

The Great Grid Upgrade

Eastern Green Link 5 (EGL 5)

Draft Design Principles Statement

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nationalgrid

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Executive Summary

- Ex1.0.1 This draft Design Principles Statement (dDPS) has been prepared to identify the objectives of the design process for the English Onshore Scheme of Eastern Green Link 5, with a focus on the converter station and the landscape mitigation proposed around it.
- Ex1.0.2 Section 1 of the document includes an introduction, description of the project, and identifies the policies and guidance that the dDPS would respond to. This includes:
- National Policy Statements (EN-1, EN-3 and EN-5) and National Planning Policy Framework where they relate to design;
 - Local policy such as the East Lindsey Local Plan 2018 and the Lincolnshire County Council Local Plan 2023; and
 - Other guidance relating to the structuring and scope of this dDPS, principally the National Infrastructure Commission (NIC) Design Group - Design Principles for National Infrastructure, the National Design Guide (NDG), and the National Model Design Code (NMDC).
- Ex1.0.3 Section 2 of this document sets out the Design Vision, Overarching Design Principles in Table 2.1, and Project Level Design Principles in Table 2.2. These follow the sub-section headings recommended by the NIC Design Group. This section also includes information about the Design Champion role.
- Ex1.0.4 Section 3 of the document sets out the Converter Station Design Principles in Table 3.1. The sub-sections follow the relevant characteristics taken from the NDG using NMDC guidance to help codify the areas of design that will need to be secured. An introduction to each characteristic is included, and this gives some background to the different components within the converter station. Table 3.1 contains a column of Key Design Principles which will be secured by a requirement with the draft Development Consent Order (DCO) Schedules. It also includes a column of potential associated activities that identify the information that could be provided to discharge the requirement post-DCO.

1. Introduction

1.1 Introduction

1.1.1 Eastern Green Link (EGL) 5 is a proposed new electrical connection being developed by National Grid Electricity Transmission plc (referred to in this document as NGET). For the purposes of seeking necessary consents EGL 5 has been split into different 'Schemes' of which the English Onshore Scheme and English Offshore Scheme are together referred to as 'the Project'. This document only applies to the English Onshore Scheme. This draft Design Principles Statement (dDPS) covers design principles and has been provided for consultation at this early stage to give the opportunity for comment on its structure and content. A final version of the DPS will be provided as part of the application for Development Consent. This will be refined through the pre-application process in response consultation feedback and to correspond to the design commitments that are developed in the Design Approach Document (DAD). The **Converter station - background to potential design approaches** is an early version of the DAD and contains early stage design development relevant to this document.

Purpose of this draft Design Principles Statement

1.1.2 The purpose of this document is to:

- Provide a guiding narrative through establishing a set of Overarching Design Principles (ODPs) and Project Level Design Principles (PLDPs) for the Project in line with National Infrastructure Commission (NIC) Design Group guidance defining principles that relate to climate, people, places and value;
- Provide Key Design Principles (KDPs) in Table 3.1 Proposed Converter Station Design Principles (CSDPs), for work covering the Project converter station in line with a requirement to be included in the draft DCO.
- Demonstrate the relationship with other documents, especially the DAD where illustrations are provided as to how the KDPs could be put into practice. The design evolution covered by the DAD will also inform the text of the KDPs.

Structure of the Document

1.1.3 This dDPS has the following structure:

- Section 1 - Introduction: includes high-level references to planning policy (with local policy and guidance relevant to the site), responses to national guidance from the NIC Design Group, NDG, NMDC, the Planning Inspectorate Nationally Significant Infrastructure Projects: Advice on Good Design, and addressing Critical Design Constraints (CDCs) for the Project.
- Section 2 – Design Vision and Project Level Design Principles (PLDPs): includes NGET's Strategic Priorities, the Design Vision and role of the design champion, how design development of the converter station has

been managed, Table 2.1 of Overarching Design Principles, and Table 2.2 of PLDPs in line with the NIC guidance.

- Section 3 – Converter Station Design Principles (CSDPs): includes guidance and Table 3.1 containing KDPs for the converter station.

1.1.4 The design principles hierarchy will be refined in consultation with the Local Planning Authorities (LPAs) in further engagement ahead of submission and is illustrated in Figure 1 below. The proposed structure has been developed to differentiate between constraints, where designs need to meet a regulatory or functional requirement, and principles where choices are defined. The CDCs in Table 1.1 are high-level and address the main groups of constraints rather than a list of regulations and standards that need to be adhered to as this will be provided in technical specifications. The ODPs in Table 2.1 are strategic to NGET and sit above the PLDPs in Table 2.2 which are subdivided into the four areas identified in the NIC guidance. Of the CSDPs in Table 3.1 only the KDPs will be secured by a requirement and the rest of the document is provided for guidance only.

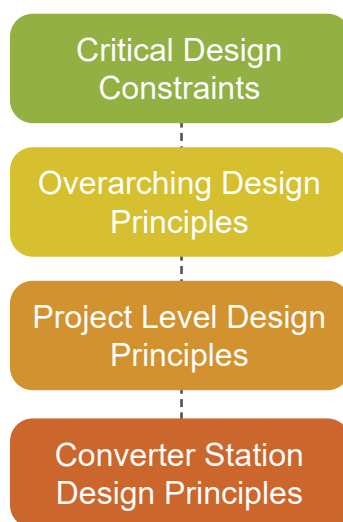


Fig 1 Hierarchy of Critical Design Constraints and Design Principles

1.1.5 Defined terms and acronyms are provided within the **PEIR Glossary**. Any reference made in this document to the 'site' should be interpreted as meaning the location of the converter station and the surrounding landscape mitigation proposals.

1.2 The Project

1.2.1 EGL 5 is a proposed 2 Gigawatt (GW) high voltage link being developed to reinforce the electricity transmission system between Scotland and England. Separate consents are required and will be sought for the Scottish elements of EGL 5 by Scottish and Southern Electricity Networks Transmission (SSEN-T). The Project spans both marine (offshore) and terrestrial (onshore) environments and have therefore been split into two geographical parts, referred to as the 'English Onshore Scheme' and the 'English Offshore Scheme', collectively termed 'the Project'.

1.2.2 The English Onshore Scheme would be located within Lincolnshire. Elements of the English Onshore Scheme would be located along the Lincolnshire coast in

East Lindsey, at Anderby Creek. From the coastline, the Project would continue for approximately 8 km (new underground HVDC cable) and connect into the EGL 5 converter station in the vicinity of the proposed 400 kV Lincolnshire Connection Substation-B (LCS-B) in East Lindsey (the LCS-B substation is considered as part of the NGET Grimsby to Walpole (GtW) Project). In addition, approximately 1 km of new underground HVAC cable will be required between the EGL 5 converter station and the connection point at the proposed 400kV LCS-B.

- 1.2.3 The Project has been designed to increase the capability of the electricity transmission network to carry low carbon and renewable energy from where it is generated to where it is used in homes across the country.

English Onshore Scheme: Permanent infrastructure

- 1.2.4 The EGL 5 English Onshore Scheme would comprise the construction of:
- A new converter station, in the vicinity of the proposed 400 kV LCS-B, in East Lindsey;
 - A Transition Joint Bay (TJB) connecting the offshore and onshore HVDC underground cables at the Anderby Creek Landfall;
 - Up to 8 km of new underground HVDC cable, from the Landfall point at Anderby Creek to the EGL 5 converter station in the vicinity of the proposed 400 kV LCS-B in East Lindsey;
 - Up to 1 km of new underground HVAC cable, between the EGL 5 converter station and the connection point at the proposed 400 kV LCS-B (the LCS-B substation is considered as part of the NGET GtW Project);
 - Temporary construction traffic access from the public highway and for land access and permanent public highway modifications and upgrades to accommodate construction deliveries; and
 - Temporary and permanent drainage and drainage mitigation, and utilities modifications and diversions.

- 1.2.5 NGET will also need to commission local changes to lower voltage distribution networks and provide appropriate utility connections to the converter station to facilitate the construction of the English Onshore components.

- 1.2.6 Further detail on the Project can be found in the **Non-Technical Summary** of the PEIR.

1.3 Responding to Planning Policy

- 1.3.1 National and local planning policy will guide the design process including the Design Principles set out in this document. This section provides an overview of the most relevant policy documents to the design matters covered by this document. Wider compliance with planning policy will be covered elsewhere in the DCO submission documents.

National Planning Policy Framework

Paragraph 5 of the NPPF sets out that it does not contain specific policies for NSIPs and states that: *“These are determined in accordance with the decision-making framework in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as well as any other matters that are relevant (which may include the National Planning Policy Framework)”*.

National Policy Statements

1.3.2 The Design Principles have been developed to address the requirements of planning policy and design guidance. The policy requirements relating to achieving good design are set out in the National Policy Statements (NPS) relevant to the Project are summarised below.

Overarching NPS for Energy (EN-1)

1.3.3 Section 4.7 covers the Criteria for good design in Energy Infrastructure. It starts by stating the requirement for a balanced approach. *‘The visual appearance of a building, structure, or piece of infrastructure, and how it relates to the landscape it sits within, is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes beyond aesthetic considerations. The functionality of an object – be it a building or other type of infrastructure – including fitness for purpose and sustainability, is equally important.’*¹

NPS for Renewable Energy Infrastructure (EN-3)

1.3.4 Overall, this technology specific NPS covers renewable electricity generation, however it relates to the Project in the following way: *‘...it will apply to offshore transmission infrastructure projects in English waters which are directed into the NSIP regime under section 35 of the Planning Act 2008.’*² This NPS refers to the criteria for achieving good design set out in section 4.7 of NPS EN-1 and also states that *‘proposals for renewable energy infrastructure should demonstrate good design, particularly in respect of landscape and visual amenity, opportunities for co-existence/co-location with other marine and terrestrial uses, and in the design of the project to mitigate impacts such as noise and effects on ecology and heritage’*.³

NPS for Electricity Network Infrastructure (EN-5)

1.3.5 This technology specific NPS refers to converter stations⁴ in the list of infrastructure it covers and therefore is relevant to these design principles. It covers factors influencing site selection and design, for example *‘applicants must take into account Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution license holders, in formulating proposals for new electricity infrastructure to ‘have regard for 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 ...do what [they] reasonably*

1 NPS EN-1 4.7.1
2 NPS EN-3 1.6.3
3 NPS EN-3 2.5.2
4 NPS EN-5 1.6.1

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.”⁵

- 1.3.6 The January 2026 update to NPS EN-5⁶ anticipates Electricity Transmission Design Principles (ETDPs) which the National Energy System Operator (NESO) have consulted upon and is currently scheduled to publish in summer 2026. This is being monitored and how these design principles should be aligned with that document will be addressed once it comes into force.

Responding to Local Planning Policies

- 1.3.7 East Lindsey Local Plan was adopted in July 2018⁷. The main parts relating to design are Chapter 4 - Raising the Quality of Our Built Environment and Strategic Policy 10 (SP10) Design. The focus on the distinctive local character of each settlement and the need to respond to the challenges of climate change through sustainable development has been taken into consideration when developing these design principles. These design principles serve an equivalent function to the Place-making Checklist advocated in the Local Plan.

1.4 Responding to Other Guidance

NIC Design Group - Design Principles for National Infrastructure

- 1.4.1 *‘The National Infrastructure Commission Design Group was established in 2019 to inspire renewed ambition for the quality of the UK’s infrastructure. Its mission is to inspire, promote and champion design excellence on all major infrastructure projects, helping to deliver infrastructure which has social value and responds creatively to the needs of people, places and the environment.’⁸*
- 1.4.2 The updated guidance released in January 2026 establishes design principles as part of a vision for improving infrastructure design. As the Project has developed the structure of the PLDPs has been aligned with this guidance. The four categories of PLDPs in the handbook have been used as headings within Table 2.2:



- *‘Climate – seek opportunities to enable the decarbonisation of society through the mitigation of emissions, and allow the project to adapt over time to build resilience.’;*



- *‘People – design infrastructure for people, not architects or engineers; make it human scale, easy to navigate and instinctive to use, helping to improve quality of life.’;*



- *‘Places – provide a strong sense of identity and improve the natural and built environment; make a positive contribution to landscapes within and beyond the project boundary.’; and*



- *‘Value – achieve multiple benefits and solve problems well; add value by defining issues clearly from the outset and providing overall direction for everyone working on the project.’⁹*

5 NPS EN-5 2.2.10

6 NPS EN-5 2.9.20

7 East Lindsey District Council (2018). East Lindsey Local Plan Core Strategy (Adopted July 2018) [online]. Available at <https://www.e-lindsey.gov.uk/localplan2018> [Accessed 2 January 2026].

8 NPS EN-5 2.2.10

9 Project Level Design Principles – Guidance from the National Infrastructure Commission, Design Group, page 21

The National Design Guide and National Model Design Code

1.4.3 The NDG and NMDC use an established structure for defining good design principles or design codes under ten characteristics. Not all of these are applicable to this type of infrastructure project, namely 'Homes and Buildings', 'Movement' and 'Uses', which are targeted at other types of development. The following six characteristics have been used as headings in Table 3.1 of CSDPs, with Lifespan being covered in the Value section of the PLDPs:

- **'Context** – enhances the surroundings;
- **Identity** – attractive and distinctive;
- **Built Form** – a coherent pattern of development;
- **Nature** – enhanced and optimised;
- **Public Spaces** – safe, social and inclusive; and
- **Resources** – efficient and resilient'¹⁰.

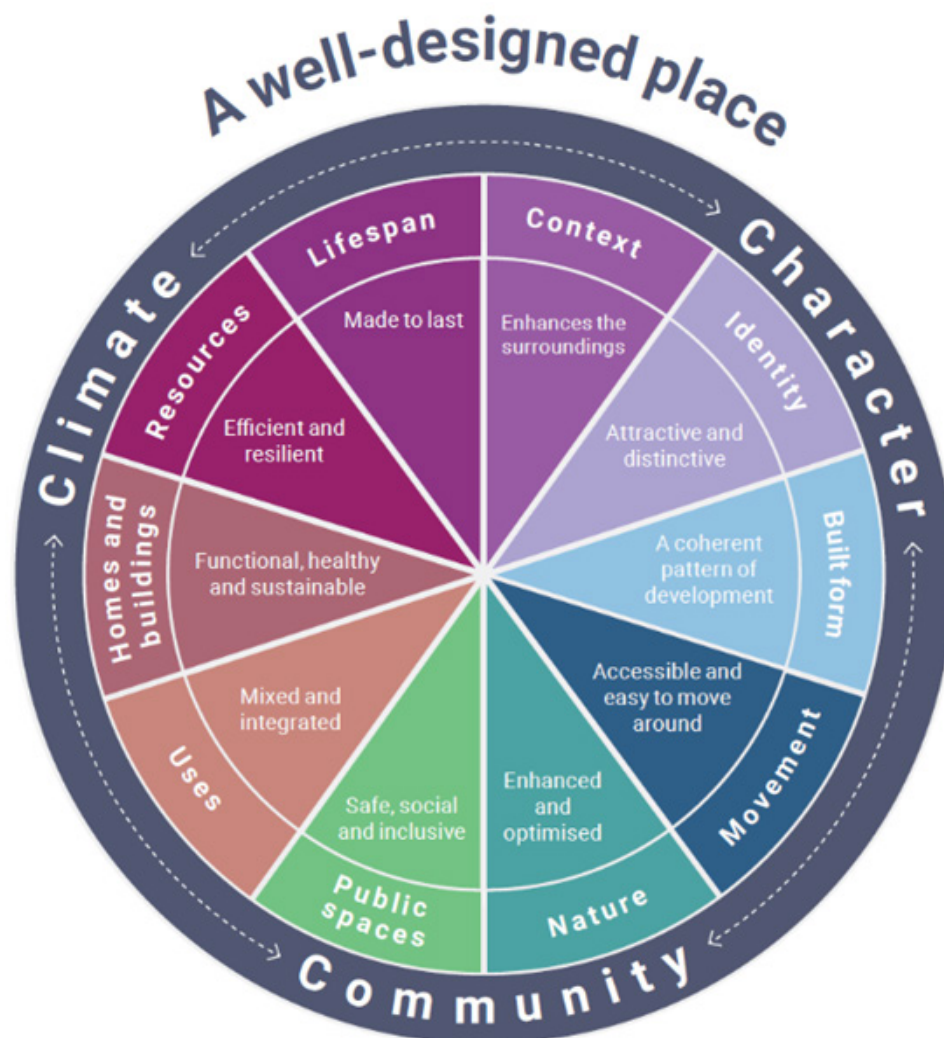


Fig 2 The ten characteristics of well-designed places, National Design Guide

¹⁰ National Design Guide, page 8

Planning Inspectorate – Nationally Significant Infrastructure Projects: Advice on Good Design.

- 1.4.4 On 16 April 2025 the Planning Inspectorate published an update of advice for good design on the UK Government website. This concluded that, *"Good design is essential for achieving sustainable, well-designed, and inclusive infrastructure projects, and applicants should follow the recommendations and considerations outlined in the advice."*¹¹
- 1.4.5 The structure and scope of our design related documents have been aligned with this advice and will include a Design Approach Document. This will include analysis of the Bilsby area in relation to the siting of the converter station and co-ordination with the LCS-B substation proposals, which will inform these design principles. The DAD will include illustrations of design approaches developed from feedback on the **Converter station - background to potential design approaches** document to inform how the design principles could be interpreted when the detailed designs are developed post-consent.

Responding to Local Design Guidance

- 1.4.6 The East Lindsey Design Guidance - Guidance on the Place Making Check List¹² identifies the areas of good design principles that would contribute towards a distinctive sense of place. This checklist overlaps with the design characteristics that will be defined in these design principles and will be taken into consideration when developing them.

1.5 Addressing Critical Design Constraints

- 1.5.1 The Critical Design Constraints (CDCs) have been identified as obligations the Project is required to meet, whether they are regulatory or commitments established in other parts of the DCO submission. Therefore, these have been separated from the design principles.
- 1.5.2 The CDCs are not an exhaustive list of criteria but are intended to help identify the scope of the design principles. The relationship between the constraints and design principles is clarified in the Overarching Design Principles (ODPs).
- 1.5.3 The CDCs have been placed at the top of the hierarchy in recognition that,

*'electricity networks infrastructure must in the first instance be safe and secure, and that the functional design constraints of safety and security may limit an applicant's ability to influence the aesthetic appearance of that infrastructure.'*¹³

However as stated in the overarching NPS EN-1, designs should 'demonstrate good aesthetics as far as possible.'¹⁴ Therefore the ODPs in Table 2.1 have been written to establish the balance required, and how design principles can be used to achieve good design by addressing the constraints in a considered way.

11 <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-good-design#annex-a--good-design-issues-to-consider>

12 https://www.e-lindsey.gov.uk/media/5778/CD36-East-Lindsey-Design-Guidance/pdf/CD36_East_Lindsey_Design_Guidance.pdf?m=1505387710013

13 NPS EN-5 2.4.3

14 NPS EN-1 4.7.2

Table 1.1: Critical Design Constraints

ID	Constraint	Activity
C.1	OFGEM regulatory framework	The design principles will be interpreted in line with NGET's regulatory obligations and statutory duties under the Electricity Act 1989, to comply with the provisions of Schedule 9, as stated in the document introduction. It is important to note that there is an overlap between NGET's licence and statutory requirements such as Standard Condition B7 in the Licence requirements which states that transmission licence holders ' <i>to develop and maintain an efficient, co-ordinated and economical system of electricity transmission</i> ' which is also pursuant to Section 9(2)(a) of the Electricity Act 1989.
C.2	Delivery programme	The design principles will be interpreted in such a way that good design is achieved without adding risk to the programme and the licensed target delivery date by which the Project is due to be delivered.
C.3	Functional requirements	The designs will not impede the function of the equipment and the overall performance of the Project. Also, the design will be of appropriate quality to facilitate transformation of the nation's energy network, be durable and provide the required level of reliability and availability.
C.4	Operational and maintenance requirements	The designs will not impede the safe and practical construction, operation, maintenance, replacement and decommissioning of the Project, in compliance with the Construction (Design and Management (CDM) Regulations 2015 and Health and Safety at Work Act 1974, nor will they complicate maintenance, particularly working from height, where this cannot be justified by the balance of benefits.
C.5	Resilience	The minimum distance between the Project converter station and the LCS-B substation will be determined by an asset risk assessment to ensure resilience of the overall electricity transmission system.
C.6	Environmental	The designs will inform and be developed in accordance with the Environmental Statement (ES) chapters and management plans in the draft DCO. Also, they will consider the feedback received from Statutory and Non-statutory consultations.
C.7	Security	The design and specification of fences, gates, Closed Circuit Television (CCTV), lighting, clearances, and related items will meet NGET technical and security requirements as determined necessary for the facility and location.
C.8	Construction and temporary works	The design principles are focused on the permanent works but need to be interpreted in accordance with management plans relating to the design and construction of all temporary works.

ID	Constraint	Activity
C.9	Water Framework Directive	The Project will be developed in consultation with the Environment Agency (EA) where they relate to The Water Environment (Water Framework Directive) Regulations 2017.
C.10	Cultural heritage	The Project will be developed with reference to the relevant ES chapters, with reference to heritage and archaeological constraints, in addition to feedback received from Statutory and Non-statutory consultations.
C.11	Biodiversity	Ecological constraints are identified within the ES and will inform the design process and mitigation measures required for the project.

2. Design Vision and Project Level Design Principles

2.1 NGET Strategic Priorities

- 2.1.1 Our vision is to be at the heart of a clean, fair and affordable energy future. Our strategic priorities set out what we need to do to deliver that vision. Given the scale of changes in the external environment and the massive investment needed to deliver the energy transition, we have updated our strategic priorities. They now better reflect the change we need to drive right through our business. They are also more aligned with the performance outcomes we want – customer satisfaction, cost efficiency, network capacity and reliability, and workforce diversity and capability.¹⁵ *“The world and industry around us is transforming so we need to transform ourselves at the same time.”*¹⁶
- 2.1.2 Through our updated strategic framework, we are better positioned than ever to achieve the transformational change needed to deliver the clean energy transition.¹⁷



Fig 3 NGET Strategic Framework

15 Delivering our vision through our updated strategic priorities - National Grid, March 2024

16 John Pettigrew, CEO of National Grid

17 Delivering our vision through updated strategic priorities - National Grid, March 2024

2.2 The Design Vision

- 2.2.1 The Design Vision has been developed in response to NGET's Strategic Priorities and the Planning Inspectorate's (PINS) Guidance on Good Design, which states that a good design process includes a *'succinct and ambitious vision for the project, underpinned by a clear analysis of the context for the place, its environment and the opportunities for creating social value, including the local and wider economy'*.¹⁸
- 2.2.2 The National Infrastructure Commission (NIC) Project Level Design Principles Handbook contains notes relating to how beyond the four principles (climate, people, place and value) it was identified that everyone involved in projects should; *'Appreciate the wider context; engage meaningfully; and continually measure and improve'*¹⁹.

Our Design Vision



Design will be responsive and respectful to the character of the local setting in terms of landscape, ecology, heritage and community, and strive to minimise impacts and seek opportunities to positively enhance the area by listening to and working with stakeholders via a comprehensive engagement process. This places people and local communities at the heart of the design process.

Design will be of a high quality, taking an integrated multi-disciplinary approach balancing the need for durability with the benefits of creativity and innovation. The ambition is for the design to be sustainable with embedded environmental mitigation measures and should match the Great Grid Upgrade ambition of transforming the nation's energy network, showing leadership through example. The pre-application stage will be used to identify appropriate Design Principles and to present draft illustrative designs to an independent Design Review Panel.



Design will meet appropriate functional, reliability, safety, and maintenance requirements and provide good value for consumers over the lifetime of the Project. This will be evidenced through documented compliance with relevant standards, independent safety audits, life-cycle cost assessments, and clear demonstration of operational efficiency, including retaining key parts of the planning and design teams to confirm designs provided by the contractor teams are compliant.

18 Planning Inspectorate. (2024) Nationally Significant Infrastructure Projects: Advice on Good Design. Updated 16 April 2025. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-good-design> [Accessed September 2025].

19 National Infrastructure Commission. (2021) Project-Level Design Principles Handbook. London: NIC, p. 22.

2.2.3 The design principles have been developed as a reflection of the Design Vision and to provide a clear design narrative and ambition for the Project. The Overarching Design Principles and Strategic Design Principles operate at a more strategic level, providing an outline framework to guide and then capturing early-stage decision making across all disciplines. The Converter Station Design Principles (CSDPs) are a more detailed response to the ODPs, developed alongside site analysis and design development. These have been written to set clear success criteria, to ensure detailed designs are developed, constructed and operated in line with the Design Vision.

Design Champion

2.2.4 In line with the recommendations of NPS EN-1²⁰ and guidance from the NIC Design Group on developing the strategic design principles, a design champion has been assigned to the Project to provide oversight of the ongoing design process and delivery.

2.2.5 The role of the design champion for the Project has been defined in line with the recommendations of the Defining and Developing the Design Champion (DC) Role: Research Report issued by the Institute of Civil Engineers (ICE). *‘The role of a design champion is to champion the value of design on their project. This means that they understand and care deeply about good design, promoting a holistic approach and driving the value that a project will bring. This should be both in terms of meeting the design objectives of a specific infrastructure project and in terms of the wider, longer-term outcomes. Their role is therefore accountable, with clear benefits to the public.’*²¹

2.2.6 In summary the key responsibilities of the design champion are:

- reviewing and developing the brief;
- developing a project-specific design vision;
- developing design governance;
- oversight of design in project delivery;
- defining the structure of the executive design team;
- challenging decisions for better outcomes; and
- measuring and evidenced design value.

2.2.7 As recommended, the design champion is an advisory role, independent of the design team, as part of a tripartite governance structure:

- design champion;
- design executive, the design team which have an internal co-ordination champion; and
- Independent design review panel.

2.2.8 The role of the design champion extends beyond the DCO stage to define and lead the governance structures through to construction to ensure design principles are not diluted and to ensure compliance. The Design Champion will ensure that compliance with the NIC's design principles which focus on delivering value, respecting people and places, and addressing climate challenges are upheld.

20 17 NPS EN-1 4.7.5

21 18 <https://www.ice.org.uk/areas-of-interest/infrastructure-delivery/defining-and-developing-design-champion-role-report>

- 2.2.9 The design champion will track performance and facilitate knowledge exchange of the Project design against NGET policy commitments, and help facilitate the exchange of knowledge and best practices from other NGET projects to drive continuous improvement in design standards.

2.3 Overarching Design Principles

- 2.3.1 The ODPs in Table 2.1 are intended to operate at a strategic level and define the relationship between the CDCs and the Design Vision. The ODPs and PLDPs apply to the overall Onshore Scheme and will inform the management plans that will secure the detail. They also inform the CSDPs in Section 3 which will be used to secure the architectural details of the converter station.
- 2.3.2 NGET has published a new Social & Environmental Action Plan (2026-2031)²² which sets out clear commitments in a combined plan, *"recognising that long-term business success depends on delivering positive outcomes for both people and the planet"*. As the design principles are developed they will be aligned with this plan. It has four strategic pillars:
- Climate Action
 - Nature Positive
 - One Planet Living
 - Social Value

Siting

- 2.3.3 The principles of siting and cable routes, and how these have been developed is covered in the **Design Development Report** as part of the stage 2 consultation materials. This process has determined the selected site, the Limits of Deviation including Rochdale Envelope defining vertical limits, and Indicative Drawings for the converter station, that these design principles have been developed to address.
- 2.3.4 The siting and routing decisions are also guided by the following rules:
- *'The Holford Rules – guidelines for the routing of new overhead lines – were originally set out in 1959. These guidelines, intended as a common-sense approach to overhead line route design, were reviewed and updated by the industry in the 1990s, and they should be embodied in the applicants' proposals for new overhead lines'*²¹ Whilst intended for overhead lines these rules can also be applied where applicable to buried High Voltage cables; and
 - *'The Horlock Rules – guidelines for the design and siting of substations – were established by National Grid in 2009 in pursuance of its duties under Schedule 9 to the Electricity Act 1989.'*²² Whilst intended for substations these rules can also be applied where applicable to converter stations, particularly the external equipment.

²² <https://www.nationalgrid.com/document/564326/download>

Table 2.1 Overarching Design Principles

ID	Design Principle	Activity
OA. 1	Design Vision	Design throughout the life of the Project will be guided by the Design Vision to ensure a cohesive and optimal outcome that meets the ambitions set out at the early stages.
OA. 2	Critical Design Constraints	The design shall address the constraints identified in Table 1.1 whilst maintaining principles of good design to mitigate the impact of those constraints on design outcomes.
OA. 3	Planning Policy Compliance	The design will seek to comply with relevant national and local policy where possible and appropriate given the nature of the development.
OA. 4	Mitigation Hierarchy	The mitigation hierarchy will be applied as an overarching principal in strategic decision making on the detailed design of the Project to address significant adverse effects, where the first option is to avoid, the second is to minimise, the third to reduce, and the last option to offset.
OA. 5	Integrated Design	The design will be coordinated through collaboration of all appropriate disciplines within the NGET team to achieve synergy and efficiency of design solutions that reduces the overall impact on cost, project programme, the environment or carbon intensity and adds value to the Project, place, and local community.
OA. 6	Coordination	Opportunities for coordination, (and where appropriate collaboration) with other projects will be sought and consideration given to whether the detailed design can incorporate measures that facilitate future projects whilst avoiding detriment to the Project.
OA. 7	Design Champion	The design champion will establish a structure for NGET to monitor compliance with the design principles throughout the delivery of the Project to completion.
OA.8	Social and Environmental	The NGET Social & Environmental Action Plan (2026-2031) will be followed to ensure the Project is delivered and operated in an environmentally and socially responsible manner.

2.4 Project Level Design Principles

2.4.1 The PLDPs in Table 2.2 are provided to give guidance and narrative for the design and do not relate directly to any discharge requirements. They are used to inform the CSDPs in Table 3.1 which contains KDPs related to the defines Works. Table 2.2 has been developed in line with the guidance from the NIC and has been organised under the four headings of Climate, People, Places and Value. The diagram below shows how the PLDPs fit into the hierarchy of constraints and design principles.

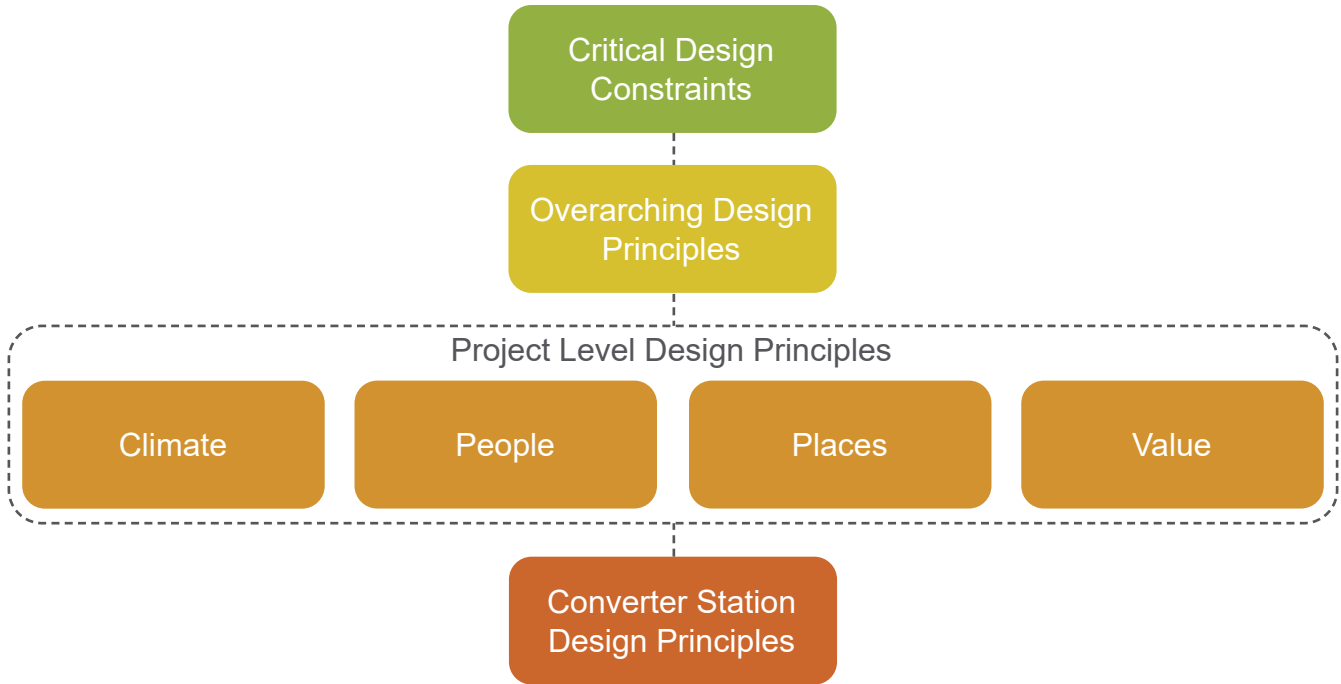


Fig 4 Structure of Project Level Design Principles.

Table 2.2 Project Level Design Principles

ID	Heading	Design Principle
Climate		
CL.1	Approach to Net Zero / Net Zero Infrastructure	<p>The Project is an essential part of The Great Grid Upgrade²³ works to help transform the nation's energy and assist the UK to reach net zero faster. In line with NGET's Environmental Plan, the design will also aim to reduce carbon emissions in construction, operation, maintenance, replacement and decommissioning where appropriate and where it does not conflict with the CDCs in Table 1.1.</p> <p>NGET is committed in delivering world class carbon efficient infrastructure by working programmatically and throughout the lifecycle of projects to minimise carbon emissions. NGET will pave the way for sustainable design and set a new standard for future infrastructure.</p>

²³ <https://www.nationalgrid.com/the-great-grid-upgrade>

ID	Heading	Design Principle
CL.2	Strategy for Biodiversity Net Gain (BNG) / Nature Positive	<p>BNG for Nationally Significant Infrastructure Projects (NSIP) will become mandatory for applications from 2 November 2026. NGET has already made this commitment on projects in advance of the requirement becoming mandatory.</p> <p>NGET will explore how BNG can be delivered through a combination of on-site measures, off-site measures and credits, to be determined when the detailed design is complete and the final effects and potential for delivering BNG on site is clear.</p> <p>NGET is committed to lead the transition to nature positive infrastructure by delivering meaningful benefits for nature and the environmental boundaries of each project.</p>
CL.3	Ecology and habitat connectivity	<p>Areas of high ecological value will be avoided where feasible to retain established habitats. Where this is not reasonably practicable the design will aim to minimise the impact by restoring and enhancing habitat features. The resilience of habitat networks will be enhanced through the landscape mitigation design to prevent the isolation of species populations.</p>
CL.4	Protection and reinstatement of soils	<p>Where possible and where it does not conflict with other design principles, siting and routing will minimise the loss of the best and most versatile agricultural land, applying best practice to the handling, storage and reinstatement of topsoil and subsoil. Where agricultural land is to be reinstated, care will be taken to maintain the integrity of the existing land drainage systems.</p>
CL.5	Sustainable Drainage System (SuDS) design	<p>The surface water drainage system design will be developed following the mitigation hierarchy with SuDS integrated with the landscape proposals, whilst providing the run-off attenuation required to not increase the flood risk of neighbouring and downstream properties. Opportunities to provide SuDS within the permanent compounds will be explored in the detailed design, subject to demonstrating compliance with the CDCs in Table 1.1.</p>

ID	Heading	Design Principle
CL.6	Climate change, extreme weather, and flood resilience / Climate Resilient Infrastructure	<p>The detailed design for the buildings, equipment and landscaped areas, including selection of drought resistant tree species, will demonstrate how the proposals address the extremes of rain intensity, drought, hot, cold and wind that may be encountered over the design life of the facility due to climate change. The development platform levels, and flood protection measures within the landscape will be designed to allow the site to remain operational during a 1 in 1000-year surface water flooding event whilst ensuring no vulnerable receptors are in the immediate path of flow exceedance routes.</p> <p>NGET is committed to deliver resilient projects through identification of climate risks and adapting to climate change and other future challenges</p>
CL.7	Energy efficiency in use	<p>A fabric first design approach utilising airtightness, insulation, management of solar gains through thermal mass and shading will be used for the buildings, such that the specification of the envelope reduces the energy demands of the facility in operation. Systems and products will be selected for low energy use to reduce the Project's electricity demand where possible. Natural ventilation will be considered where it can be demonstrated to be consistent with the function of the spaces.</p>
People		
PE.1	Stakeholder engagement	<p>Regular thematic meetings with the LPAs will be held throughout the pre-application period. An independent Design Review (DRP) will be undertaken at a suitably early stage of design development during the pre-application period. Development drafts of this DPS document, and the DAD will be issued to the LPAs for review at appropriate developmental stages in the pre-application period such that they have been thoroughly consulted upon by the time of submission.</p>

ID	Heading	Design Principle
PE.2	Responding to design feedback	Public and LPA feedback on the stage 1 consultation for the EGL 3 & 4 Project, which included six design approach option sketches for a switching station at Bilsby, was considered in developing a short-list of four, more developed design approach concepts for this stage 2 consultation on EGL 5. The feedback from this consultation will be used to further reduce the number of active options to be taken to independent DRP. This will be used as a forum for reducing down to a single preferred design approach for the application for Development Consent. The preferred converter station option will be aligned with the secured KDPs in the CSDPs. This is for the purposes of providing clarity of design intent within the flexibility of the parameters. A more detailed explanation of this process will be provided in a DAD.
PE.3	Local amenity	The proposals will seek to avoid the loss of local community amenity and, where appropriate to the setting, use the landscape mitigation proposals to increase the green infrastructure opportunities, improving recreational links.
PE.4	Construction impacts	The design will take a balanced approach to design enhancement and impacts during construction. The design would be developed to avoid resulting in new or different significant adverse environmental effects compared to that assessed in the PEIR.
PE.5	Noise and vibration impacts	In developing the detailed design, potential noise and vibration sources will be located as far from sensitive receptors as is feasible given consideration of other principles and CDCs, and noise levels at sensitive receptors minimised through measures to be set out in a Register of Environmental Actions and Commitments (REAC) . Where assessments demonstrate the need, acoustic attenuation should be incorporated following the As Low As Reasonably Possible (ALARP) principle. The design of any acoustic enclosures will be considered by the same criteria as other structures to reduce visual impact.
PE.6	Local education and training opportunities	NGET will actively engage with local education providers regarding opportunities for training and skills in relation to the energy sector, awareness of net zero and the Project.

ID	Heading	Design Principle
Places		
PL.1	Minimising and rationalising land take	The design will minimise land take, make efficient use of land in consideration of potential seasonal disruption, and avoid where reasonably practical dividing land to be returned into farming use into inaccessible and unsuitable parcels. However, this principle should be considered in the context of awareness of the need to consider and facilitate the delivery of future projects to the extent that they are known about and likely to proceed.
PL.2	Landscape character	Where feasible designated landscapes will be avoided through siting and routeing decisions. The landscape proposals will respond to the surrounding landscape context, land pattern and green infrastructure. Measures will include, where appropriate, the provision of native species screen planting to above ground infrastructure, hedgerow creation and strengthening of hedgerows and boundary vegetation, the extension and enhancement of water courses to supplement the existing drainage network.
PL.3	Visual amenity	The arrangement and design of the buildings and equipment will be sympathetic to their surroundings and integrated into the landscape setting of the site insofar as is reasonably practicable given the nature of the development. Buildings will be clad in appropriate materials and colours designed to appear recessive within the landscape to mitigate the impact on landscape character and visual amenity of recreational users and surrounding residential receptors.
PL.4	Archaeology	The Project will seek through siting, routeing and design, informed by geophysical surveys, to avoid archaeological features where possible, minimising impacts and, where ground disturbance cannot be avoided applying suitable evaluation and mitigation.
PL.5	Built heritage assets	Informed by a Cultural Heritage Assessment and through consultation with conservation officers, the Project will avoid cultural heritage assets where practicable through the siting and routeing strategy, minimising impacts by locating as far from sensitive receptors as feasible, mitigating the scale and impact of development through landscape screening of external equipment, and design quality (embedded mitigation) of buildings visible over the screening.

ID	Heading	Design Principle
PL.6	Maintenance, servicing, emergency access and parking	The converter station compound will contain circulation around each building/yard to provide clear access for servicing, maintenance and fire appliance access. Car parking for regular operations, visiting personnel, and laydown space will be provided within the secure fence line and be accessible without travelling through areas containing outdoor high-voltage electrical equipment.
Value		
V.1	Integrated multifunctional landscape design	The landscape strategy will consider the functional requirements of all design and environmental disciplines, to deliver a combination of benefits such as visual screening, amenity, acoustic attenuation, drainage, and ecological value with a wide range of habitats.
V.2	Design life	The proposals will provide for a minimum design life of 40-years with fit for purpose and tested products, materials, and assemblies that require minimal maintenance or replacement over that period.
V.3	Sustainable construction and the circular economy / One Planet Living	<p>NGET will work with the supply chain to develop detailed designs which follow sustainable construction principles, including appraising options to reduce embodied carbon, make efficient use of responsibly sourced materials with high recycled content, and specify systems with the ability to recycle at the end of life with a preference for the capability to disassemble and re-use, diverting construction waste from landfill.</p> <p>NGET are committed to embed circular economy principles across the programme to utilise resources efficiently and minimise what is used.</p>
V.4	Advanced landforming and planting	Landscape mitigation earthworks around the converter station would be implemented at the earliest opportunity, to facilitate screening and to allow for advance mitigation planting to be implemented wherever practicable.
V.5	Land maintenance and management	Land maintenance and management will be governed by an Outline Landscape and Ecological Management Plan to be produced for the application for Development Consent, the purpose of which will be to establish good practice in maintaining the land for optimum operational life, safe use and access, condition and appearance in line with the CDCs. It will include monitoring and maintenance of new planting and seeding to ensure successful establishment.

ID	Heading	Design Principle
V.6	Learning lessons from case studies that can be applied to the Project / Industry Legacy	<p>NGET will consider other converter stations from the UK and across Europe, relevant projects in the local area, and other relevant projects to provide inspiration for the design and consider what may be achievable in compliance with the CDCs in Table 1.1 and other considerations. This research will be included in the DAD.</p> <p>NGET is committed to adopt sector leading approaches to leave an environmental legacy for future infrastructure.</p>

3. Converter Station Design Principles

3.1 Introduction

3.1.1 Section 3 of this document is divided into two parts, each of which are divided into the seven sub-sections identified in Figure 11 below. Six of these sub-sections relate to the relevant characteristics taken from the NDG with a further 'General' sub-section added to define how the KDPs would function.

1. Guidance narrative notes have been provided giving background information regarding what is covered by the CSDPs.
2. The CSDPs are set out in Table 3.1 and contain the draft KDPs that are to be developed for the converter station and define how design quality will be secured in relation to the context and other commitments secured elsewhere via management plans.

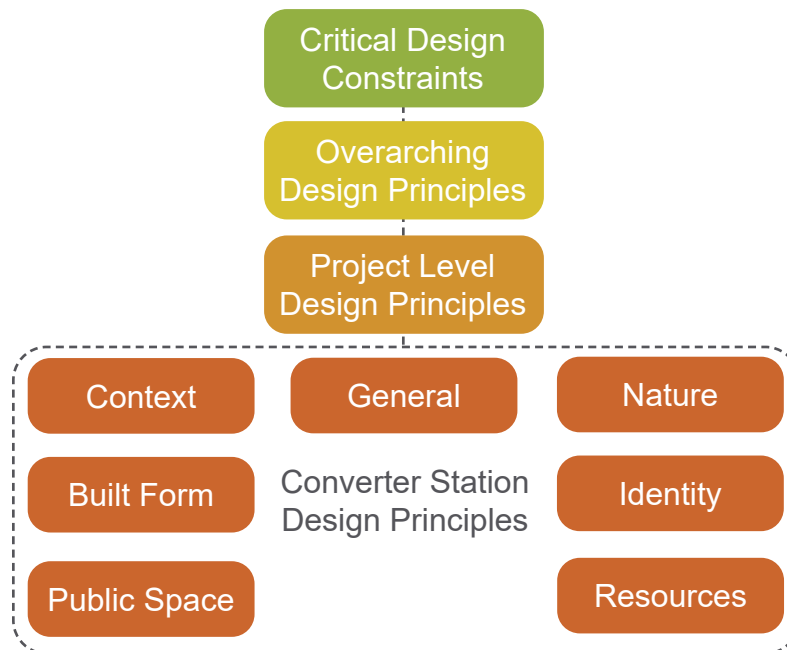


Fig 5 Structure of Converter Station Design Principles

3.1.2 Table 3.1 has been laid out in four columns to make the design principles easy to use and set out a clear route to the discharge of the requirement post-DCO:

- (Column 1) ID – for quick reference;
- (Column 2) Heading – for quick reference;
- (Column 3) KDPs – setting out the objective to be complied with (or to be adhered to) as specified in a requirement in the draft DCO; and
- (Column 4) Potential Associated Activities – setting out guidance to clarify the information relating to each KDP that could be included in Requirement Discharge Documents (RDDs) submissions post-DCO.

3.2 Guidance Narrative to the Converter Station Design Principles

General

- 3.2.1 These Design Principles will contain commitments to follow a process and as such the KDPs in the following sections all need to follow what is defined in this general section. These General KDPs will be reviewed and updated in line with a process that is agreed between the Applicant and host LPA and the resultant requirement text.
- 3.2.2 General KDPs have been included that codify:
- The relationship between the following KDPs and the CDCs. This is to avoid the need to restate the constraints within each KDP.
 - A commitment to consultation on design, the scope of which to be agreed.
 - A definition of what information would be submitted for discharge of the requirement, the scope of which to be agreed.

Context

- 3.2.3 'The NDG states that an understanding of the context, history and character of an area must influence the siting and design of new development. This context includes the immediate surroundings of the site, the neighbourhood in which it sits and the wider setting'²⁴.
- 3.2.4 The converter station would be colocated with the GtW Lincolnshire Connection Substation B. How the projects relate to each other will be described within the relevant co-ordination section of the DAD. Co-ordination requirements have been added to the relevant design principles described within Table 3.1.
- 3.2.5 The response to the landscape setting, making use of existing tree belts for screening, reinforcing existing landscape features and habitats will be described within the Outline Landscape and Ecological Management Plan. To avoid duplication of the design principles in that document, Table 3.1 focuses on how the building designs would relate to the landscape proposals for an integrated design approach.
- 3.2.6 The response to the cultural heritage setting shall be related to the consultation responses and approach described in the chapter for Cultural Heritage in the PEIR and analysis in the **Converter station - background to potential design approaches** document which describes how this has informed the potential design approach options.

Nature

- 3.2.7 The NDG states that 'well-design places:
- *Integrate existing, and incorporate new natural features into a multi-functional network that supports quality of place, biodiversity and water management, and addresses climate change mitigation and resilience;*
 - *Prioritise nature so that diverse ecosystems can flourish to ensure a healthy natural environment that supports and enhances biodiversity;*

²⁴ NPS EN-1 4.7.5

- *Provide attractive open spaces in locations that are easy to access, with activities for all to enjoy, such as play, food production, recreation and sport, so as to encourage physical activity and promote health, well-being and social inclusion*²⁵.

3.2.8 The Outline Landscape and Ecological Management Plan (oLEMP) would cover the detailed design principles that relate to landscape and ecology. Therefore, KDPs that could be duplicated or conflict with that document have been excluded from Table 3.1 which, instead focuses on how the converter station design would relate to the landscape setting and proposals. This includes consideration of different layers of the converter station explored in **Converter station - background to potential design approaches** document such as:

- The lower section of the buildings, external equipment and fencing being predominantly within range of fairly opaque screening that would be provided by earth works and planting.
- The middle section of the buildings and taller equipment being of a height where it would only be partially screened by existing trees and tree planting as it matures and as such would be seen as a layer within the landscape.
- The upper part of the taller buildings providing a profile that would be above the reach of screen planting and seen in the landscape as a silhouette from long distance views.

Built Form

3.2.9 As defined in the **PEIR, Volume 1, Part 1, Chapter 4 - Description of the Project**, at this stage of the consenting process, the layout of the converter station is indicative and a Rochdale Envelope approach may be used to define a design envelope and parameters within which the final design would sit.

3.2.10 The **Converter station - background to potential design approaches** document, which would be replaced by a more detailed DAD at application stage, shows an indicative diagram of the converter station within which an arrangement of buildings and external equipment is shown. There are different buildings and areas within a converter station with varying characteristics that the KDPs are intended to address as solutions may not be possible to apply uniformly due to varying CDCs.

3.2.11 The design principles are designed to address this in line with NPS EN-3: *‘where details are still to be finalised applicants should explain in the application which elements of the proposal have yet to be finalised, and the reason why that is the case*²⁶. The scope for flexibility will be defined in the draft DCO, which will refer to Works Plans showing the areas within which works must take place, and include a Table of Parameters to set the maximum dimensions of the converter station.

Identity

3.2.12 As set out in the NMDC Guidance:

- *‘The identity of a place comes not just from the form and appearance of the buildings and spaces but also from the way that it is planned, its natural environment and the use of its buildings. This includes the way that it*

²⁵ NDG, page 26

²⁶ NPS EN-3 2.6.1 also 2.6.2 and 2.6.3

*responds to the character of the local area and the design of its buildings and public spaces. Identity may come out of respecting and enhancing the existing character of the area and also from adapting and shaping to develop new character. The architectural approach needs to be influenced by its surrounding architectural character*²⁷.

- 3.2.13 Whilst complying with the principle of being visually recessive as far as is possible, the design of buildings within the converter station would have a coherent design language that is commensurate with the scale and prominence of massing, particularly where beyond the height of existing and proposed tree screening. The design intent, and how this has been developed in response to engagement and DRP is covered in the **Converter station - background to potential design approaches** document.
- 3.2.14 The East Lindsey District Council Guidance on Place-making Checklist includes guidance on the selection and the importance of the use of colour in development.²⁸ Colours can appear differently externally compared to internally, at long distances, on matt or reflective surfaces, against different backgrounds, lighting conditions and weather at different rates. The **Converter station - background to potential design approaches** document includes analysis of the colours found in the context. Through interpretation of the analysis potential cladding colour options have been provided for feedback. Colour selection options will be informed by feedback from stakeholders and developed in the DAD such that they can be defined in this dDPS.

Public Space

- 3.2.15 There are no Public Rights of Way (PRoWs) that would be affected by the converter station and associated landscape mitigation proposals.
- 3.2.16 The new permanent access road would be designed such that a single bellmouth can serve both the Project converter station and the LCS - B substation. The road will be designed to accommodate the largest and heaviest Abnormal Indivisible Load (AIL) vehicle required for installing and replacing the equipment in the converter station compound.
- 3.2.17 The interface between the converter station and public space would be very limited, but consideration would be given to how the appearance of the converter station may have a visual impact on local public amenities when assessing the design.

Resources

- 3.2.18 As set out in the NMDC Guidance;
- *‘Well-designed places and buildings conserve natural resources including buildings, land, water, energy and materials. Their design responds to the impacts of climate change by being energy efficient and minimising carbon emissions to meet net zero targets by 2050. It identifies measures to achieve: mitigation, primarily by reducing greenhouse gas emissions and minimising embodied energy; and adaptation to anticipated events, such as rising temperatures and the increasing risk of flooding.*²⁹

27 National Model Design Code: Part 2 - Guidance Notes, Page 41

28 East Lindsey District Council, Guidance on the Place Making Checklist, Page 15.

29 National Model design Code - Part 2 Guidance Notes, page 77

- 3.2.19 The KDPs in the Resources section of Table 3.1 are focused on the conservation of resources in relation to the converter station. The wider scheme would be addressed in other relevant management plans which take on board the following PLDPs;
- climate change, extreme weather and flood resilience (CL.6);
 - energy efficiency in use (CL.7); and
 - sustainable construction (V.3).
- 3.2.20 NPS EN-3 sets out that; *‘Earth bunds and mounds, tree planting or both may be used for softening the visual intrusion and may also help to attenuate noise from site activities. However, these features should be sympathetic to local landscape character and follow best practice.’*³⁰ The use of such strategies has been explored in the landscape approach section of the **Converter station - background to potential design approaches** document and would be addressed by KDP R.2 of Table 3.1.
- 3.2.21 Where appropriate the Project will seek to engage with local businesses, promote local employment and training opportunities, and source materials, supplies and equipment from as close as possible to contribute to the local economy and reduce transportation emissions.

3.3 Introduction to Table 3.1

- 3.3.1 These are the design principles that will be referenced in a requirement of the draft DCO applicable to the converter station. The Converter Station Design Principles table is divided into the following seven sub-sections:
- General
 - Context
 - Nature
 - Built Form
 - Identity
 - Public Space
 - Resources
- 3.3.2 At this stage in the consenting process the KDPs cannot be fully articulated as the design is in early development. As the design approach is developed through coordination with the wider team, and in response to stakeholder engagement, further definition will be provided such that the KDPs describe the qualities of the design that are to be secured.
- 3.3.3 In some instances it will not be appropriate for the KDPs to specify particular outcomes without qualification, even though they all need to be compliant with the CDCs. For example:
- A technical requirement preventing the intended design outcome could become apparent through site investigations or detailed design coordination.

³⁰ NPS EN-3 2.7.96

- An opportunity for a more innovative design approach, untested on this type of facility, may prove to be inappropriate after further detailed design coordination.

3.3.4 The intention is to include for the possibility of these innovative design approaches in setting the ambition for good design outcomes. The Potential Associated Activity column provides the opportunity to identify where technical statements would be provided to give evidence as to key design decisions.

Table 3.1 Converter Station Design Principles

ID	Heading	Key Design Principle	Potential Associated Activity
General			
GE.1	Compliance with CDCs	<p>The following KDPs in this table must be implemented in accordance with the CDCs. In particular the architectural design shall be implemented within the confines of;</p> <ul style="list-style-type: none"> • the Project programme, • the Project budget, • functional requirements, • operational, security and safety requirements, • and within the parameters and commitments that are otherwise fixed by the DCO and documents secured by it 	Where changes to design or requests cannot be accommodated due to conflicts with CDCs this will be clearly communicated in documents submitted to discharge the requirement.
GE.2	Consultation on converter station design	The Applicant will organise an independent design review panel (DRP) to review draft design information and will provide a summary of any design changes made in response.	A response table could be provided in the DAD identifying how each line of the DRP report has been addressed.
GE.3	Information submitted to discharge the requirement	The information submitted to discharge the requirement will address how the Applicant has sought to satisfy each KDP.	A detailed version of the DAD could be provided collating the information, design materials and technical statements.

ID	Heading	Key Design Principle	Potential Associated Activity
Context			
CO.1	Coordination with other projects	In developing the detailed design, opportunities for coordination between the converter station and other projects, such as LCS-B, will be explored to identify actions that could reduce overall impacts, make the most efficient use of resources, and deliver a coordinated landscape across the projects.	<p>Coordination workshops could be held at least once per RIBA design work stage 1, 2 and 3, between the NGET projects to minimise impacts across the projects.</p> <p>An overall site plan could be provided showing the latest available design data (identified as for information only), from the co-locating projects to demonstrate co-ordination has taken place and conflicts avoided as appropriate.</p>
CO.2	Height, scale, and massing response to context	The detailed design will aim to minimise the size of the converter station, and to locate buildings within the compound where they have the least visual impact.	<p>A technical statement could be provided showing how the converter station platform and building positions has been developed to minimise impact on LVIA viewpoints particularly;</p> <ul style="list-style-type: none"> • VP06, and • VP07A.
CO.3	Responding to key views	<p>Through analysis of the relevant LVIA key representative views, where the converter station massing will be visible, the detailed design of this will demonstrate how the impact of the proposed design has been minimised in its development alongside the detailed landscape design proposals.</p> <p>Where information on collocating with adjacent transmission infrastructure is available, this should also be taken into consideration for key views and the converter station design.</p>	<p>A technical statement could be provided setting out design development including analysis of the affected LVIA and heritage key representative views, Landscape Institute visualisations (e.g. AVR 3) following TGN 06/19 and CGIs of the converter station and landscape designs in those views, including versions for:</p> <ul style="list-style-type: none"> • summer and winter seasons; and • Year 1 and 15 (the year at which mitigation planting would typically be expected to have fulfilled its mitigation function).

ID	Heading	Key Design Principle	Potential Associated Activity
CO.4	Responding to strategic views	<p>A subset of the LVIA key views, to be agreed, will be considered strategic for the purposes of assessing the performance of the converter station design in different lighting conditions, with a particular focus on how the sheen on cladding and roofing materials can affect appearance during:</p> <ul style="list-style-type: none"> • different times of day with different lighting angles; and • different qualities of light such as low ambient and strong directional sunlight. 	<p>Additional baseline photography and corresponding CGIs of these views could be provided, in line with Landscape Institute guidance TG 06/19, to demonstrate how the designs have taken this into account. This could include versions taken at:</p> <ul style="list-style-type: none"> • morning, midday, and evening; and • in overcast and bright sunlight conditions.

Nature

N.1	Integration with context, landscape, and access proposals	<p>The detailed proposals will demonstrate how the converter station design has been integrated with the context, access road, and the detailed landscape proposals, enabling as many existing landscape features to be retained as possible, for the purposes of maximising the effectiveness of the mitigation and reducing the impact on existing habitats.</p>	<p>Detailed drawings of the landscape proposals, such as sections and plans, showing the equivalent level of detail of adjacent features such as fences, buildings and equipment could be provided.</p> <p>Correspondingly, drawings of the proposed buildings and equipment also showing the equivalent level of detail of the landscape proposals demonstrating how they relate to the landscape context could be provided.</p>
N.2	Potential for SuDS	<p>Opportunities for SuDS within the facility platform will be explored in the detailed design.</p>	<p>A technical statement, produced whilst developing the detailed designs, demonstrating how options have been appraised, citing reasons why they are to be included or excluded from the proposals.</p>

ID	Heading	Key Design Principle	Potential Associated Activity
N.3	Lighting	Light spillage will be managed by minimising the provision of lighting; keeping to where it is required for tasks, specifying fittings that avoid light spillage, using controls such that it only comes on when required. This will follow a dark skies strategy; to cut light pollution, its impacts on wildlife, prevent wasting electricity, and mitigating visual impact at night. Windows will be fitted with blinds to control light spill if the facility is occupied after dark.	<p>A technical statement could be provided for the external lighting designs, including:</p> <ul style="list-style-type: none"> • a strategy for the site and how the lighting provision has been reduced to the minimum operational requirements; and • details of fittings and lighting profiles, controls, energy efficiency ratings.

Built Form

BF.1	Orientation of the converter station	In developing detailed proposals, the orientation of the converter station will be considered in conjunction with the preferred building and equipment arrangements (as set out in BF.3), the access route, and the alignment of the cable corridor, to retain as much of the existing landscape features as possible, and to reduce gaps in screening in the key views.	<p>Annotated site plans and associated key views with analysis of the following could be provided:</p> <ul style="list-style-type: none"> • <i>permanent and temporary access strategy and how this relates to the site layout;</i> • <i>cable corridors into the converter station;</i> • <i>lines of sight through gaps in screening;</i>
BF.2	Enclosures	If there is a requirement for external equipment to be enclosed for technical reasons, such as acoustic attenuation, then the enclosure should be treated as a building for the purposes of assessing the design of the cladding and colour selection.	<p>A technical statement could be provided explaining the requirements for the selected equipment to be enclosed, such as protecting the equipment or acoustic attenuation, and identifying the types of equipment that could be external. Including studies of key views showing external equipment and enclosures in conjunction with the landscape screening design, and the design approach for the buildings.</p>

ID	Heading	Key Design Principle	Potential Associated Activity
BF.3	Building arrangement	<p>Where there is flexibility in the arrangement within the converter station, opportunities will be taken to locate buildings to screen external equipment, and to create a clear and cohesive pattern of forms, for example using smaller buildings arranged in front of larger ones to reduce the visual impact of tall flat elevations.</p> <p>Where feasible the preference is for the transformers to be offset from the DC Halls to allow greater design flexibility of the elevation facing the transformers.</p>	<p>A technical statement could be provided including annotated compound layouts and massing diagrams, with analysis of how the buildings are arranged for the benefit of the massing strategy whilst also considering how:</p> <ul style="list-style-type: none"> ● access to buildings and equipment is managed, including how the AIL accesses the transformers; and ● operations staff park near to and access the control building, with a further safety and security fence separating this from the electrical equipment area.
BF.4	Building and roof forms	<p>Building shapes will be considered as part of the detailed design approach, and refined to suit the internal arrangements, seeking opportunities to reduce height and massing whilst forming a strong narrative and hierarchy of form. The details of roof profiles, ridges, eaves, parapets and verges will be used to articulate the final design approach that is developed following pre-application stakeholder feedback.</p>	<p>A technical statement including sketch diagrams, sections, elevation studies, and 3D views that show how the external forms respond to the internal space requirements could be provided.</p>
BF.5	DC Halls	<p>These are the largest buildings within the converter station with one for each pole (positive and negative). The halls for each pole have identical requirements tending towards symmetry, with inward sides between them, and outward facing sides. The design will seek to ensure the two buildings read as distinct forms and avoid blurring into a single mass. The space between the halls will be used for keeping air-conditioning plant and other equipment out of view (see BF.3).</p>	<p>A technical statement could be provided including studies of the DC Hall designs showing:</p> <ul style="list-style-type: none"> ● the design measures taken to reduce their apparent scale; ● how the design approach relates to their greater significance and potential impact; and ● how they relate to the rest of the buildings and equipment, and how they are seen in context.

ID	Heading	Key Design Principle	Potential Associated Activity
Identity			
ID.1	Meeting the ground	The way buildings meet the ground will be considered in terms of the combined layering of features such as land-forming, screen planting, fencing, compound external works, equipment, and lower sections of the building cladding, with a focus on blending these features together and softening the visual impact.	A technical statement could be provided including detailed studies, in section and elevation, showing how the design and appearance of layers up to and including the building façade are integrated into an overall composition, including landscape design, details and colours of the fencing, equipment and lower section of cladding design.
ID.2	Meeting the sky	Where the upper parts of buildings rise above the tree line, design concepts will be developed considering how the top edge of the buildings are seen against the horizon. The concepts will make use of profiles, edges, planes, and textures to soften the visual impact and include strategies for managing visual clutter to avoid this detracting from the design intent. The way the appearance of the sky as a backdrop varies with viewing height, weather, and lighting conditions will be considered when developing and communicating the designs (in line with CO.4). Consideration should also be given to the relationship with any adjacent overhead lines and towers.	A technical statement could be provided including detailed studies, in section and elevation, showing how the design of the tops of buildings works in relation to appearance in key views. Studies could include a strategy for managing visual clutter of elements such as, rainwater goods, access safety equipment, louvres, cowls, and other roof-based equipment.

ID	Heading	Key Design Principle	Potential Associated Activity
ID.3	Materials, colours and textures	<p>The designs will use cladding and roofing systems that exploit the way light emphasises articulation, layering and texture, to create depth and variation in surfaces so the buildings skin is responsive to the setting and varying climatic conditions. A limited colour palette will also be selected to help create a strong connection to the context and landscape design.</p>	<p>A technical statement could be provided explaining the selection of cladding and roofing systems, including facing materials and coating options, showing how they are used on the scheme through labelling of the detailed elevation drawings.</p> <p>Large scale samples of materials, including the selected colours and mock-ups of any layering effects, photographed in situ as well as being made available for the LPA to view in person could also be provided.</p>
ID.4	Integration of building openings, plant, ductwork, access equipment and rainwater goods.	<p>Where appropriate, the design will seek to locate plant, ductwork, access equipment and rainwater goods in less prominent areas, avoiding roofs and the upper parts of the cladding, or behind rainscreen overcladding. Where it is not possible to hide these features then the aim will be to integrate them within the design such that they do not detract from the concept.</p> <p>Where appropriate, the design will seek to locate doors, windows, louvres, and cowls where they have less prominence, aiming to avoid the upper parts of the elevations where they could be difficult to manage visually and acoustically.</p>	<p>Detailed plans, sections, and elevations of the proposals could be provided including equivalent level of development for architectural, structural, civil, mechanical, electrical, public health, safety, and maintenance access designs to demonstrate an integrated approach.</p>

ID	Heading	Key Design Principle	Potential Associated Activity
ID.5	Quality of detailing	<p>Where enhanced building design approaches are proposed, with the intention to reduce visual impact and improve visual amenity, they will be compared to an equivalent conventional cladding scheme to enable the added benefit of the proposal to be assessed.</p> <p>The viewing distance will be a key consideration in establishing what type of detailing is appropriate and adds value.</p> <p>Potential for enhancement to be prioritised on outward facing areas, compared to areas that can be demonstrated to be inward facing and less visible.</p>	<p>A technical statement could be provided including diagrams showing areas of buildings, enclosures and fences that fit into each category of detailing approach.</p> <p>Including drawings of typical details of key cladding and roofing material interfaces demonstrating how they address the defined requirements.</p>

Public Space

PS.1	Incorporating security measures into the design	<p>The design of security features including fencing, gates, CCTV and clear margins around the converter station perimeter will be considered as part of the overall composition of landscape features and buildings (in line with ID.1), mitigating the impact on the public realm and landscape character. Secured by Design principles will be followed where appropriate.</p>	<p>A technical statement could be provided showing how security requirements and measures have been determined in line with NGET policies. Secured by Design principles will be followed in the statement, but an award will not be applied for.</p> <p>Security measures to be included in the detailed studies and indicative 3D renders provided for ID.1 and PS.1.</p>
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Resources

R.1	On-site renewable energy generation	<p>Where appropriate, and without significantly increasing visual impact, the potential to incorporate on-site renewables into the design to contribute towards the operational energy requirements of the converter station will be considered.</p>	<p>A technical statement could be prepared covering the energy strategy including an assessment of how the energy demand for operating the converter station is managed for efficiency and performance, including the design of the building envelopes, and options for on-site renewables including how they relate to visual impact (see CO.3).</p>
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ID	Heading	Key Design Principle	Potential Associated Activity
R.2	Balancing cut and fill across the site	<p>Cut and fill will be balanced across the site where appropriate, to reduce the impact of vehicle movements to and from the site, in such a way that the converter station compound level is at the lowest reasonable level, and cut material is used around the site for earth works to provide;</p> <ul style="list-style-type: none"> ● additional visual screening elevating planting to reduce visual impact, and ● additional acoustic screening to sensitive receptors. <p>Where there is the opportunity to do so, and it is appropriate given the different design programmes, the Applicant will seek to coordinate cut and fill strategies with collocating projects, including:</p> <ul style="list-style-type: none"> ● movements for temporary compounds and during construction ● establishing permanent earthworks at an early stage where this could be used for advanced planting, and ● where appropriate sharing cut and fill material, to reduce overall and multiple movements across the sites. 	<p>A technical statement could be provided, coordinated with the related management plans and cut and fill drawings, showing how the requirements of the design principle have been met.</p> <p>Earthworks profiles showing:</p> <ul style="list-style-type: none"> ● natural contours to their outward faces in keeping with the landscape setting, and ● potential for steeper banks facing the converter stations to reduce land take and maximise acoustic screening. <p>The technical statement could include the most up to date available information from the collocating projects and strategies for coordination with them.</p>

ID	Heading	Key Design Principle	Potential Associated Activity
R.3	Water recycling	Where appropriate rainwater harvesting will be included to reduce water usage and surface water run-off as part of the SuDS strategy. The scope will depend on the requirement for non-potable water such as toilet flushing and vehicle washdown.	<p>A technical statement could be provided for the water recycling strategy in support of the overall SuDS proposals showing:</p> <ul style="list-style-type: none"> • where it is collected, storage and maintenance strategies, and • what the recycled water is to be used for, including quantities required and mains connection requirements.

4. References

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