post-DCO consent. It should be read alongside the Converter Station Background Document, which is available on the project website: <https://www.nationalgrid.com/national-grid-ventures/lionlink>.

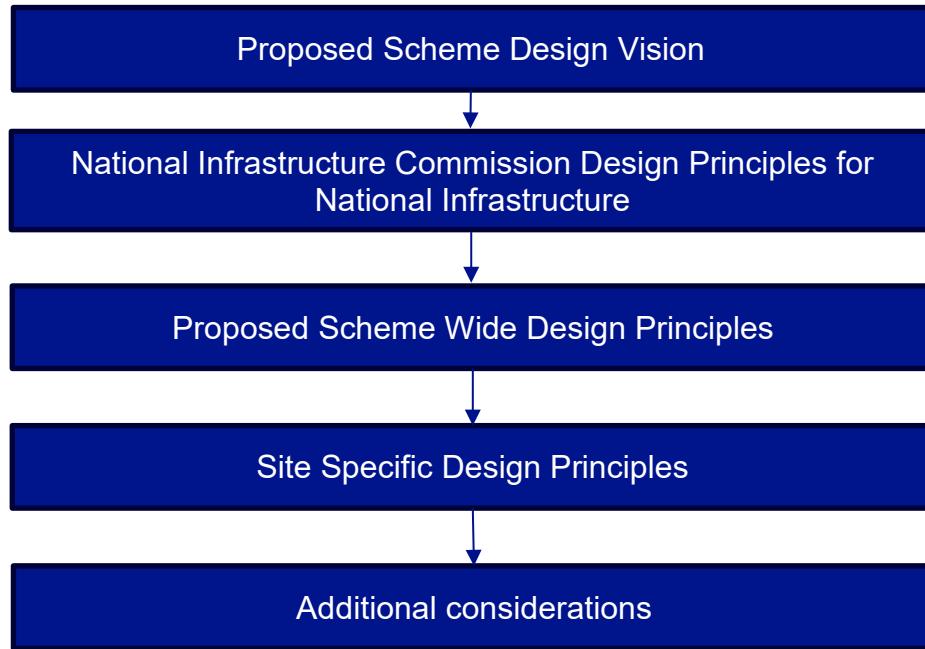
The Proposed Scheme comprises the following key components:

- Kiln Lane Substation located to the north of Friston;
- Proposed Underground High Voltage Alternating Current (HVAC) Cables between the proposed Converter Station in Suffolk and Kiln Lane Substation north of Friston;
- Proposed Converter Station in Suffolk, east of Saxmundham;
- Proposed Underground High Voltage Direct Current (HVDC) Cables between the proposed Converter Station in Suffolk, and a proposed Landfall Site at Walberswick; and
- Submarine electricity cables from a proposed Landfall Site at Walberswick at the mean high-water mark at the UK coast to the edge of the UK Exclusive Economic Zone (EEZ).

National Grid Lion Link Limited (NGLL), as the Applicant, has applied an integrated design approach which draws together engineering, environmental, sustainability and social value design considerations. The purpose of the Design Principles has been to inform the development of the Proposed Scheme design for construction and operation.

The Design Principles are likely to evolve during the course of the design development process, and this document will be regularly reviewed and updated, as required, before being submitted as part of the application for development consent. The Design Principles have been developed taking into consideration feedback received from stakeholders. The document will continue to be subject to consultation with stakeholders and will account for representations made during statutory consultation.

The Design Principles follow a hierarchical approach, from the overarching Proposed Scheme design vision to specific considerations that the Proposed Scheme will consider.



The Proposed Scheme-level Design Principles have been informed by the following guidance:

- National Infrastructure and Service Transformation Authority *“Design Principles for National Infrastructure”* (Ref 1)
- National Infrastructure and Service Transformation Authority *“Project Level Design Principles”* (Ref 2)
- Chartered Association of Building Engineers (CABE) *“A design-led approach to infrastructure”* (Ref 3)
- Landscape Institute *“Infrastructure Technical Guidance Note 04/20”* (Ref 4)

The Proposed Scheme-level Design Principles serve several functions:

- they help to inform the assessment of the likely environmental effects of the Proposed Scheme in the

Preliminary Environmental Information Report (PEIR) and the Environmental Statement (ES).

- they help to demonstrate how sustainability objectives are implemented within the design.
- they set the parameters for the detailed plans to be prepared by Contractors or others to satisfy the Requirements that will be attached to the DCO.
- they help to illustrate how NGLL has responded to public consultation feedback in relation to design.
- they help to illustrate how NGLL has taken account of the criteria for good design set out in the National Policy Statement for Energy (EN-1) (Ref 5) and relevant advice from the Planning Inspectorate and other bodies, including relevant Local Plan policy.

The Proposed Scheme will be compliant with legal and policy obligations. For this reason, Design Principles with respect to these requirements, be that regulatory or commitments established in other parts of the DCO, are not set out expressly in this document. For example, the need for the design to comply with health and safety regulations, which is a statutory requirement.

A Design Champion will be identified and will be responsible for the delivery of the Design Principles. They will have a commitment to design excellence and promote technical excellence and uphold the Design Principles.

“Good design is not simply about the look of a project; it is about the whole process of putting a project together so that it achieves the elements of good design including choice of location, vision, narrative, design principles and consultation programme”. National Infrastructure Commission

2. Design Vision

The Planning Inspectorate advises applicants to develop an overarching vision with a locally contextual design narrative, which supports the identification of opportunities for wider benefits and outcomes beyond the Proposed Scheme itself.

Developing a strong Design Vision is supported by the Landscape Institute, which states that “*achieving good design which works with the landscape and delivers valuable green infrastructure therefore needs a joined up, collaborative approach, where all planning and design elements of the project are integrated*”

The Design Vision for the Proposed Scheme, which is set out below, has been developed with input from stakeholders:

Proposed Scheme Design Vision

“The Proposed Scheme will be sensitive to place and will contribute positively to nature recovery at the landscape scale and the communities it touches. It will create opportunities to deliver Environmental Net Gain and social value by maximising the benefits locally.”

The Design Vision underpins the Design Principles, which are set out in Sections 1 to 3 of this document. It will continue to guide the development of the design and test the acceptability of subsequent, more detailed design development.

The design vision will be achieved by:

Being responsible

- taking an environment-led, strategic approach to design, informed by baseline studies and a review of local policy,

programmes, projects and priorities defined by the relevant councils and other bodies;

- minimising impacts on local communities, landowners and the environment as far as possible;
- respecting and contributing positively to local context and surroundings, including the Suffolk & Essex Coast & Heaths National Landscape and the Suffolk Heritage Coast; and
- ensuring that the principles of sustainability are integral to designs by incorporating environmental solutions and environmental mitigation.

Being flexible and creative

- looking beyond the immediate context of the Proposed Scheme to identify the wider opportunities at the landscape-scale;
- ensuring a collaborative approach across the development of the design to deliver an optimised outcome;
- ensuring all planning and design elements of the Proposed Scheme are integrated; and
- considering opportunities to create a legacy, driven by a high-quality design response.

Meeting functional requirements

- developing high quality, well-designed and durable solutions that conserve and respect the environment and amenity of the areas in which they are located.
- ensuring that spaces created as part of the Proposed Scheme (e.g. habitat creation) could be maintained to a good standard in the long-term, having due regard to planning policy and best practice.

3. Design Principles

3.1 Purpose of the Design Principles

The good design process set out by the Planning Inspectorate includes the provision of a “*clear statement of design principles that will drive the project and deliver wider value and benefits beyond the core purpose of the scheme*”. It states that this should include evidence that the Design Principles respond positively to the four elements – climate, people, place and value - established by the National Infrastructure Commission (NIC - now the National Infrastructure and Service Transformation Authority) and that project level Design Principles should be structured and grouped logically.

The Design Principles help to ensure that the Proposed Scheme accords with the National Policy Statements (NPS) and meets the criteria for good design for energy infrastructure in the NPS for Energy (EN-1) (Ref 5), including the following:

- good design (para. 4.7.1);
- consideration should be given to improvements to, and impacts on, habitats and species in and around developments, for wider ecosystem services and natural capital benefits, beyond those under protection and identified as being of principal importance (para. 5.4.34);
- projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate (para. 5.10.6);

- applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5) (para. 5.11.12); and
- consider and quantify the different types of flooding (whether from natural and human sources and including joint and cumulative effects) and include information on flood likelihood, speed-of-onset, depth, velocity, hazard and duration (para. 5.8.15).

Application of the relevant project-level Design Principles would additionally help NGLL to meet its legal duty to seek to further the statutory purpose of Suffolk & Essex Coast & Heaths National Landscape.

The Design Principles are consistent with government policy on sustainable development and commitments to achieving net zero emissions by 2050. The Design Principles also incorporate National Grid's ten commitments to carrying out works in the UK (Ref 6), the environmental priorities in alignment with being a responsible business and leaving a positive legacy (Ref 7) and guidance on sense of place (Ref 8).

3.2 National Infrastructure Commission Design Principles for National Infrastructure

The Applicant has reviewed the NIC's four high-level Design Principles for national infrastructure and has considered these alongside national and relevant local planning policy in developing project level Design Principles for the Proposed Scheme. Table 1 explains how the design of the Proposed Scheme addresses these. This table also shows how the Proposed Scheme-level Design Principles, which are set out in Table 2 and Table 3, relate to the four principles.

Table 1 Addressing the NIC Design Principles for National Infrastructure

NIC Design Principle	How the design of the Proposed Scheme responds to the NIC Design Principles	Related Proposed Scheme-level Design Principles
 Climate Mitigate greenhouse gas emissions and adapt to climate change	<p>The primary purpose of the Proposed Scheme is to provide up to 2GW of energy to the national grid, including connections to Dutch offshore wind via an offshore platform in Dutch waters. The Proposed Scheme will make a substantial contribution towards achieving net zero greenhouse gas emissions by 2050 or sooner.</p> <p>The Proposed Scheme will assist in adapting the landscape to a changing climate by substantially increasing the area of biodiverse habitats associated with the proposed Converter Station Site. The resilience of new and existing habitats will be enhanced by increasing the range of species and plant provenance.</p>	GE: 1 GE: 6 GE: 7 GE: 13 GE: 35 GE: 36 GE: 41
 People Reflect what society wants and share	<p>The Applicant has engaged positively and openly with the local community from an early stage in the Proposed Scheme design, including through non-statutory consultation in 2022 and 2023 following the publication of the EIA Scoping Report.</p>	GE: 9 GE: 10 GE: 12 GE: 14 GE: 19 GE: 20 GE: 21 GE: 22

NIC Design Principle	How the design of the Proposed Scheme responds to the NIC Design Principles	Related Proposed Scheme-level Design Principles
 benefits widely	<p>The majority of the Proposed Scheme will comprise underground infrastructure, with the land above being restored to its current use and condition post-construction. The design of the proposed Converter Station Site includes substantial areas of new habitat and permissive paths to substantially improve access to the countryside in proximity to the local community of Saxmundham and to join up fragmented parts of the PRoW network. For the proposed Kiln Lane Substation, it is the intention of the Proposed Scheme to deliver the consented design in the full-build out scenario with the associated mitigation.</p>	GE: 23 GE: 30 GE: 32 GE: 37
 Places Provide a sense of identity and improve our environment	<p>The Applicant has considered the siting and layout of the Proposed Scheme carefully to maximise integration with the local landscape, including the permanent above ground infrastructure. This includes designing the Converter Station Site as a new landscape to integrate and embed the proposed buildings and associated infrastructure into the landscape and provide substantial</p>	GE: 1 GE: 2 GE: 3 GE: 4 GE: 5 GE: 8 GE: 10 GE: 14 GE: 15 GE: 16 GE: 17 GE: 18 GE: 24

NIC Design Principle	How the design of the Proposed Scheme responds to the NIC Design Principles	Related Proposed Scheme-level Design Principles
	<p>areas for nature conservation and public amenity. The existing landscape framework of woodland and hedgerows will be enhanced, restoring historic field boundaries in places and respecting and enhancing local character and ecology. The Proposed Scheme is expected to deliver at least 10% Biodiversity Net Gain (BNG) on site.</p>	<p>GE: 25 GE: 26 GE: 27 GE: 28 GE: 29 GE: 31 GE: 34 GE: 35 GE: 36 GE: 37 GE: 38 GE: 39 GE: 41</p>
 <p>Value Achieve multiple benefits and solve problems well</p>	<p>The environment-led design approach has considered opportunities to deliver beneficial outcomes that extend beyond the site boundaries of the Proposed Scheme from the outset. This has included a review of strategic environmental and social value opportunities outlined in published documents and identified as projects or priorities by stakeholders and the local community. In addition to BNG, the design seeks to deliver wider environmental net gain, by maximising the range of ecosystem services that the natural capital created by the Proposed Scheme will provide. This includes mitigating runoff, providing flood attenuation,</p>	<p>GE: 1 GE: 4 GE: 11 GE: 13 GE: 33 GE: 35 GE: 36 GE: 38 GE: 39 GE: 40</p>

NIC Design Principle	How the design of the Proposed Scheme responds to the NIC Design Principles	Related Proposed Scheme-level Design Principles
		<p>enhanced habitat connectivity and public access to nature.</p>

3.3 Proposed Scheme-level Design Principles

This section sets out the Design Principles for the Proposed Scheme and explains how these have been developed in the context of the NIC Design Principles for National Infrastructure set out above.

- The NIC states that project level Design Principles should directly address the project's requirements, benefits and outcomes;
- Design Principles should form a key part of project governance, driving design decisions from the project outset;
- Developing Design Principles is an iterative, ongoing process. Once consent is achieved, they will become fixed, outlining how schemes will achieve their outcomes;
- Design Principles should align all parties around agreed, shared outcomes, facilitating timely, effective delivery; and
- The Design Principles for the Proposed Scheme have been formulated with the input of engineering, architectural, environmental, lands and planning teams and in response to stakeholder engagement and community consultation.

The Proposed Scheme-level Design Principles are set out in Table 2 and Table 3. They have been further refined and applied to the environmental masterplan within the Design Approach Document to help illustrate how the Design Vision can be achieved. The principles provide a structure and clarity on what will be delivered but are sufficiently flexible to address the varied character of the landscape.

The strategic environmental and social value opportunities and the landscape character assessment set out in the PEIR will be used to inform decisions on appropriate habitats, planting mixes, permissive paths etc by applying the project-level Design Principles at the detailed design stage.

The Proposed Scheme-level Design Principles set out the range and types of design aims which will be considered during the development of the Proposed Scheme design and, where relevant, subsequent construction of the Proposed Scheme. The Proposed Scheme-level Design Principles are structured as follows.

- Proposed Scheme wide Design Principles, which are to be applied, where applicable, to all aspects of the Proposed Scheme.
- Site specific Design Principles for the proposed Landfall site, the proposed Underground HVDC and HVAC Cable Corridors, the proposed Converter Station and the

proposed Kiln Lane Substation. These are contextual principles which elaborate further on the generic principles

- Additional principles that will be considered as the design of the Proposed Scheme is reviewed and refined up to submission of the DCO application.

3.4 **Next steps**

An eight-week consultation on the Proposed Scheme will run from January to March 2026 to enable the public and consultees to review the proposals and provide feedback. The Applicant invites comments on the Design Principles for the Proposed Scheme.

Further details on the consultation and electronic copies of all consultation documents can be downloaded at the project website:

<https://www.nationalgrid.com/national-grid-ventures/lionlink>

The Applicant will review responses received. Comments will be taken into account when considering the evolution of the Design Principles and modifications to the design or mitigation incorporated into the Proposed Scheme.

Table 2 Proposed Scheme Wide Design Principles

Design Principle ID	Category	Proposed Scheme Level Design Principle	NIC Design Principles
GE:1	Scheme Wide	Develop a landscape-scale, integrated design in accordance with the environment-led design approach that minimises adverse impacts on the landscape and maximises opportunities to deliver BNG and wider environmental net gain. This includes consideration of distinctive or valued landscape patterns or features, key or protected views and the visual amenity of sensitive receptors by siting infrastructure carefully to retain and reinforce the existing landscape framework.	Climate Places Value
GE:2	Scheme Wide	As far as possible, avoid impacts to the Suffolk & Essex Coast & Heaths National Landscape or otherwise minimise impacts by retaining valued features and reinstating vegetation lost to facilitate construction.	Places
GE:3	Scheme Wide	Seek opportunities to further the purpose of the Suffolk & Essex Coast & Heaths National Landscape to conserve and enhance the natural beauty of the area and its associated Special Qualities, informed by baseline studies and engagement with relevant authorities and landowners.	Places
GE:4	Scheme Wide	Develop designs that respond positively to the characteristics of the local landscape, biodiversity and heritage with reference to the landscape character assessment and local design guidance, including in the selection of materials and finishes of proposed buildings and structures.	Places Value
GE:5	Scheme Wide	Make efficient use of the land required for the temporary (construction) and permanent (operation) of the built elements of the Proposed Scheme.	Places
GE:6	Scheme Wide	Select planting to maximise resilience to climate change and biosecurity by selecting appropriate species and provenance informed by the landscape	Climate
GE:7	Scheme Wide	Design the built elements of the Proposed Scheme to maximise resilience to climate change.	Climate
GE:8	Scheme Wide	Integrate the built elements of the Proposed Scheme into the existing landscape with consideration of massing, high quality architecture, finishes, materials and colour palette appropriate to context.	Places
GE:9	Scheme Wide	Develop the design in a way that minimises impacts on local communities, business and tourism.	People
GE:10	Scheme Wide	Collaborate with other projects to minimise environment and social impacts through co-location of energy infrastructure. This should include considerations within the Design Approach Document and the Converter Station Master Plan.	Places People

Design Principle ID	Category	Proposed Scheme Level Design Principle	NIC Design Principles
GE:11	Scheme Wide	Implement innovative methods of design and construction as far as possible to facilitate delivery of the Proposed Scheme's design principles.	Value
GE:12	Scheme Wide	Develop the design in accordance with the security considerations set out in section 4.16 of NPS EN-1 and the principles and relevant guidance of "Secured by Design", the official police security initiative owned by the UK Police Service.	People
GE:13	Scheme Wide	Prevent increase in flood risk to people and property during construction and operation taking account of the latest guidance on the likely impact of climate change.	Climate Value
GE: 14	Scheme Wide	Provide appropriate distances from environmental and social receptors to minimise impacts as far as possible, including a minimum 15m offset from wetland, grassland and woodland priority habitats.	People Places
GE:15	Scheme Wide	Avoid adverse effects on the integrity of Special Areas of Conservation (SACs), Special Protection Areas (SPAs), and Ramsar Sites.	Places
GE:16	Scheme Wide	Avoid adverse effects on the features of designated sites of national importance, comprising Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs).	Places
GE:17	Scheme Wide	As far as possible, avoid loss, damage or fragmentation of sites of regional and local biodiversity interest and habitats identified as being of principal importance for the conservation of biodiversity in England and Wales (priority habitats). As far as possible, the Proposed Scheme should enhance these sites and habitats.	Places
GE:18	Scheme Wide	Seek to achieve a balance of cut and fill as far as possible to minimise the requirements for importing and exporting material, minimise traffic movements and to minimise Greenhouse Gas (GHG) emissions.	Places
GE:19	Scheme Wide	Avoid locating sources of air pollution adjacent to sensitive receptors affected by the Proposed Scheme as far as possible (e.g. residential properties and schools).	People
GE:20	Scheme Wide	Minimise the permanent loss of best and most versatile agricultural land, as far as possible (Grades 1, 2 and 3a).	People
GE:21	Scheme Wide	Minimise disturbance to farming practices and ensure permanent works leave workable field parcels where possible. Relocate or reinstate existing farm accesses that are removed.	People
GE:22	Scheme Wide	Minimise the effect of closures and diversions of Public Rights of Way (PRoW) and roads during construction and operation. Diverted PRoW should be replaced to an equivalent quality or better to the reasonable satisfaction of the relevant Highway Authority.	People
GE:23	Scheme Wide	Maintain existing accesses to community facilities, businesses, and visitor attractions at all times or provide a suitable equivalent.	People

Design Principle ID	Category	Proposed Scheme Level Design Principle	NIC Design Principles
GE:24	Scheme Wide	Avoid physical impacts to designated heritage assets.	Places
GE:25	Scheme Wide	Avoid physical disturbance to non-designated heritage features as far as possible.	Places
GE:26	Scheme Wide	Avoid impacts to the setting of both designated and non-designated heritage assets as far as possible and conserve or enhance the setting of designated and non-designated heritage assets.	Places
GE:27	Scheme Wide	Retain and protect existing habitats within the Draft Order Limits as far as possible.	Places
GE:28	Scheme Wide	Avoid the loss or deterioration of irreplaceable habitats including ancient woodland, and ancient and veteran trees.	Places
GE:29	Scheme Wide	As far as possible avoid the loss of other woodland, mature trees, especially those protected by Tree Preservation Orders (TPO), and important hedgerows, for example through the use of trenchless construction methods where appropriate. Minimise vegetation loss associated with temporary works such as accesses, compounds and haul roads.	Places
GE:30	Scheme Wide	Minimise adverse effects on the health and wellbeing of communities through construction and design, as well as providing enhancement measures that have the potential to benefit health as far as possible including increased amenity and recreational space.	People
GE:31	Scheme Wide	Avoid creating new pathways for contaminated land, groundwater or gas.	Places
GE:32	Scheme Wide	Maintain existing pedestrian, vehicular and public transport links and minimise risk of community severance as far possible during construction and operation.	People
GE:33	Scheme Wide	Design out waste, in line with the Waste Hierarchy, including design for re-use and recovery, off-site construction, materials optimisation, waste efficient procurement and deconstruction and flexibility.	Value
GE:34	Scheme Wide	Avoid or minimise impacts on existing watercourses and the risks of creating pollution pathways.	Places
GE:35	Scheme Wide	Where the removal of vegetation during construction cannot be avoided, loss will be minimised, and replacement planting will be undertaken. Loss of existing habitat and landscape features will be mitigated with replacement planting undertaken as close to the location of the existing vegetation as far as possible. Where mature trees are lost, they will be replaced with semi-mature specimens or appropriate larger grade stock. Replacement planting will be in accordance with the Outline LEMP and will have regard to the historic and landscape character of the area and climate resilience.	Climate Value Places

Design Principle ID	Category	Proposed Scheme Level Design Principle	NIC Design Principles
GE:36	Scheme Wide	Maximise the resilience of proposed planting to climate change and biosecurity impacts by including a wide palette of plant species and provenance in line with Forestry England best practice guidance, sourced locally as far as practicable.	Climate Value Places
GE:37	Scheme Wide	Impacts from lighting on local communities and amenity, dark landscapes, nature conservation and heritage assets will be minimised. Any lighting will be designed in accordance with the Bat Conservation Trust and Institute of Lighting Professionals Bats and Artificial Lighting at Night 08/23 Guidance Note.	Places People
GE:38	Scheme Wide	Existing landscape features within the Draft Order Limits will be retained and protected as far as possible to maintain habitat connectivity and visual screening.	Value Places
GE:39	Scheme Wide	The Proposed Scheme will promote and facilitate environmental and biodiversity net gains with consideration given to the measures set out in the Suffolk Local Nature Recovery Strategy.	Value Places
GE:40	Scheme Wide	Visibility splays at site accesses will be provided in accordance with relevant Local Highway Authority guidance.	Value
GE:41	Scheme Wide	The use of traffic management measures to reduce the vegetation loss required for visibility splays at temporary site accesses during construction as far as possible.	Climate Places

Table 3 Site Specific Proposed Scheme-level Design Principles

Design Principle ID	Category	Design Principle	NIC Design Principles
LA:1	Landfall site	Avoid impacts to the integrity of coastal defences during construction and operation of the Proposed Scheme.	People
LA:2	Landfall site	Prevent an increase in pollution risk to the underlying aquifer during construction and operation, including during a flood event.	Places People
LA:3	Landfall site	Recreational access to the beach will be retained throughout construction and operation of the Proposed Scheme.	People
CS:1	Converter Station	Integrate the Converter Station into the landscape through careful siting, massing and design within the Design Approach Document and the Converter Station Master Plan.	Places Value
CS:2	Converter Station	Design earthworks with natural, flowing contours which as far as possible tie in seamlessly with the surrounding topography from viewpoints and receptors beyond the Converter Station site boundary.	Places Value
CS:3	Converter Station	Provide planting or earthworks to avoid or minimise adverse impacts on views of operational areas or more intrusive elements from sensitive visual receptors.	Places People Value
CS:4	Converter Station	The design of the proposed Converter Station buildings and associated structures should be as low as practicably possible in the landscape to maximise landscape integration and visual screening.	People Places
CS:5	Converter Station	Position noisy equipment to avoid directing towards sensitive receptors as far as possible. Where required, incorporate mitigation measures into the design to minimise noise impacts.	People
CS:6	Converter Station	Coordinate design intent with adjacent infrastructure projects in terms of general building form, height, colour, materials and extent of outdoor equipment.	Places
CS:7	Converter Station	Coordination of construction and operational requirements with other National Grid projects as far as possible to deliver the projects more efficiently and to minimise disruption.	People Value
CS:8	Converter Station	Coordinate the permanent site access route to the Converter Station site with Sea Link to minimise the footprint of the two projects and to minimise disruption.	Value
CS:9	Converter Station	Design the site layout to complement the cable arrangement and flow of electricity as it gets converted from direct current to alternating current to	Value

Design Principle ID	Category	Design Principle	NIC Design Principles
		make efficient use of space and to minimise the area required by the Proposed Scheme.	
CS:10	Converter Station	Design light sources to minimise spill and glare beyond the Converter Station Site boundary as far as possible.	People Places
CS:11	Converter Station	Design environmental features (e.g. ponds) as an integral part of the landscape and with reference to local landscape features (e.g. field boundaries and topography). Introduce Sustainable Drainage Systems (SuDS) features to help manage surface water flooding.	Places Value Climate
OfR:1	Offshore cable	Lower cables into the seabed to the depths defined by the Cable Burial Risk Assessment. As far as possible, outcrop or subcrop (within ~1m of seabed) of bedrock and hard ground shall be avoided.	Value
OfR:2	Offshore cable	Install cables with the levels of protection defined by the Cable Burial Risk Assessment using existing lay vessel, burial/trenching tools and/or external remedial protection if partially buried.	Value
OfR:3	Offshore cable	Route the cable to avoid boulders/boulder fields, sand waves and other obstructions whether man-made or natural, such that preparation by way of boulder removal or sand-wave levelling and debris removal is reduced to the minimal level possible.	Places Value
OfR:4	Offshore cable	Route the cable to avoid slopes with gradients that exceed the maximum gradients upon which current burial/trenching tools can operate.	Value
OfR:5	Offshore cable	Route the cable to approach pipeline and cable crossings at as near to perpendicular as possible.	Value
OfR:6	Offshore cable	As far as possible, avoid known areas of either Annex 1 Habitats or supporting habitats for marine protected areas. Where avoidance is not possible, minimise the distance through which they are crossed.	Places Value
OfR:7	Offshore cable	Minimise the use of external cable protection as far as possible, with consideration given to reducing overall seabed footprint and height.	Places Value
OfR:8	Offshore cable	As far as possible, minimise vessel numbers and movements so as to minimise disruption to shipping, commercial fishing and protected species.	Places People Value
OfR:9	Offshore cable	As far as possible, avoid known and potential marine archaeological assets.	Places
OnR:1	Onshore cable	Avoid watercourse crossings and flood plains as far as possible and cross high value watercourses perpendicularly to the watercourse by trenchless methods.	Places

Design Principle ID	Category	Design Principle	NIC Design Principles
OnR:2	Onshore cable	Locate construction works outside Flood Zone 2 and 3.	Places Climate
OnR:3	Onshore cable	Avoid installing cable within highway unless necessary to reduce impacts to communities and enable easy cable access for maintenance.	People Value
OnR:4	Onshore cable	Minimise haul and access route temporary crossings over watercourses and design the crossing type and mitigation proportionate to the watercourses' environmental value.	Places Value
OnR:5	Onshore cable	Minimise the number and severity of cable alignment bends to prevent exceeding cable tension limits during installation.	Value
OnR:6	Onshore cable	Design a cable alignment that minimises the need to protect or divert existing above and below infrastructure.	Value
OnR:7	Onshore cable	Design the HVAC cable system to balance circulating currents to minimise electrical losses as far as possible.	Value
OnR:8	Onshore cable	The location of joint bays within the proposed Underground Cable Corridor to avoid crossing points of existing infrastructure and field boundaries.	Value
OnR:9	Onshore cable	Utilise trenchless techniques where possible to reduce impacts on habitats and communities.	Places People
OnR:10	Onshore cable	Utilise existing accesses for haul roads and share or reuse accesses for other projects where possible.	Value
OnR:11	Onshore cable	Utilise trenchless techniques to avoid sensitive ecological features which are unavoidably crossed by the proposed Underground Cable Corridors.	Places
OnR:12	Onshore cable	Reduce the working width of the Cable Corridor when crossing sensitive ecological features and provide temporary storage of coppiced plants if practicable.	Places
OnR:13	Onshore cable	Within agricultural land, the proposed Underground Cables will be buried at a depth and reinstated to return the land back to agricultural use.	People Places
SS:1	Kiln Lane Substation	Prevent increased flood risk in the village of Friston as a result of additional drainage discharge. Seek opportunities to reduce flood risk where possible.	Places Climate
SS:2	Kiln Lane Substation	Seek to coordinate design intent with Sea Link and ScottishPower Renewables (SPR) East Anglia ONE North (EA1N) and East Anglia TWO (EA2) offshore wind projects including civil infrastructure, namely an integrated drainage design and water strategy.	Value

Design Principle ID	Category	Design Principle	NIC Design Principles
SS:3	Kiln Lane Substation	Position noisy equipment to avoid directing towards sensitive receptors as far as possible. Where required, incorporate mitigation measures into the design to minimise noise impacts.	People
SS:4	Kiln Lane Substation	Design light sources to minimise spill and glare beyond the Substation boundary as far as possible.	Places People

4. References

Ref 1 National Infrastructure and Service Transformation Authority (2020). Design Principles for National Infrastructure.

Ref 2 National Infrastructure Commissions (2024). Project Level Design Principles.

Ref 3 CABE (2012). A design-led approach to infrastructure. Available at:
https://www.designcouncil.org.uk/fileadmin/uploads/dc/Documents/A_design_led_approach_to_infrastructure_Cabe.pdf

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<https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf>

Ref 6 National Grid (2016). National Grid's commitments when undertaking works in the UK: Our stakeholder, community and amenity policy. Available at: <https://www.nationalgrid.com/document/81026/download>

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National Grid plc
National Grid House,
Warwick Technology Park,
Gallows Hill, Warwick.
CV34 6DA United Kingdom

Registered in England and Wales
No. 4031152
nationalgrid.com