

The Great Grid Upgrade

Chesterfield to High Marnham

Chesterfield to High Marnham

Planning Design & Access Statement

19 December 2025

nationalgrid

Contents

Executive summary	1
1. Introduction	5
1.1 Overview	5
1.2 Purpose of the PDAS and Statutory Requirements	5
1.3 Consenting Regimes	6
New Substation Development	6
Existing Substation Removal Works	6
Environmental Impact Assessment Regulations	6
Overhead Line Works and Consenting Requirements	8
Pre-Application Consultation	8
Planning Application Submission	9
Report Structure	11
2. Context for the Scheme	13
2.1 Overview	13
2.2 Background to the Scheme	13
2.3 The Role of National Grid	14
National Grid Electricity Transmission plc (National Grid)	14
National Energy System Operator (NESO)	14
Scheme Operation	15
Statutory Duties	15
2.4 The Horlock Rules	16
3. Description of the Development Site	18
3.1 Introduction	18
3.2 Site Location and Setting	18
3.3 Planning History	20
3.4 Case Studies	23
Land to south of the existing substation	23
Commentary	24
Land to east of existing substation	25
Commentary	26
Overall Conclusion	27
4. The Scheme	28
4.1 Introduction	28
4.2 Scheme Description	28
Proposed GIS Substation	29
Internal access, circulation and parking	30

4.3	Overhead Line Works and Consenting Requirements	30
4.4	Public Rights of Way Diversions	31
4.5	Construction and Commissioning	32
	Outline Construction Environmental Management Plan	32
	Outline Construction Traffic Management Plan	33
	Outline Site Waste Management Plan	34
	Temporary Works	34
	Site Access and Routes	36
4.6	Operational Phase	37
	Access	37
	Operational Activities	38
4.7	Environmental Mitigation and Biodiversity Net Gain (BNG)	38
5.	Design and Access Statement	40
	Design Objectives	40
	Technology Options	41
	Use	42
	Layout	42
	Scale and Amount	43
	Removal Works	43
	Drainage	44
	Appearance	44
	Landscaping and Enhancement	45
	Green Infrastructure Plan	46
	Access	46
5.2	Compliance with the Horlock Rules	48
5.3	Design:Midlands Substation Design Review	52
6.	Planning Policy and Guidance	56
6.1	Introduction	56
6.2	Overview	56
	Development Plan	56
	Material Considerations	56
6.3	Development Plan	57
	The North East Derbyshire Local Plan	57
	Derby and Derbyshire Minerals Local Plan	57
	Derby and Derbyshire Waste Local Plan	57
6.4	Material Considerations	58
	National Planning Policy Framework (NPPF)	58
	Planning Practice Guidance (PPG)	62
	National Policy Statements and Need	63
6.5	Other Material Considerations	67
	International Climate Policy Context	67
	National Climate and Energy Legislation and Policy Context	68
6.6	Summary	71
7.	Planning Assessment	73

7.1	Introduction	73
7.2	Principle of the Scheme	74
7.3	Design Overview (Layout, Design and External Appearance)	76
7.4	Ecology (including Biodiversity and Arboriculture)	79
	Statutory designated sites	80
	Non-statutory designated sites	81
	Habitats	81
	Species	82
	Arboriculture	84
	Biodiversity Net Gain (BNG)	89
	Conclusion	92
7.5	Landscape and Visual Character	93
	Landscape Appraisal	94
	Visual	96
	Conclusion	97
7.6	Historic Environment	98
	Conclusion	102
7.7	Traffic and Transport	103
	Conclusion	109
7.8	Air Quality	109
	Conclusion	112
7.9	Noise and Vibration	112
	Conclusion	114
7.10	Land and Ground Conditions	115
	Conclusion	120
7.11	Agriculture and Soils	121
7.12	Minerals	123
7.13	Water Resources and Flood Risk	124
7.14	Socioeconomics and Human Health	128
	Conclusion	133
7.15	Electric and Magnetic Fields	133
8.	Planning Balance and Conclusion	135
8.1	Introduction	135
	Need of the Scheme	135
	Benefits of the Scheme	136
	Adverse Impacts of the Scheme	136
	The Overall Planning Balance	139

Table 1.1 Planning application drawings	9
Table 3.1 Planning history	21
Table 5.1 Accordance with the Horlock Rules	48
Table 5.2 National Grid responses to Design:Midlands recommendations	52
Table 7.1 Tree categories recorded	85
Table 7.2 Tree Preservation Orders	86
Table 7.3 Trees requiring removal	86

Table 7.4 Baseline area habitats	89
Table 7.5 Baseline hedgerow habitats	90
Table 7.6 Post-development on-site created area habitats	91
Table 7.7 Post-development hedgerow	91

Figure ES.1 Chesterfield Site Location	3
Figure 3.1 Chesterfield Site Location	19

References	140
------------	-----

Appendix A	Independent Design Panel Review, Design:Midlands Report
Appendix B	Planning Policy: NEDLP
Appendix C	Planning Policy: Derby and Derbyshire Minerals Local Plan
Appendix D	Planning Policy: SPDs
Appendix E	Proposed Draft Planning Conditions
Appendix F	Abbreviations
Appendix G	Glossary

Executive summary

Overview of the Scheme and Need

National Grid Electricity Transmission plc, referred to as 'National Grid' within this Planning, Design and Access Statement (PDAS), is applying for planning consent for a new 400kV substation ('the Scheme') on land off Calow Lane in Derbyshire ('the Site').

In 2019 the Committee on Climate Change published its Net Zero report setting out recommendations to the UK government on long-term emissions targets for the UK. The government subsequently adopted the Climate Change Act 2008 (2050 Target Amendment) Order 2019, which increased its pledge to achieve 100 per cent reduction in emissions by 2050. One of the ways this will be achieved is through decarbonisation, including moving away from fossil fuels providing energy to homes and businesses. Consistent with the government's Net Zero target, there has been, and continues to be, growth in the volume of renewable and zero carbon generation that is seeking to connect to the electricity transmission system. The UK government policy clearly sets out the critical requirement for significant reinforcement of the electricity transmission system to facilitate the connection of renewable energy sources and to transport electricity to where it is used. In particular, the British Energy Security Strategy (HM Government, 2022) sets targets for the connection of up to 50GW of offshore wind by the 2030s as a key part of a strategy for secure, clean and affordable British energy for the long term.

The Scheme forms a part of the Great Grid Upgrade which will enable the country to connect 50GW of green energy by 2030. National Grid is seeking permission for:

'Erection of a 400kV Gas Insulated Switchgear (GIS) substation including three super grid transformers, gantries, internal access roads, a GIS building, parking, drainage, diesel generator, lighting and CCTV, permanent access road from Calow Lane, earthworks, landscaping and biodiversity enhancement, and fencing the permanent realignment of footpaths NE5/25/1 and NE5/16/1 and felling of trees subject to TPO W1/171'.

The proposed works are linked with the existing substation infrastructure and comprise:

- Development of a new 400kV substation which would be within a compound of 150m x 210m.

- GIS substation building which would measure approximately 76m long by 25m wide and 15m high.

- Up to three 400/275kV 1100MVA super grid transformers (SGTs).

- Six overhead line gantries which will be approximately 12m high.

- Three additional buildings (ranging from 4.5m to 15m in height, 6m to 76m long, and 2.5m to 25m wide).

- The compound would be surrounded by a 2.4m high palisade security fence with a 4m high electric pulse fence to secure the site.

- Closed-circuit television (CCTV) surveillance equipment.

The substation includes electrical plant for controlling directing, switching and transforming high voltage electricity. This plant includes:

- SGTs and associated cooler banks;

- GIS switchgear;

Gas Insulated Busbar (GIB) connecting the GIS switchgear to other plant;
Capacitor Voltage Transformers (CVT);
Cable Sealing Ends (CSEs);
earth switches;
surge arresters;
diesel generator for emergency backup power; and
protection isolation equipment.

In addition to the above, redundant equipment at the existing 275kV substation will be removed.

The development of a new substation will enable National Grid to uprate the existing 275kV overhead lines between Chesterfield and High Marnham to operate at 400kV between the new substation at Chesterfield (in North East Derbyshire) and a new substation at High Marnham (in Bassetlaw). The development of the new substation will also support National Grid's uprating of the existing 275kV overhead lines to operate at 400kV between Brinsworth, a new substation at Long Lane (in Brinsworth) and Chesterfield. This will allow additional power to flow through the grid, transferring green energy from where it is generated to where it is needed.

Application Site and Surrounding Area

Currently, the Site comprises two parts. Part of the Site comprises the existing 275kV National Grid Chesterfield Substation (owned and operated by National Grid Electricity Transmission), which is located within the western part of an existing 132kV substation compound). Most of the remainder of the Site is agricultural land, located to the south of the existing 132kV substation compound (owned and managed by National Grid Electricity Distribution). A number of existing pylons are also present within the Scheme boundary.

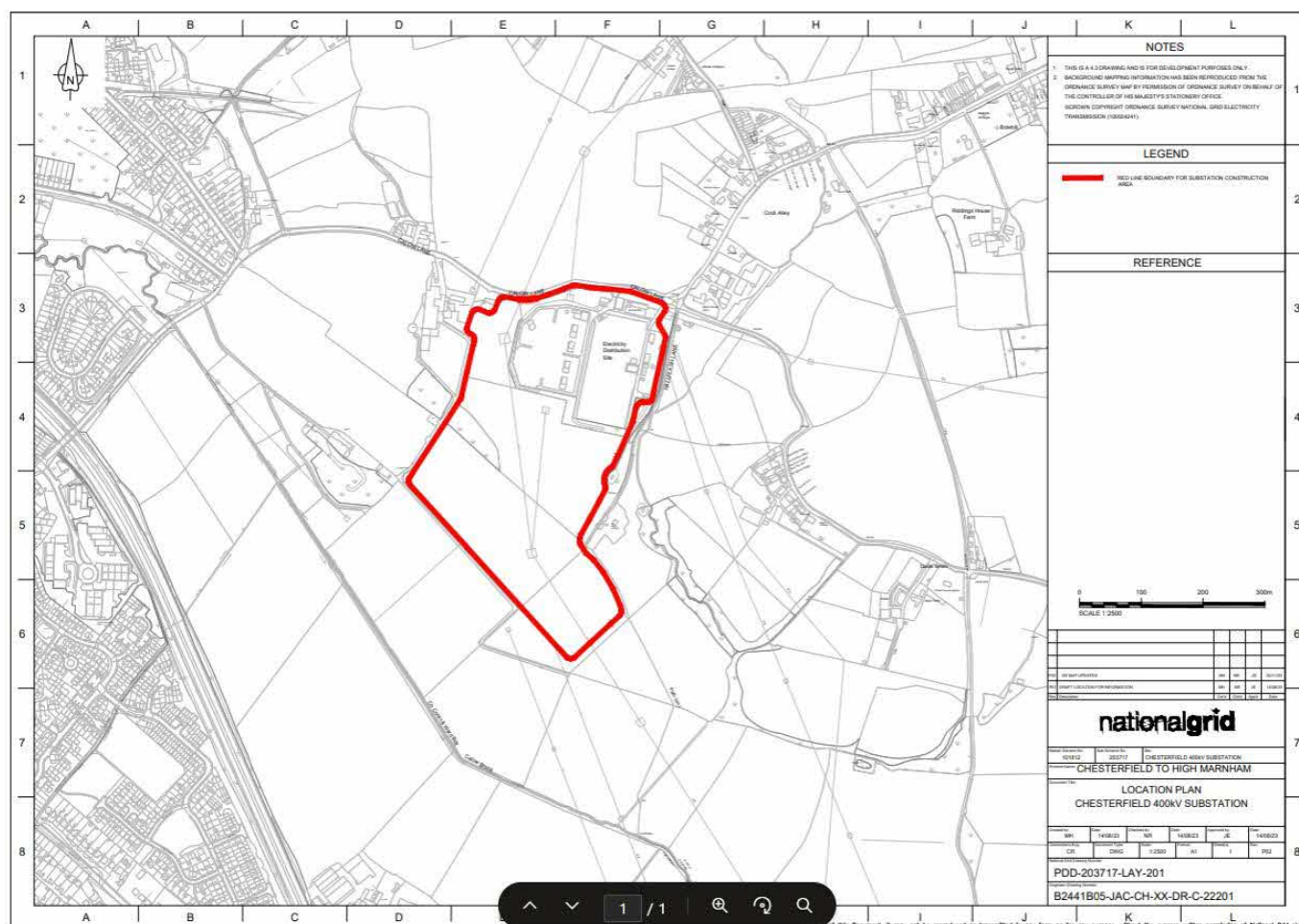
The Site's centre point OS Grid Reference is SK 40923 69817.

The Site is within the administrative area of North East Derbyshire District Council (NEDDC).

The Site is located to the south east of Chesterfield, south of Cock Alley. Access to the Site is taken from Calow Lane to the north. The Site is bounded to the east by Hallflash Lane. The A617 is present to the south west of the Site, beyond which are the southern residential and commercial areas of Chesterfield. The land parcels that immediately surround the Site are predominantly agricultural. Land to the north, south and east is more rural in character; developed land is predominantly to the west of the Site.

The Site is 14.5 hectares (ha) and has a topography ranges from approximately 104-117m Above Ordnance Datum (AOD). The Site is gradually sloped from north to south with the steepest areas being in the south of the Site. The landscape is generally open with small woodland blocks and field boundary hedgerows forming some containment within the local landscape. Farm buildings and agricultural fields provide the main features, with the existing substation infrastructure, pylons and overhead lines forming the main detracting features in the skyline. The Site is partially screened by woodland and intervening topography in the surrounding area.

Figure ES.1 Chesterfield Site Location



It is noted that the agricultural land to the south benefits from planning permission for a photovoltaic solar farm and associated infrastructure (North East Derbyshire District Council Planning Application Reference 20/01283/FL).

Planning Policy

Section 70(2) of the Town and Country Planning Act 1990 (TCPA 1990) requires the local planning authorities in determining planning applications to have regard to the development plan, so far as is material to an application and to any other material considerations.

The Development Plan relevant to the Scheme comprises the North East Derbyshire Local Plan (2014-2034) (NEDDC, 2021) and the saved policies of the Derby and Derbyshire Minerals Local Plan (as amended 2002) (Derby City Council and Derbyshire County Council, 2000) and the Derby and Derbyshire Waste Local Plan (adopted 2005) (Derby City Council and Derbyshire County Council, 2005).

National planning policy and guidance relevant to the Scheme includes the National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government (MHCLG), 2024a), Environmental Improvement Plan 2023 (Department for Environment, Food and Rural Affairs (Defra), 2023), and various government publications stemming from the Climate Change Act 2008 and the government's subsequent net zero targets.

Whilst the substation proposals at Chesterfield will be determined in accordance with the TCPA 1990, it is considered that the National Policy Statements (NPSs) for Energy are a material consideration for this proposal in emphasising the need for critical electricity infrastructure.

In January 2024, the Department for Energy Security and Net Zero (DESNZ) designated revised NPSs for Energy. The relevant NPSs to the Scheme are:

Overarching National Policy Statement for Energy (EN-1) ('NPS EN-1'); and
National Policy Statement for Electricity Networks Infrastructure (EN-5) ('NPS EN-5').

Revised versions of these documents were published by Government on 13 November 2025. These versions of the NPS will be designated following a 21 day-sitting period and are expected to be published on or around 17 December 2025. Text within this PDAS references these 2025 iterations of the NPS EN-1 and NPS EN-5 (DESNZ, 2025a; 2025b) documents.

NPS EN-1 is clear at Paragraph 1.2.1 that the Energy NPSs may be a material consideration in decision making on applications that fall under the TCPA 1990.

NPS EN-1 and NPS EN-5 identify the need for new and reinforced electricity transmission infrastructure as a critical national priority to maintain security of supply and deliver the transition to net zero. The Scheme will form a part of National Grid's wider transmission reinforcement strategy identified through the Electricity System Operator's Holistic Network Design and subsequent Centralised Strategic Network Plan, which together set out nationally critical reinforcements required to connect new offshore generation and strengthen the onshore 400kV network. The proposed substation provides a vital node in this system, supporting the transfer of renewable generation and system resilience across northern England. The Scheme is specifically referenced in the Clean Power 2030 report by the National Energy System Operator (NESO) as one of four projects which, if not delivered by 2030, would have a significant impact on the ability of the country to deliver clean power. Consequently, substantial weight should be afforded to the national need and strategic importance of the development, consistent with the approach in NPS EN-1 and NPS EN-5, irrespective of the consenting route.

Planning Assessment

As identified in national policy and the government's energy strategy there is an urgent and critical need to bring forward low carbon infrastructure to meet targets for decarbonisation and net zero. The Scheme would provide a crucial contribution to the delivery of these policy aims, by improving the existing electricity transmission network.

The various specialist reports submitted within this application as part of an Environmental Appraisal Report (EAR) demonstrate that, with the implementation of proposed mitigation measures, the residual impacts of development would not be significant, with aspects of a temporary nature being confined to the construction phase. Any long-term visual and environmental impacts are to be minimised through incorporating measures to reduce visual impact, which include a landscape mitigation scheme.

The Scheme is consistent with relevant development plan policy (insofar as it is up-to-date having regard to national policy and other material considerations).

Overall, the need for, and benefits of the Scheme clearly outweigh its adverse impacts. The planning balance is firmly in favour of the Scheme, and in accordance with the presumption in favour of sustainable development advanced in the NPPF, it is respectfully submitted that planning permission be granted.

1. Introduction

1.1 Overview

- 1.1.1 National Grid Electricity Transmission Plc (National Grid) is applying to North East Derbyshire District Council (NEDDC) for full planning permission for the following:
- ‘Erection of a 400kV Gas Insulated Switchgear (GIS) substation including three super grid transformers, gantries, internal access roads, a GIS building, parking, drainage, diesel generator, lighting and CCTV, permanent access road from Calow Lane, earthworks, landscaping and biodiversity enhancement, and fencing the permanent realignment of footpaths NE5/25/1 and NE5/16/1 and felling of trees subject to TPO W1/171’.*(the Scheme).
- 1.1.2 National Grid owns and operates the high voltage transmission system in England and Wales. The system operates mainly at 400 kilovolts (kV) and 275kV, connecting electricity generators to substations where the high voltages are transformed to lower voltages for onwards distribution to homes and businesses via regional Distribution Network Operators (DNOs) who operate at a maximum of 132kV.
- 1.1.3 National Grid is the company licensed to transmit electricity in England and Wales, as granted under the Electricity Act 1989. Through this duty, National Grid is responsible for operating around 7,200km of overhead lines, 700km of underground lines and 340 primary substations.
- 1.1.4 National Grid is a statutory undertaker as defined under the Electricity Act 1989, the Town and Country Planning Act 1990 (TCPA 1990) and The Town and Country Planning (General Permitted Development) (England) Order 2015.
- 1.1.5 This Planning, Design and Access Statement (PDAS) is provided as part of the planning application for the Scheme in order to assist NEDDC, statutory consultees, and other interested parties in their consideration of National Grid’s proposals.
- 1.1.6 The PDAS sets out the context for the Scheme before summarising the relevant Development Plan policies and other material considerations against which the planning application will be determined.
- 1.1.7 The PDAS then assesses the extent to which the Scheme is in accordance with the relevant policies of the Development Plan and other material considerations before presenting the overall planning balance.
- 1.1.8 In conclusion, the PDAS confirms that the benefits of the Scheme will considerably outweigh the adverse impacts of constructing and operating the new substations.
- 1.1.9 The PDAS has been prepared by Arcadis on behalf of National Grid.

1.2 Purpose of the PDAS and Statutory Requirements

- 1.2.1 Part 3, Article 9 of The Town and Country Planning (Development Management Procedure) (England) Order 2015 requires that a Design and Access Statement be submitted with most major planning applications, subject to specified exemptions, including engineering operations.

- 1.2.2 In accordance with Part 3, Article 9, this PDAS describes the evolution of the design of the Scheme, which has been informed by an iterative process of environmental, economic, and engineering analysis and assessment.
- 1.2.3 This PDAS is intended to provide the following main functions:
- provide a description of the Scheme;
 - summarise the proposed consents strategy and identify the means by which each Scheme component can be approved;
 - demonstrate the planning need case;
 - assess the proposals in the context of national and local planning policy; and
 - provide a summary of the outcomes of the environmental and technical assessments completed in support of the application.

1.3 Consenting Regimes

New Substation Development

- 1.3.1 The planning application for the Scheme will be determined under Section 70(2) of the TCPA 1990 and Section 38(6) of the Planning and Compulsory Purchase Act 2004. Together, these provisions establish the statutory basis for decision making in the planning system. Section 70(2) requires the decision-maker to have regard to the provisions of the development plan and any other material considerations. Section 38(6) provides that decisions must be made in accordance with the development plan unless material considerations indicate otherwise.
- 1.3.2 The determining authority in this case is NEDDC, as the local planning authority (LPA).

Existing Substation Removal Works

- 1.3.3 Some redundant equipment within the existing 275kV substation will be removed. The perimeter fence is to be retained for security purposes. Gravel or other suitable low maintenance substrate is to be installed across this part of the Site. Any known contamination or potential sources of contamination are to be removed/remediated, including assets below ground (such as oil-filled cables).
- 1.3.4 The works will be undertaken by National Grid utilising its Permitted Development Rights under Schedule 2, Part 15, Class B(f) of The Town and Country Planning (General Permitted Development) (England) Order 2015.

Environmental Impact Assessment Regulations

- 1.3.5 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) define Environmental Impact Assessment (EIA) development as either:
- 1.3.6 Schedule 1 development, where an EIA is required; or
- Schedule 2 development likely to have significant effects on the environment by virtue of factors such as its nature, size or location, taking into account the selection criteria set out in Schedule 3, identified through the process of screening.

The Scheme does not fall under the activities listed in Schedule 1 of the EIA Regulations, and neither are substations specifically listed under the developments within Schedule 2.

- 1.3.7 The Scheme also does not fall within a sensitive area as defined by Regulation 2 of the EIA Regulations:
- a) land notified under section 28(1) (sites of special scientific interest) of the Wildlife and Countryside Act 1981;
 - b) a National Park within the meaning of the National Parks and Access to the Countryside Act 1949;
 - c) the Broads;
 - d) a property appearing on the World Heritage List kept under article 11(2) of the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage;
 - e) a scheduled monument within the meaning of the Ancient Monuments and Archaeological Areas Act 1979;
 - f) an area of outstanding natural beauty designated as such by an order made by Natural England under section 82(1) (areas of outstanding natural beauty) of the Countryside and Rights of Way Act 2000 as confirmed by the Secretary of State; and
 - g) a European site.
- 1.3.8 An EIA Screening Report on the Scheme was submitted to NEDDC on 5 April 2024 on a voluntary basis to allow National Grid to confirm that EIA is not a requirement for the substation development. The Council's EIA Screening Opinion, which was published on 19 April 2024, confirmed that an EIA is not required (LPA ref. 24/00287/EIA).
- 1.3.9 Since that EIA Screening Opinion was issued, design development progressed, and further detailed network analysis undertaken by National Grid identified the need for two separate grid reinforcement projects. The Scheme now falls within the scope of the Chesterfield to High Marnham Project ('the Project'), the purposes of which are to reinforce the electricity network by uprating the existing 275kV transmission lines to operate at 400kV. The Project requires the construction of the Scheme together with the construction of a new substation in High Marnham (the High Marnham Site).
- 1.3.10 Under these new parameters a new EIA Screening Report on the Scheme was submitted to NEDDC on 3 November 2025. The Council's EIA Screening Opinion, which was published on 18 November 2025, confirmed that an EIA is not required (LPA ref. 25/00911/EIA).
- 1.3.11 The related but independent project, the Brinsworth to Chesterfield project, will reinforce the electricity network between Brinsworth and Chesterfield by uprating the existing 275kV transmission lines to operate at 400kV. This project will include the construction of the Long Lane New 400kV substation, next to the M1 together with works to connect the Brinsworth to Chesterfield project to the new Chesterfield 400kV substation being delivered as part of the Project.
- 1.3.12 The potential for cumulative effects with the works required for the Chesterfield to High Marnham. The potential for cumulative effects with the works required for the Project, the Brinsworth to Chesterfield Project and other committed developments was considered in the EIA Screening Report. NEDDC confirmed through EIA Screening Opinion 25/00912/EIA that EIA was not required for the Scheme.

Overhead Line Works and Consenting Requirements

- 1.3.13 Ancillary works are required to connect the new Chesterfield 400kV substation to the transmission network. This includes replacing the existing 275kV overhead line (OHL) with a new 400kV line, installing new permanent pylons and setting up temporary OHL and pylons during construction.
- 1.3.14 Although outside the current planning application, temporary and permanent works are proposed to connect the new 400kV Chesterfield Substation to the transmission network. These include modifying the existing Chesterfield to Brinsworth and Chesterfield to High Marnham circuits, replacing three existing pylons with three new ones (one west and two south of the substation), and installing new overhead lines. A temporary overhead line and pylon, located south of the substation, will also be erected during construction to facilitate the transition.
- 1.3.15 Section 37 of the Electricity Act 1989 requires consent for new above-ground overhead lines less than 2km in length and for the replacement of existing overhead lines, unless specific exemptions apply.
- 1.3.16 Section 37 generally requires consent to install or retain above-ground electric lines, with exceptions. Consent is not needed for overhead lines on land occupied or controlled by National Grid, such as within substations. Further exemptions apply to minor works and temporary installations under six months, as set out in the Overhead Lines (Exemption) (England and Wales) Regulations 2009.
- 1.3.17 A detailed description of the OHL works and associated consenting requirements is provided in Section 4.3.

Pre-Application Consultation

- 1.3.18 National Grid engaged in pre-application discussions with NEDDC. Meetings were held with NEDDC on the following dates:
 - 3 November 2023: introduction to the Scheme and overview of the emerging proposals for the substation and plans for public engagement;
 - 24 June 2024: feedback on public engagement, planned content of the planning application submission and an overview of Biodiversity Net Gain (BNG) proposals; and
 - 27 June 2025: provision of an update on the Project and Scheme and presentation of emerging landscape proposals and programme.
- 1.3.19 The advice received from NEDDC has been taken into account when finalising this planning application. A further pre-application meeting was held with Derbyshire County Council on 20/10/2024 to discuss Public Right of Way (PRoW) diversions.
- 1.3.20 As a validation requirement, a Design Review meeting took place with Design: Midlands on 26 September 2025 to discuss the proposal. NEDDC was part of the design review meeting.
- 1.3.21 National Grid carried out pre-application public consultation to introduce the Scheme, and to provide local communities and key stakeholders with an opportunity to learn more about the project and put questions to the project team.

- 1.3.22 Public consultation ran for four weeks between Monday 22 April to Monday 20 May 2024. An online webinar was held on 1 May 2024 and in-person public consultation events were held at Calow Community Centre on 10 and 11 May 2024. Feedback could also be provided via a consultation website, freephone Community Relations helpline and a feedback email address.
- 1.3.23 National Grid has also engaged with the Ramblers Association and Peak and Northern Footpaths Society regarding the proposed footpath diversions.
- 1.3.24 Details of the feedback received and how National Grid has considered that feedback are summarised in this PDAS.
- 1.3.25 Further information on the public consultation process can be found in the Statement of Community Involvement.

Planning Application Submission

- 1.3.26 This PDAS and other supporting documentation have been prepared to ensure that sufficient information is available to NEDDC to determine the application for the Scheme.
- 1.3.27 The application has been prepared in accordance with TCPA 1990 and The Town and Country Planning (Development Management Procedure) (England) Order 2015, local validation requirements and the pre-application advice from NEDDC.
- 1.3.28 The Site is located entirely within the boundaries of NEDDC's authority area. Therefore, NEDDC is the determining LPA for this application.
- 1.3.29 The planning application for the Scheme comprises the plans and documents set out in Table 1.1. These should be read in conjunction with this PDAS.

Table 1.1 Planning application drawings

Plan/Document	Reference
Application Form and Ownership Certificates	
Site Location Plan	PDD-203717-LAY-201
Overall Layout	PDD-203717-LAY-233
Block Plan	PDD-203717-LAY-240
Chesterfield 400kV Substation – Block Plan	PDD-203717-LAY-235
Chesterfield 400kV Substation – Existing Site Layout Plan	PDD-203717-LAY-241
Chesterfield 400kV Substation – Proposed Site Layout – Substation Works	PDD-203717-LAY-234
Chesterfield Overall Elevations Sheet 1	PDD-203717-ELE-221
Chesterfield Overall Elevations Sheet 2	PDD-203717-ELE-222
Chesterfield Building Elevations Sheet 1	PDD-203717-ELE-223
Chesterfield Building Elevations Sheet 2	PDD-203717-ELE-224

Plan/Document	Reference
Chesterfield Building Layout	PDD-203717-LAY-243
Proposed Site Layout	PDD-203717-LAY-242
External Lighting Layout	PDD-203717-LAY-231
Drainage Layout	PDD-203717-LAY-232
Cut and Fill Plan	PDD-203717-LAY-221
Chesterfield Landscape Mitigation Plan	30184504-ARC-XX-LAN-DWG-00003.
Typical Fence Details	PDD-203717-LAY-246

Supporting Documentation

1.3.30 As well as the comprehensive set of plans listed in Table 1.1, the application is also supported by a range of technical documents to ensure that the relevant policies and material issues are considered. These are as follows:

Planning, Design and Access Statement (PDAS) (this document);

Environmental Appraisal Report (EAR) comprising:

- Ecological Assessment (accompanied by a Biodiversity Report);
- Landscape and Visual Assessment;
- Cultural Heritage and Archaeology (accompanied by a Heritage Desk-Based Assessment);
- Air Quality (accompanied by an Air Quality Assessment);
- Water Resources and Flood Risk;
- Land and Ground Conditions;
- Noise and Vibration (accompanied by an Operational Noise Impact Assessment);
- Traffic and Transport;
- Agriculture and Soils (accompanied by an Agricultural Impact Assessment);
- Socioeconomics and Human Health; and
- Cumulative Impact Assessment.

1.3.31 The EAR is supported by the following appendices:

Appendix A Chesterfield New 400kV Substation Glossary and Abbreviations;

Appendix B Chesterfield New 400kV Substation Methodology;

Appendix C Chesterfield New 400kV Substation Proposed Site Layout;

Appendix D Chesterfield New 400kV Substation Chesterfield New 400kV Outline Construction Environmental Management Plan;

Appendix E Chesterfield New 400kV Substation Drawings;

Appendix F Chesterfield New 400kV Substation and Overhead Lines Ecology Report;

Appendix G Chesterfield New 400kV Substation Biodiversity Net Gain Report;

Appendix H Chesterfield New 400kV Substation Landscaping Proposals and Visualisations;

Appendix I Chesterfield New 400kV Substation Gazetteer of Heritage Assets;

Appendix J Chesterfield New 400kV Substation Cultural Heritage Desk-based Assessment;

Appendix K Chesterfield New 400kV Substation Construction Dust Assessment and Methodology;

Appendix L Flood Risk Assessment;

Appendix M Surface Water Drainage Strategy;

Appendix N Chesterfield New 400kV Substation Ground Conditions and Contaminated Land Desk Study Report;

Appendix O Noise Impact Assessment;

Appendix P Chesterfield New 400kV Substation Outline Construction Traffic Management Plan;

Appendix Q Chesterfield New 400kV Substation Agricultural Land Classification Report;

Appendix R Chesterfield New 400kV Substation Outline Soil Management Plan;

Appendix S Chesterfield New 400kV Substation Arboricultural Impact Assessment; and

Appendix T Chesterfield New 400kV Substation Outline Site Waste Management Plan.

1.3.32 The following additional reports have been provided in addition to the EAR:

Coal Mining Risk Assessment;

Electric and Magnetic Fields (EMF) Report;

Swept path/tracking plans for Abnormal Indivisible Loads (AILs), and

Statement of Community Involvement.

Report Structure

1.3.33 The PDAS should be read in conjunction with the plans, drawings and the accompanying supporting information provided with the planning application. Following this introduction (Section 1), the structure of this PDAS is as follows:

Section 2 provides background information relating to the context for the Scheme, including in respect of National Grid and its statutory duties and introduces the Horlock Rules (National Grid Company plc, 2009).

Section 3 provides details of the Site context and surrounding area.

Section 4 gives a description of the Scheme and the need for the development.

Section 5 presents the Design and Access Statement.

Section 6 reviews the current planning policy context for the Scheme including relevant Development Plan policies, national planning policy and guidance, and other material considerations including the environmental and technical reports which support the application.

Section 7 assesses the proposal in terms of its compliance with the Development Plan, national planning policy and guidance, and other material considerations.

Section 8 presents the planning balance and overall conclusions, confirming that permission should be granted.

References.

Appendix A provides a copy of the independent design review report produced by Design:Midlands

Appendix B includes a summary of relevant planning policies from the North East Derbyshire Local Plan

Appendix C includes a summary of relevant planning policies from the Derby and Derbyshire Minerals Local Plan

Appendix D includes a summary of relevant policies from Material Planning Considerations from the Development Plan

Appendix E outlines suggested planning conditions for consideration should the planning application be approved.

Appendix F Abbreviations.

Appendix G Glossary.

2. Context for the Scheme

2.1 Overview

- 2.1.1 This section of the PDAS:
- introduces the background and need for the Scheme;
 - describes the role of National Grid and its statutory duties; and
 - introduces the Horlock Rules.

2.2 Background to the Scheme

- 2.2.1 Rising electricity demand is expected as power generation for residences, business operations and transport undergoes transformation. The UK government has committed to reach net zero emissions by 2050. This means achieving a balance between the greenhouse gases put into the atmosphere and those taken out. Decarbonising the energy system is vital to achieve net zero; the fossil fuels that once powered the economy is to be replaced with sources of low-carbon electricity.
- 2.2.2 There is an increased growth forecast in offshore wind capacity in Scotland and the North East of England, as well as increasing power flows to and from European power grids. This would put pressure on the existing network, such that reinforcement of the transmission network has been identified as necessary to secure the operation of the transmission system and ensure reliable, economical and long-term supply.
- 2.2.3 To achieve this, National Grid needs to upgrade the high voltage power network in England to connect these new sources of offshore energy to the energy network. These plans are part of the biggest overhaul of the energy network in a generation, the Great Grid Upgrade, which would see significant investment and improvement in the nation's energy infrastructure as the UK continues its transition towards net zero and more sources of low carbon power are developed.
- 2.2.4 The Great Grid Upgrade comprises 17 major infrastructure projects that would both scale up the grid and update existing networks. It would enable National Grid to carry more clean, secure energy from where it is generated to where it is needed.
- 2.2.5 The proposed 400kV substation at Chesterfield is a key component of the Chesterfield to High Marnham reinforcement project which is specifically referenced in the Clean Power 2030 Report by the National Energy System Operator (NESO) (2024) as one of four projects which, if not delivered by 2030, would have a significant impact on the ability of the country to deliver clean power. This Project will include the construction of the Chesterfield 400kV substation, and upgrading the existing 275kV transmission overhead lines between Chesterfield and High Marnham to operate at 400kV. The Project also includes the construction of new substations at both Chesterfield (the Scheme) and High Marnham (the High Marnham Site).

- 2.2.6 The related but independent Brinsworth to Chesterfield project, will reinforce the electricity network between Brinsworth and Chesterfield by upgrading the existing 275kV transmission lines to operate at 400kV. This project will include the construction of the Long Lane New 400kV substation, next to the M1 in Rotherham together with works to connect the Brinsworth to Chesterfield project to the new Chesterfield 400kV substation being delivered as part of the Project. The Brinsworth to Chesterfield reinforcement project is also specifically referenced in the Clean Power 2030 Report by NESO (2024) as one of four projects which, if not delivered by 2030, would have a significant impact on the ability of the country to deliver clean power.
- 2.2.7 The Scheme proposals will support the UK's net zero target by reinforcing the electricity transmission network between the north of England and the Midlands and facilitate the distribution of planned offshore wind generation to regional and local levels, allowing clean green energy to be carried across the network.
- 2.2.8 Further information on the need for the Scheme is provided in Section 8 of this statement.

2.3 The Role of National Grid

- 2.3.1 National Grid Group companies sit at the heart of Great Britain's energy system, connecting millions of people and businesses to the energy they use every day. National Grid Group's operations in the UK include National Grid Electricity Transmission, which owns the high voltage transmission system in England and Wales; National Grid Electricity Distribution (formerly Western Power Distribution), which owns and operates electricity distribution networks in the Midlands, the South West and Wales; and National Grid Ventures, which owns and operates energy businesses in competitive markets, including sub-sea interconnectors. The applicant for the Scheme is National Grid Electricity Transmission plc ('National Grid').

National Grid Electricity Transmission plc (National Grid)

- 2.3.2 National Grid holds the Transmission Licence for England and Wales, and its statutory duty is to develop and maintain an efficient, coordinated and economical system of electricity transmission and to facilitate competition in the generation and supply of electricity, as set out in the Electricity Act 1989.
- 2.3.3 National Grid, as the regulated provider of electricity transmission services in England and Wales, is regulated by the Office of Gas and Electricity Markets (Ofgem). Transmission services include maintaining reliable electricity supplies and offering to construct new transmission system assets for new connections to the National Electricity Transmission System.

National Energy System Operator (NESO)

- 2.3.4 The National Energy System Operator (NESO) is the electricity system operator for Great Britain. NESO ensures electricity is always where it is needed, and the transmission network remains stable and secure in its operation.
- 2.3.5 As of 1 October 2024, NESO became a public body and is wholly owned by the Secretary of State. It was formerly part of National Grid Group plc and called the National Grid Electricity System Operator (ESO).

- 2.3.6 NESO has been established to act as the independent organisation responsible for planning Great Britain's energy system, looking after and operating the electricity and gas networks while also offering expert advice to the sector's decision-makers.

Scheme Operation

- 2.3.7 Electricity is transmitted by National Grid at 400kV and 275kV, linking generators with major centres of demand. At these centres of demand, the high voltage of the transmission network is transformed to 132kV and below for delivery into the local distribution networks. The key role of this transmission system is to connect the electricity generators' power stations with regional DNOs which then supply businesses and homes. In return for the connection, users of the transmission network pay a tariff to National Grid. This revenue is then used to maintain, improve and invest in the transmission network.

Statutory Duties

- 2.3.8 National Grid holds the Transmission Licence for England and Wales and is thus obligated to develop and maintain an efficient, co-ordinated and economical system of electricity transmission and to facilitate competition in the generation and supply of electricity, as set out in the Electricity Act 1989, licensed under Section 6(1)(b). As such, National Grid is bound by legal obligations set out in the Electricity Act 1989 and its associated licence.
- 2.3.9 Under Section 9(2) of the Act, National Grid has a duty to:
- develop and maintain an efficient, co-ordinated and economical system of electricity transmission; and
 - facilitate competition in the supply and generation of electricity.
- 2.3.10 As a licence holder National Grid has specific duties to uphold in relation to the desirability of preserving amenity of certain aspects of the environment and to mitigate the effects of its activities on the environment under Section 38 and Schedule 9 of the Electricity Act 1989.
- 2.3.11 National Grid is also required, under Section 38 of the Electricity Act 1989, to comply with the provisions of Schedule 9 of the Act. Schedule 9(1) requires that the licence holder, in the formulation of proposals to transmit electricity:
- 2.3.12 *'(a) shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and*
- 2.3.13 *(b) shall do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects'.*
- 2.3.14 Section 40 of the Natural Environment and Rural Communities Act 2006, meanwhile, sets out that *'A public authority which has any functions exercisable in relation to England must from time to time consider what action the authority can properly take, consistently with the proper exercise of its functions, to further the general biodiversity objective'*. National Grid serves a public function and Section 40 of this Act therefore also applies in the context of the Scheme.

2.4 The Horlock Rules

- 2.4.1 The Horlock Rules (National Grid Company plc, 2009) outline the methodology and recommendations for designing and positioning substations, alongside CSE compounds and line entries. When evaluating potential new electricity infrastructure projects, National Grid assesses the extent to which various options adhere to or diverge from these regulations. These guidelines complement National Grid's Holford Rules guidelines on the routing of high voltage transmission lines and where appropriate should be used in conjunction with them.
- 2.4.2 Although the Horlock Rules are not planning policy, National Policy Statement for Electricity Networks Infrastructure (EN-5) ('NPS EN-5') (Department for Energy Security and Net Zero (DESNZ), 2025b) states at Paragraph 2.9.18 that the Horlock Rules '*guidelines for the design and siting of substations [...] should be embodied in the applicants' proposals for the infrastructure associated with new overhead lines*'.
- 2.4.3 National Grid devised the Horlock Rules in 2003 and updated them in 2009 in pursuance of the duties under Schedule 9 of the Electricity Act 1989. The Horlock Rules provide guidelines for the siting and design of new substations, or substation extensions, to avoid or reduce the environmental effects of such developments.
- 2.4.4 The Horlock Rules state that:
- in the development of system options including new substations, consideration must be given to environmental issues from the earliest stage to balance the technical benefits and capital cost requirements, against the consequential environmental effects, in order to avoid (as far as possible) adverse effects (Rule 1);
 - the siting of substations, sealing end compounds and line entries should seek to avoid areas of the highest amenity, cultural or scientific value through the overall planning of the system connections (Rule 2);
 - areas of local amenity value, important existing habitats and landscape features should be protected as far as reasonably practicable (Rule 3);
 - siting of substations, extensions and associated proposals should take advantage of the screening provided by landform and existing features and the potential use of site layout and levels to keep intrusion into surrounding areas to a reasonably practicable minimum (Rule 4);
 - proposals should keep visual, noise and other environmental effects to a minimum (Rule 5);
 - the land use effects of proposals should be considered when planning the siting of substations or extensions (Rule 6);
 - in the design of new substations or line entries, early consideration should be given to the options available for terminal towers, equipment, buildings and ancillary development appropriate to individual locations (Rule 7);
 - space should be used effectively to limit the area required for development, consistent with appropriate mitigation measures and to minimise the adverse effects on existing land use and rights of way, whilst also having regard to future extension of the substation (Rule 8);

design of access roads, perimeter fencing, earth shaping, planting and ancillary development should form an integral part of the site layout and design to fit in with the surroundings (Rule 9);

in open landscapes especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance (Rule 10); and

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

3. Description of the Development Site

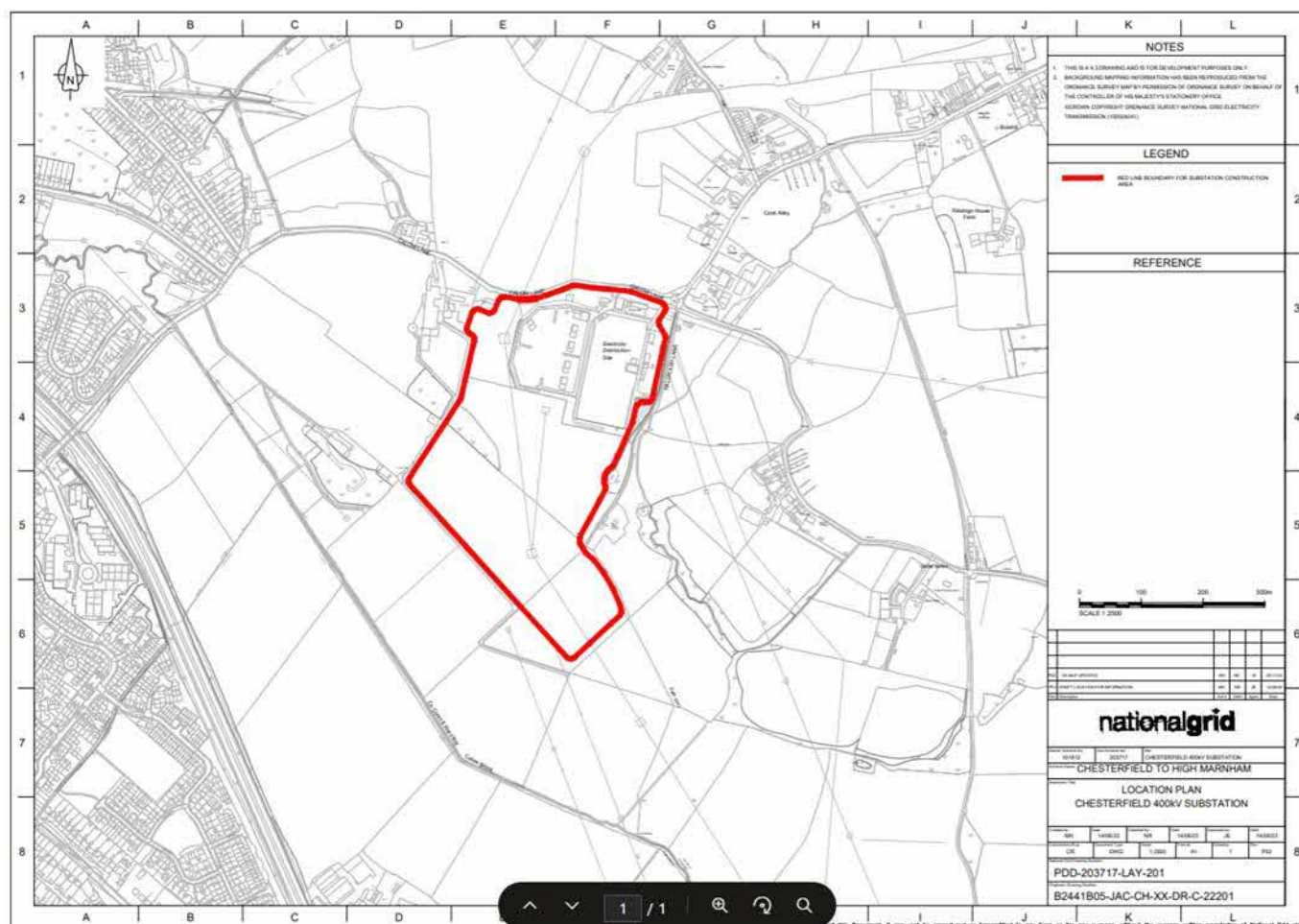
3.1 Introduction

- 3.1.1 This section of the PDAS provides an overview of the application site and its setting.

3.2 Site Location and Setting

- 3.2.1 Currently, the Site comprises two parts, the existing 275kV substation and the existing 132kV substation, which covers a combined area of approximately 14.5 hectares (ha). The Site is located to the south east of Chesterfield, south of Cock Alley.
- 3.2.2 The existing 275kV substation is located within the western part of an existing 132kV substation compound, with most of the remainder of the site being agricultural land, located to the south of the existing 132kV substation compound. A number of existing pylons are also present within the Site boundary, as shown in Drawing PDD-203717-LAY-233.
- 3.2.3 The 275kV substation is owned and operated by National Grid Electricity Transmission and the 132kV substation is owned and managed by National Grid Electricity Distribution.
- 3.2.4 The proposed 400kV substation site is located approximately 2km south east of Chesterfield town centre. The Site is bounded to the north by Calow Lane and to the east by Hallflash Lane. The A617 is present to the south west of the Site, beyond which are the southern residential and commercial areas of Chesterfield. The land parcels that immediately surround the Site are predominantly agricultural. Land to the north, south and east is more rural in character, while developed land is predominantly to the west of the Site.
- 3.2.5 The Site location and planning application red line boundary is illustrated in Figure 3.1 below.

Figure 3.1 Chesterfield Site Location



- 3.2.6 The Site topography ranges from approximately 104-117m Above Ordnance Datum (AOD). The Site is gradually sloped from north to south with the steepest areas being in the south of the Site. The landscape is generally open with small woodland blocks and field boundary hedgerows forming some containment within the local landscape. Farm buildings and agricultural fields provide the main features, with the existing substation infrastructure, pylons and overhead lines forming the main detracting features in the skyline. The Site is partially screened by woodland and intervening topography in the surrounding area.
- 3.2.7 There are no statutory designated ecological sites within the Site. There is one statutory designated site within 2km of the Site, which is the Duckmanton Railway Cutting Derbyshire Wildlife Trust Reserve and Site of Special Scientific Interest (SSSI) 1km to the north east of the Site. There are 16 non-statutory sites within 2km of the Site, including Local Wildlife Sites (LWS), potential LWS (pLWS), and Derbyshire Wildlife Trust Reserves. There are no World Heritage Sites, scheduled monuments, Registered Battlefields, or Registered Parks and Gardens within 2km of the Site. There are no listed buildings within the Site, but there is one listed building within 1km of the Site and a further 15 within 2km of the Site.
- 3.2.8 No Environment Agency designated main rivers are located within the Site. A tributary of the Calow Brook flows north to south directly to the east of the Site. Calow Brook is located to the east (180m at its closest point) and the south (250m at its closest point) of the Site.

- 3.2.9 The Site is not located within areas designated nationally or locally for their landscape. There are no National Landscapes or National Parks within 2km of the Site.
- 3.2.10 Furnace Hillock is a copse of trees located within the western part of the Site and is a pLWS. These trees are protected by a Tree Preservation Order (TPO), and further details are provided in the EAR (Appendix E).
- 3.2.11 The Site is not within an Air Quality Management Area (AQMA).
- 3.2.12 There are no Noise Important Areas within the Site; the closest is 500m to the south west of the Site, associated with the A617.
- 3.2.13 Four residential receptors are adjacent to the western and eastern boundaries of the Site. Additional residential receptors are located to the north east of the Site. Larger residential areas in the surrounding area include (distances approximate):
- Hasland 500m to the west;
 - Hady 400m to the north west;
 - Calow 1km to the north; and
 - Winsick 700m to the south.
- 3.2.14 There are three Public Rights of Way (PRoWs) which interact with the Scheme. The three PRoWs are:
- PRoW NE5/25/1 – currently routed on an east-west alignment to the south of the existing substation;
 - PRoW NE5/17/2 and NE5/17/1 – currently following Hallflash Lane; and
 - PRoW NE5/16/1 – currently following an alignment to the north and east of Furnace Hillock before routeing to the south of the existing substation and joining Hallflash Lane.
- 3.2.15 The Scheme would require the temporary closure and diversion of these footpaths during construction and a permanent realignment of NE5/25/1 and NE5/16/1 once the Scheme is operational.

3.3 Planning History

- 3.3.1 Table 3.1 below provides a review from NEDDC's online planning register of previous planning submissions on or in immediate proximity to the Site. Opencast coal extraction on the majority of the Site was granted by the Minister of Power in April 1967.
- 3.3.2 Since then, there has been a long history of approval for electricity installations (all applications marked with an asterisk could not be located on NEDDC's planning register, but are referenced from the planning committee report of NED/02/00967/FL):

Table 3.1 Planning history

Reference	Proposal	Decision	Decision Date
N/A*	Erection of a 132kV electricity substation	Granted	April 1957
N/A*	Erection of a 33kV substation	Approved	October 1957
N/A*	Outline Planning Permission for extensions to the electricity substation to form a further 275kV substation	Approved	October 1961 – Details approved in February 1962
N/A*	132kV substation, including amendments to adjacent 275kV substation	Approved	1964
N/A*	Small extension for a 132kV reactor and switch house with an external cooler bank	Granted	September 1969
NED/692/464	Proposed 400kV to the rear of existing 132kV/275kV substation site	Section 106 – Approved	30 September 1997
93/00083/FL	Erection of an equipment accommodation module	Conditionally Approved	25 December 1998
NED/692/465	Diversion of 275kV power line at Calow Substation	No Objection	25 December 1998
01/00397/FL	Construction of equipment accommodation module (Telecoms module-fibre optics) and standby generator	Conditionally Approved	4 June 2001
NED/02/00967 /FL	Renewal of NED/692/464 for 400 K.V. substation to rear of existing 132/275 K.V. substation site (+ landscaping scheme) (Major Development)	Refused	13 December 2002
14/00093/FL	Installation of 2 no wind turbines (22.6m to hub 34.3m to blade tip)	Withdrawn – No Decision	12 September 2014
15/00747/EIA	EIA Screening Opinion request relating to solar farm	No EIA Required	4 August 2015
16/00845/FL	Energy storage system comprising of battery storage containers, ancillary buildings, security fencing, CCTV, access tracks and landscaping (Amended Plans)	Refused	
Appeal – Dismissed – 4 August 2017	13 February 2017		
20/00488/EIA	EIA screening opinion for proposed photovoltaic park	No EIA Required	24 June 2020
24/00287/EIA	EIA Screening Opinion for a new 400kV substation at land adjoining existing National Grid 275kV Chesterfield Substation, Calow Lane	No EIA Required	24 April 2024

Reference	Proposal	Decision	Decision Date
24/00228/FL	Proposed variations relating to condition 2 (approved plans), condition 3 (substation), condition 4 (glint and glare), condition 5 (trees and hedgerow protection), condition 6 (landscape and ecology mitigation and management), condition 7 (construction biodiversity management), condition 8 (surface water drainage), condition 9 (surface water run-off during construction), condition 11 (soil management), condition 13 (construction environmental and waste management), condition 14 (landscape and ecological enhancement), condition 15 (security measures), condition 16 (construction access - Calow Lane), condition 17 (construction access - Hassocky Lane), condition 18 (construction access - Mansfield Road), condition 21 (highway condition survey) and condition 23 (temporary permission) attached to planning permission 20/01283/FL for photovoltaic solar park and associated infrastructure (s73 application)	Section 106 Completed	16 October 2024
24/00863/DIS CON	Application to discharge condition 14 (Site Access Visibility Splays Hasocky Lane Access) pursuant to planning application 24/00228/FL	Conditionally Discharged	28 November 2024
24/00862/DIS CON	Application to discharge condition 13 (Construction Vehicles Calow Lane access) pursuant to planning application 24/00228/FL	Conditionally Discharged	29 November 2024
24/00864/DIS CON	Application to discharge condition 4 (CBMP) pursuant to planning application 24/00228/FL	Conditionally Discharged	29 November 2024
24/00875/DIS CON	Application to discharge condition 11 (CEMP) pursuant to planning application 24/00228/FL	Conditionally Discharged	29 November 2024
24/00756/FL	Installation of underground cable (Affecting a Public Right of Way)	Conditionally Approved	2 December 2024

3.4 Case Studies

- 3.4.1 As shown in Table 3.1, the Site and its immediately adjoining land has shown a successful rate of applications that have been given approval for electricity installations. Whilst this is the case, there are examples of applications that have not been deemed appropriate to planning permission.
- 3.4.2 As a part of careful diligence and quality assurance, the following section looks to set out and discuss these previous applications and demonstrate how the planning application pertaining to this PDAS will look to avoid similar pitfalls and strive to meet requirements for planning approval.

Land to south of the existing substation

- 3.4.3 National Grid previously secured planning consent for a new 400kV substation on land to the south of the existing 275/132kV substation off Calow Lane (planning application NED/692/464 (alternative ref.: 92/00050/FL)). Planning permission was granted on 30 September 1997 following the completion of a Section 106 agreement which related to the implementation of landscaping proposals and highway improvements. This permission was not implemented by National Grid but worthy of note is that the planning consent was on the same land which forms this planning application.
- 3.4.4 A re-submission of the approved scheme was submitted on 21 August 2002 (planning ref NED/02/00967/FL). The application was recommended for approval at planning committee on the basis that no material changes in circumstances had occurred since the original approval and the justification for the proposal in this location remained valid. The committee report noted that the substation would be relatively well screened from distant viewpoints and would not appear significantly more prominent than the existing facility due to the proposed landscaping.
- 3.4.5 The application was refused at planning committee on 13 December 2002 on the following grounds:

That the site is situated in an open countryside location, where policies seek to restrict new development to that which is in keeping with the character of the area and conserves the character of landscape. The proposed development will be prominent and intrusive feature in the landscape and will have an increased local prominence which will result in a loss of visual amenity for the area. The proposal is therefore contrary to General Development Strategy Policies 2 and 4 of the Derby & Derbyshire Joint Structure Plan, Policy GS7 of the North East Derbyshire Local Plan and of the North East Derbyshire Local Plan Review First Deposit.

The site is situated in close proximity to a number of dwellings, and will significantly increase the size and presence of the substation, exacerbating fears associated with Electromagnetic Fields and health implications. The proposal will therefore adversely affect the amenity of neighbouring properties.

Commentary

- 3.4.6 Looking first at the policy stance, it is clear that ‘the countryside will be protected from inappropriate development’ as stated in policy SS9 – Development in the Countryside. Whilst the policy is silent in terms of electricity substations, this does not automatically mean they are not acceptable. Indeed, there are very few (if any) Local Plans across the UK which have specific policies relating to the siting of substations such as the Scheme. The intent of Policy SS9 is to restrict large-scale housing and commercial development which will erode the character of the countryside and instead divert these developments to more urban areas. Generally speaking, a large number of substations will be in rural locations such as this. The key thing is to ensure that a substation is sited in a suitable location, screened well, is of a suitable scale and use of suitable materials.
- 3.4.7 Whilst the site of the proposed Scheme is not allocated in the Local Plan, the aims of the plan are consistent with NPPF and the Climate Change Act 2008 in terms of transitioning to a low carbon economy. Section 8.43 of the Local Plan confirms that *‘the development of clean sources of electricity is essential to cutting down carbon dioxide emissions...’*. While the Scheme itself would not specifically generate electricity, the Scheme, and the Project of which it forms part, is critical in enabling the transition towards a low carbon economy through reinforcing the transmission network and enabling large scale energy developments to proceed. The Clean Power Report 2030 (NESO) explicitly identifies the Project (and the Brinsworth to Chesterfield project which the Scheme also supports) as schemes which, if not delivered by 2030, would have a significant impact on the ability of the country to deliver clean power. The principle of erecting an extension to an existing substation in order to enhance and support the national transmission network is considered to be acceptable when reading NPPF as a whole.
- 3.4.8 The principle of constructing an electricity substation at this location south of the existing substation has previously been established. In addition, the resubmitted scheme also received the backing of the planning authority who acknowledged that there was no material change in circumstances. It is considered that notwithstanding the time which has lapsed since the original consent, this remains a material planning consideration as there have been no material changes to the site and surrounding area. It is submitted that the need for this substation is now greater than at the time of the original consent, as detailed in Section 8 of this PDAS.
- 3.4.9 The land-take for the proposed substation has kept to the absolute minimum taking account of the wider needs of the technical requirements and connections from customers. In addition, a GIS solution was chosen in order to reduce the land take.
- 3.4.10 In terms of visual impact, if the application site was viewed on a flat plane and if there was no landscaping surrounding the application site and between the application site and nearby residential receptors, then the site would likely be very prominent on the long and short views. However, cognisance needs to be taken of the topography of the land surrounding the application site and also the current and proposed landscape treatment on the site, surrounding the site and also in between the site and nearby residential receptors.
- 3.4.11 As will be noted in the sections below, the Scheme makes the most of the existing field boundaries. The strong tree belt along the eastern boundary will remain and help reduce visual impact from the closest receptors to the east, as will part of the existing cluster of trees at the western edge of the site. The view from the housing scheme to the west (Hady Lane/Spital Lane) is restricted by virtue of the rising topography of the fields between the Site and housing. From the south, any views

from 'Manor House' or the A617 will be restricted by virtue of topography and landscaping in between the application site and these receptors.

- 3.4.12 National Grid notes the concerns pertaining to EMF. Comprehensive information about EMFs has been provided in a separate report to be submitted with this planning application. National Grid has prepared an EMF Report which describes how the design of the scheme is compliant with the International Commission on Nonionizing Radiation Protection (ICNIRP) guidelines (ICNIRP, 1998) in ensuring that the threshold for impacts to humans is not met or exceeded. National Grid will ensure that policies and procedures are in place at the design phase to ensure that all equipment complies with public EMF exposure limits.

Land to east of existing substation

- 3.4.13 Submitted by Energy Reservoir 11 Limited on 15 August 2016, under planning application 16/00845/FL, planning permission was sought on land to the east of Hall Flash Lane for an energy storage system comprising battery storage containers, ancillary buildings, security fencing, CCTV, access tracks and landscaping.
- 3.4.14 That application was refused on 13 February 2017 on the following grounds:
'the application is considered to be unacceptable as the development would result in the loss of a green field site in a manner that by reason of the proposal's location, topography and scale would have an unacceptable impact on the character and appearance of the area and fail to either conserve or enhance the natural environment and the impact of doing so significantly and demonstrably outweighs any benefits of the scheme contrary to policies GS1, GS6 and NE1 of the North East Derbyshire Local Plan and the National Planning Policy Framework when read as a whole.'
- 3.4.15 An appeal was dismissed (appeal ref.: APP/R1038/W/17/3173683) on 4 August 2017. The decision was based on two key issues: 1. the effect of the proposal on the character, and 2. the effect of the proposed access on highway safety with particular reference to visibility at the junction of the proposed access with Calow Lane.
- 3.4.16 The development, with its industrial appearance and alterations to the field entrance and access track, including the removal of 8m of hedgerow and the creation of visibility splays, was found to urbanise the area and detract from its rural character. This was deemed inconsistent with the rural Coalfield Village Farmlands character type. The proposal was expected to have a significant visual impact, particularly for users of a public footpath crossing the site. Views of the development would also be partially visible from Hall Flash Lane, Hall Flash Farm (150m away), and the rear of houses on Calow Lane, with the compound, retaining walls, and other structures further harming the area's visual character, especially in winter when vegetation provides less screening. Overall, the proposal conflicted with Policies GS1, GS6, and NE1 of the NEDDC Local Plan (NEDLP) 2014-2034.
- 3.4.17 Regarding highway safety, the proposal required widening an existing 6m gap in the hedgerow to 14m and providing visibility splays, but the visibility splay in the critical direction fell significantly short of the required 2.4m x 51m. Although the local highway authority raised no objections, it recommended conditions such as temporary warning signs and the use of a banksman in high-visibility clothing to control vehicle movements. However, these measures were deemed unenforceable and impractical and warning signs alone were insufficient to mitigate the highway safety risks. As such, the proposal was concluded to be detrimental to highway safety and failed to comply with Paragraph 32 of the NPPF, which requires safe and suitable access for all users.

- 3.4.18 While the proposal offered some local energy benefits and reduced energy burdens, it was deemed harmful to the character and appearance of the countryside due to the loss of pastureland, the introduction of a 200m access track, and localised harm to Calow Lane. The combined harm to the countryside's character and highway safety outweighed the scheme's benefits, rendering it inconsistent with sustainable development as defined in the NPPF.
- 3.4.19 Although local residents suggested using the Chesterfield Substation site for access to the Proposed Development, the Inspector concluded that the proposal must be assessed on its own merits.

Commentary

- 3.4.20 Whilst it is acknowledged that the character of the wider area is generally rural in nature, the precedent for a new substation on the site south of the existing substation has already been accepted by virtue of the approval in 1992.
- 3.4.21 This area is already characterised by industrial use, owing to the presence of the existing substation located immediately north of the Site. The proposed Scheme should therefore be regarded as an extension of the existing industrial facility, rather than the introduction of a new industrial area within a rural setting.
- 3.4.22 The Site boundary is approximately 220m to the west of residential properties, with the main site infrastructure sitting around 30m further to the west (approximately 250m separation as the crow flies), but on the western side of the existing tree planting along Hall Flash Lane. The battery storage application sat within the more open field on the eastern side of Hall Flash Lane. Despite having the backdrop of trees along Hall Flash Lane, there was no landscaping in between to reduce the visual impact of that development when viewed from the houses to the east. The Scheme that this PDAS pertains to also benefits from existing and proposed landscaping along the southern and western boundaries to help reduce the visual impact of the development in the short and long views.
- 3.4.23 The views from the south (Manor House) are reduced somewhat by strong tree planting along Calow Brook, the topography and distance (some 700m). Likewise, any views from the A617 will be limited because of the mature planting along the boundary of that road.
- 3.4.24 In terms of the view from Hall Flash Farm from the east, the existing vegetation along Hall Flash Lane will remain and act as a visual buffer. Laurel Farm sits some 150m to the north west of the Scheme and already benefits from mature planting around the western boundary of the existing substation. The landscape proposals show retention of existing woodland along the western boundary of the Scheme where possible, in addition to new planting in order to reduce the visual impact. It is acknowledged that users of PRoWs NE5/25/1, NE5/16/1 and NE5/17, already have views of the existing substation albeit skewed by virtue of the strong landscape belt along the southern boundary. National Grid are proposing to re-align PRoW NE5/25/1, which will look to maintain its existing east to west orientation, with hedgerow planting proposed along the length of the new path to reduce visual impact of the new substation. However, it is acknowledged that there is a small section which will be more visible because no planting is proposed where the cables go between the proposed and existing substations. PRoW NE5/16/1, which currently crosses the site in a north west to south east direction, is also proposed to be re-aligned. The diversion will route the PRoW around the western perimeter of the Site, moving south of the Scheme, before

re-joining the existing connection further east, albeit slightly further south, at PRoW NE5/17/1. This re-alignment will ensure that public access is maintained and will not restrict use. Landscape planting is proposed along the boundary of the Site along the re-routed path in order to reduce the visual impact when viewed from that vantage point. In that regard, the visual impact of the current substation and proposed Scheme would be similar in nature.

- 3.4.25 In contrast to the refused battery storage site, the Scheme will not require the removal of hedgerows along Calow Lane for operational needs as it will utilise an existing field access and associated bellmouth, and as such there are no road safety issues.

Overall Conclusion

- 3.4.26 Whilst it is recognised that there have been applications refused on or adjacent to the site to the south of the existing substation, it is considered that there are material considerations which outweigh this in favour of the Scheme.
- 3.4.27 The proposed substation extension is considered acceptable in planning terms, with robust mitigation for any potential impacts, and is well-aligned with both local and national policy objectives supporting the transition to a low-carbon energy system.
- 3.4.28 **Policy Compliance:** The Scheme does not conflict with Local Plan or national planning policy. While countryside protection policies seek to restrict inappropriate development, the siting of substations in rural areas is both necessary and accepted, provided that impacts are adequately mitigated.
- 3.4.29 **Established Principle:** The acceptability of a substation at this location is long-established, with previous planning consents and no material changes to the site or its context since the original approval. The need for the substation has only increased.
- 3.4.30 **Environmental and Visual Impact:** The design minimises land take, employs a GIS solution to further reduce its footprint, and incorporates significant existing and proposed landscaping. Visual impacts from nearby housing, public rights of way, and roads are carefully mitigated by topography and planting.
- 3.4.31 **Health and Amenity:** The project is fully compliant with national guidance regarding electromagnetic fields (EMF), resulting in negligible health risk, and public access will be maintained through rerouted and improved rights of way.
- 3.4.32 **Relationship to Surroundings:** The scheme is an extension to an existing industrial facility in a rural area already characterised by such uses, and is well separated from residential properties with appropriate landscape buffers.
- 3.4.33 **Support for Low-Carbon Transition:** The development is essential to supporting the national grid and enabling further renewable energy generation, in line with national climate and energy objectives.
- 3.4.34 In summary, the scheme is appropriate for its location, well designed to mitigate any potential impacts, and justified in light of increased infrastructure need and policy support for the transition to a low-carbon energy system.

4. The Scheme

4.1 Introduction

- 4.1.1 This section of the PDAS provides a description of the Scheme.
- 4.1.2 This section of the statement also sets out the design components that have been incorporated within the Scheme in the context of the physical, social and economic environment of the proposed substation. Specific details around the amount of development proposed, and the layout, scale and appearance of the proposals are also discussed within this section.

4.2 Scheme Description

- 4.2.1 This planning application seeks full planning permission for:
‘Erection of a 400kV Gas Insulated Switchgear (GIS) substation including three super grid transformers, gantries, internal access roads, a GIS building, parking, drainage, diesel generator, lighting and CCTV, permanent access road from Calow Lane, earthworks, landscaping and biodiversity enhancement, and fencing the permanent realignment of footpaths NE5/25/1 and NE5/16/1 and felling of trees subject to TPO W1/171’.
- 4.2.2 The Scheme comprises the following principal elements:
 - construction of a new 400kV GIS substation;
 - up to three SGTs;
 - six overhead line gantries; and
 - three permanent buildings.
- 4.2.3 The substation includes electrical plant for controlling directing, switching and transforming high voltage electricity. This plant includes:
 - SGTs and associated cooler banks;
 - GIS switchgear;
 - Gas Insulated Busbar (GIB) connecting the GIS switchgear to other plant;
 - Capacitor Voltage Transformers (CVT);
 - Cable Sealing Ends (CSEs);
 - earth switches;
 - surge arresters;
 - diesel generator; and
 - protection and control equipment.
- 4.2.4 The proposed layout of the Site, including removal and temporary works, is shown in Chesterfield New 400kV Substation Proposed Site Layout.

4.2.5 These components are described below.

Proposed GIS Substation

- 4.2.6 Within the national electricity system, substations operate within the transmissions network to enable electricity to be transmitted as different voltages, safely and effectively. Substations can transform the voltage of electricity either up or down as required. This is needed so that electricity can be safely transmitted throughout the country and into homes, businesses and buildings.
- 4.2.7 The Scheme comprises a new 400kV GIS substation and associated infrastructure within a secured fenced compound of up to 150m x 210m. The compound will be surrounded by a 2.4m high palisade security fence with a 4m high electric pulse fence installed to the rear of the palisade to secure the site and avoid trespassers, including CCTV surveillance.
- 4.2.8 The 400kV substation will be housed within a building, comprising a main hall (containing electrical equipment including GIS) and an annex housing ancillary equipment necessary for the operation of the substation. The ancillary facilities will include the following:
- control room;
 - relay room;
 - storage room;
 - staff meeting room; and
 - welfare facilities (including toilets and showers).
- 4.2.9 The 400kV GIS building will be located within the substation compound, will measure 76m by 25m, and will measure and include up to three SGTs. The SGTs will be surrounded by a perimeter of reinforced concrete bunds, supported on a base slab continuous with the wall and a central plinth for supporting the SGTs. The bunds would also act as a secondary oil containment measure for the insulation oil in the transformers.
- 4.2.10 There is proposed to be a noise enclosure around each transformer to reduce operational noise. The noise enclosures will be around the SGTs only (not the attached cooler banks) and will be up to 12m long, 8m wide and 6m high to contain the primary noise emitting components. Other equipment includes protection and control equipment, switching devices, cooler banks for each transformer, a diesel generator and a water tank emergency firewater supply.
- 4.2.11 The tallest structure within the substation compound will be the GIS building, which will be 76m long by 25m wide and 15m high. The GIS building will house 13 GIS bays with each bay 3m wide and up to 8m long. Each GIS bay will connect to the wider substation through a series of overground GIBs with diameters of 400mm and lengths of up to 180m.
- 4.2.12 The following substation components will be separate from or connected to the main GIS building:
- Gantries: there will be six steel gantries. The gantries are 2.5m x 22m with heights of 12.5m. There will be two western gantries that will tie into the northernmost pylon and the four southern gantries will tie into the remaining two pylons to the south.

A small storage unit and workshop building will be located within the eastern part of the Site.

Within the substation, the majority of electrical equipment will be mounted on steel posts fixed to concrete foundations. The top of the electrical equipment, and GIB or GIS busbars connecting equipment, will be typically up to 9m above ground level.

Diesel generator: this is a small, packaged diesel generator used as back up if the low voltage power supply fails. The diesel generator, fitted with a silenced exhaust system, will be located at the eastern side of the Site. Hardstanding for the placement of a backup emergency diesel generator will also be located alongside this. The diesel generator will be located within an acoustic container to minimise noise.

Internal access, circulation and parking

- 4.2.13 The proposed internal road and pedestrian area layout for the substation compound has been designed to allow the safe movement of vehicles and pedestrians and has had regard to relevant health and safety legislation and good industry practice. The Site access roads are designed to allow for maintenance access around the substation. The internal access roads will be 6m wide and surfaced with tarmac.
- 4.2.14 Car parking is to be provided to the west of the GIS building, with provision of six parking spaces, including the provision of two electric vehicle parking spaces for visitors and National Grid staff.

4.3 Overhead Line Works and Consenting Requirements

- 4.3.1 As set out in Section 1.3, ancillary works are required to tie the proposed substation into the existing transmission network. These works are to comprise the replacing the existing 275kV Overhead Line (OHL) with new 400kV overhead lines; new permanent pylons as well as a temporary OHL and pylons on the 4ZX OHL.
- 4.3.2 Section 37 consent is required to be obtained for new above-ground overhead lines that are:
 - new overhead lines less than 2km in length; and
 - replacing an existing overhead line (which meets certain tests, unless it is exempt).
- 4.3.3 Section 37 of the Electricity Act 1989, as amended, sets out, with certain exceptions, that consent must be obtained to 'install or keep installed' electric lines above ground. 'Electric lines' are defined in Section 64 of the Electricity Act 1989.
- 4.3.4 Section 37 of the Electricity Act 1989 also provides an exemption from the requirement to obtain consent for any overhead line that is on land that 'is, or will be', in National Grid's 'occupation or control'. This means that above ground electric lines (busbars, conductors or gantries that are part of the 'electric line') can be installed and kept installed on National Grid land, i.e. within substations, without requiring Section 37 consent, or relying on any electricity exemptions. In addition, The Overhead Lines (Exemption) (England and Wales) Regulations 2009 provide further exemptions for minor works to existing overhead lines requiring Section 37 consent and also temporary works under 6 months.

- 4.3.5 Whilst outside the scope of this planning application, the following provides a high-level overview of the nature of the temporary and permanent works proposed to modify the existing overhead line configuration to connect the new 400kV Chesterfield Substation to the transmission network:

Modifications to the existing Chesterfield to Brinsworth and Chesterfield to High Marnham circuits (4ZV) are required to turn this existing circuit into the new 400kV Chesterfield Substation. Three existing pylons will be removed and replaced with three new pylons.

The permanent location of the three new pylons include one to be located to the west of the substation, with the other two to be located to the south of the substation. The new overhead lines length will connect to the pylons.

During construction it will be necessary to erect a temporary overhead line to facilitate the transition from the existing 4ZV overhead line to the Chesterfield Substation. The temporary pylon will be located to the south of the proposed substation.

4.4 Public Rights of Way Diversions

- 4.4.1 Prior to submitting the planning application, National Grid presented its initial proposals for managing the PRowS during both the construction and operational phases of the Scheme. Since then, National Grid has consulted with the Ramblers Association and the Peak Footpath Society, informing them of the need to temporarily divert or close the PRowS.

- 4.4.2 During the construction and operation of the Scheme, National Grid is proposing to implement the following diversions:

PRow NE5/25/1 will need to be realigned onto a slightly amended alignment to the south of the existing substation but it will broadly maintain its existing west to east alignment. The PRow will be appropriately screened and will be outside the security fencing of the substation. The only parts of the PRow without screening will be the sections that cross over two underground cables that connect the proposed substation with the existing substation; screening cannot be installed here due to potential interaction between vegetation roots and the cables.

PRow NE5/16/1 will need to be permanently diverted to ensure that an accessible route remains open to the west and south of the proposed substation. The PRow will be temporarily realigned during construction before being permanently diverted for the operational phase. The diverted route would run parallel to the south western part of the Scheme boundary. The PRow will be suitably screened to maintain the amenity value of the PRow.

- 4.4.3 The works required to divert aforementioned PRowS will be submitted under Section 257 of the TCPA 1990, which allows applications to divert or stop up a footpath, bridleway or restricted byway to allow a development that has planning consent to take place. There may also be a need to temporarily close PRow NE5/17/2 for a short period to facilitate drainage works.

- 4.4.4 The existing PRow alignment and proposed permanent diversions are illustrated on drawing 30184504-ARC-XX-LAN-DWG-00003. This drawing also illustrates the proposed temporary diversion of NE5/16/1.

4.5 Construction and Commissioning

- 4.5.1 This section sets out the construction programme and outlines the key assumptions that have been made within the Chesterfield EAR with regards to construction approach and working methods.
- 4.5.2 The Scheme will be designed, constructed and operated in accordance with all relevant health and safety legislation. It will also comply with design safety standards including the National Electricity Transmission System Security and Quality Supply Standard (NETS SQSS), which defines the criteria and methodology for coordinating and operating the National Electricity Transmission System. The NETS SQSS informs a suite of National Grid policies and processes which set out the design standards and thresholds that must be met when designing, constructing and operating assets such as the proposed substations.
- 4.5.3 The indicative programme identifies pre-commencement works are due to start in July 2026 and will be completed by August 2026. Construction works will span from August 2026 and will be completed by March 2030. Temporary connection works will be in place from June 2026 to March 2030.
- 4.5.4 The indicative construction and commissioning stage will consist of the following phases:
- pre-commencement works: July 2026 – August 2026;
 - site establishment and enabling works: August 2026 – October 2026;
 - substation works: September 2026 – December 2029; and
 - demobilisation: January 2030 – March 2030.

Outline Construction Environmental Management Plan

- 4.5.5 An Outline Construction Environmental Management Plan (OCEMP) has been submitted as part of this planning application. Following the receipt of planning approval, the OCEMP will then be updated by the Mains Works Contractor to a full Construction Environmental Management Plan (CEMP) which will be in accordance with the OCEMP.
- 4.5.6 The purpose of the OCEMP is to identify potential adverse environmental issues arising from the construction of the Scheme, to specify measurable limits and targets, and to detail the mitigation measures to be undertaken during construction and the management tools and procedures required. The OCEMP therefore provides an operational manual detailing the management, monitoring, auditing and training procedures to be followed during the construction of the works to ensure compliance with relevant legislation. It would also set out the specific roles and responsibilities of the Main Works Contractors and wider project team personnel. The OCEMP would typically include the following:
- available details regarding the phasing of works;
 - details of the works to be undertaken highlighting any operations likely to result in adverse environmental impacts, with an indication of the specific detailed mitigation measures to be employed;
 - prohibited or restricted operations;

- a framework for compliance with relevant legislation and guidance;
- details of plant to be used;
- construction working hours including any weekend or public holiday works proposed and, if so, their working hours;
- roles and responsibilities of key staff including training of staff, liaison with stakeholders and management of enquiries and complaints;
- details of emergency procedures to be implemented on the Site;
- details of general Site management practices, including working hours, hoarding, access, lighting, Site facilities, energy and water use, waste, materials procurement and storage;
- details of environmental management and control procedures, covering ecology, traffic and access, noise and vibration, dust, contamination, hazardous materials, drainage and pollution control;
- requirements for auditing, monitoring and record-keeping;
- mechanisms for third parties to register complaints and the procedures for responding to complaints; and
- provisions for reporting, public liaison and prior notification, especially where dispensations are required.

- 4.5.7 All proposed mitigation measures relating to the construction phase as identified in Chapters 4-15 of the EAR are also included within the OCEMP.

Outline Construction Traffic Management Plan

- 4.5.8 An Outline Construction Traffic Management Plan (OCTMP) has been submitted as part of this planning application. Following the receipt of planning approval, the OCTMP will then be updated by the Contractor to a full Construction Traffic Management Plan (CTMP), which will be in accordance with the OCTMP

- 4.5.9 The purpose of the OCTMP is to outline the measures to be followed to manage construction traffic. The OCTMP would typically include the following:

- the construction programme and anticipated peak two-way traffic movement flows broken down into vehicle types (Heavy Goods Vehicles (HGVs) and Cars/Light Goods Vehicles (LGVs));
- details of proposed routes for HGVs travelling to and from the Site;
- peak numbers of anticipated construction workers;
- Abnormal Indivisible Loads – numbers and the vehicle types/sizes;
- details of any PRow realignment/diversions/closures and any alternative routes being proposed and the duration of closure/diversion;
- confirmation of the substation site access and the site access locations for the overhead lines; and
- site access drawings, including visibility splays and swept path analysis.

Outline Site Waste Management Plan

- 4.5.10 An Outline Site Waste Management Plan (OSWMP) has been submitted as part of this planning application prior to the commencement of the Scheme. Following the receipt of planning approval, the OSWMP will then be updated by the Main Works Contractor to a full Site Waste Management Plan (SWMP) which will be in accordance with the OSWMP.
- 4.5.11 The OSWMP outlines measures to be undertaken during construction to appropriately manage construction waste.

Temporary Works

- 4.5.12 Prior to the removal of selected overhead line entries into the 275kV compound equipment, temporary works will be implemented to ensure continuity of electrical connection throughout the grid during the construction of the new substation. This will involve supporting part of the existing substation with two temporary CSE compounds, which will be situated to the west and south west of the existing substation. The western temporary CSE compound will measure 38m in width by 25.5m in length, accommodating an access road, with the tallest structures being the overhead line gantries at approximately 12.5m in height. The south west temporary CSE compound will have dimensions of 22m by 18.5m, with the overhead line gantries also reaching a height of approximately 12.5m. These temporary CSE compounds are essential to maintain uninterrupted grid connectivity and operational reliability during the transitional phase of the substation upgrade.
- 4.5.13 The temporary CSE compounds will be connected to the existing substation via four CSE cables, with each compound accommodating two cables. These cables will be installed below ground, each having a cross-sectional area of up to 2,500mm² and a length of 335m. The southern temporary CSE compound will connect to a temporary overhead line pylon, which will be positioned along the southern edge of the Scheme boundary.
- 4.5.14 These works benefit from deemed planning permission through Part 15, Class B(f) of The Town and Country Planning (General Permitted Development) (England) Order 2015.

Removal Works

- 4.5.15 Some redundant equipment within the existing 275kV substation will be removed. The perimeter fence will be retained for security purposes. Gravel or other suitable low maintenance substrate will be installed across this part of the Site. Any known contamination or potential sources of contamination will be removed/remediated including assets below ground (such as oil filled cables).
- 4.5.16 Three pylons will be removed as part of this Scheme. One is located to the north of the western part of the existing substation, one is to the north of the new substation, and one is to the south of the new substation. There will be temporary overhead cables connecting the pylon for removal to the north of the new substation and the new pylon to the south west of the new substation.
- 4.5.17 Several underground cables connecting the western part of the existing 275kV substation will be removed and replaced with new cables in the construction phase which will connect the existing 275kV substation to the GIS compound.

- 4.5.18 Additionally, an existing 132kV underground cable that currently travels southward from the existing substation will be removed.
- 4.5.19 Under Schedule 2, Part 15, Class B of The Town and Country Planning (General Permitted Development) (England) Order 2015 (GPDO 2015), the following text sets out those electricity acts that are covered by Permitted Development (PD).
- ‘Development by statutory undertakers for the generation, transmission, distribution or supply of electricity for the purposes of their undertaking consisting of—*
- (a) the installation or replacement in, on, over or under land of an electric line and the construction of shafts and tunnels and the installation or replacement of feeder or service pillars or transforming or switching stations or chambers reasonably necessary in connection with an electric line;*
- (b) the installation or replacement of any electronic communications line which connects any part of an electric line to any electrical plant or building, and the installation or replacement of any support for any such line;*
- (c) the sinking of boreholes to ascertain the nature of the subsoil and the installation of any plant or machinery reasonably necessary in connection with such boreholes;*
- (d) the extension or alteration of buildings on operational land;*
- (e) the erection on operational land of the undertaking of a building solely for the protection of plant or machinery;*
- (f) any other development carried out in, on, over or under the operational land of the undertaking.’*
- 4.5.20 For these elements of the Scheme to be covered under Schedule 2, Part 15, Class B of the GDPO 2015, the removal works are also required to meet the condition thresholds set out by Class B1 and B2 of the GDPO 2015. As these conditions are adhered to, the removal works of the Scheme are covered under Class B of the GDPO, making them PD.

Construction Compound

- 4.5.21 The location of the construction compound for the Scheme is still to be confirmed, however it is anticipated that the compound will be on land adjoining the development site. Subject to confirmation of the final location of the temporary compound, it is understood that, due to its temporary nature and its location adjoining the main construction site, the compound would benefit from deemed planning permission under PD rights.
- 4.5.22 Schedule 2, Part 4, Paragraph A of the GDPO 2015 states that PD may be granted for temporary compounds when associated with an approved application so long as the proposed PD is consisted with, *‘the provision on land of buildings, moveable structures, works, plant or machinery required temporarily in connection with and for the duration of operations being or to be carried out on, in, under or over that land or on land adjoining that land’*.
- 4.5.23 Therefore, National Grid would implement the works required for the construction compound under the Permitted Development rights referred to above. However, if required, National Grid would seek a separate planning consent from NEDDC as the LPA.

- 4.5.24 Standard construction compound lighting and palisade security fences for construction compounds will be used.

Working Hours

- 4.5.25 Typical working hours would likely be 7am to 7pm on Monday to Friday, except during system outages, and 8am to 1pm on Saturday. System outages are assumed to only be permitted from the end of March to the end of October. During outages, some weekend working may be required.
- 4.5.26 Any works proposed outside of the hours specified above are to be agreed with NEDDC prior to any of the proposed works being carried out.

Site Access and Routes

- 4.5.27 The Site will be accessed via a new access from Calow Lane into the northern part of the Site. Vehicles will travel along the A617, the B6425, the A632 and then Calow Lane before entering the Site
- 4.5.28 From the site entrance off Calow Lane, an access road will be constructed that goes southward from Calow Lane into the proposed substation where it will split off in five directions throughout the proposed substation.
- 4.5.29 The access route crosses proposed underground cables in four places along the route. Two of these cables are permanent and located within the footprint of the proposed substation. The remaining two cables are temporary and will be located in the north west of the Site, in association with the temporary CSE compounds.
- 4.5.30 Two temporary access tracks will be used during construction. One is to the north west of the proposed substation and loops around a temporary CSE compound. The other goes from the north west of the proposed substation and down along the western side of the Site, along an existing track within Furnace Hillock, to a second CSE compound to the west of the proposed new 400kV substation.

Abnormal Indivisible Load Access Study (WYNNS, 2025)

- 4.5.31 Accompanying this submission is an Abnormal Indivisible Load Access Study (Ref. Abnormal Indivisible Load Access Study – WYNNS, 2025). An abnormal indivisible load is defined as a large, heavy, or awkward item that cannot be divided into smaller, more manageable parts for transportation. For the Scheme, there is a requirement to deliver three SGTs to the Site.
- 4.5.32 The Abnormal Indivisible Load Access Study constitutes a technical assessment undertaken to determine the feasibility and safety of transporting an Abnormal Indivisible Load along a specified route, typically involving public roads or other infrastructure. A route survey was conducted in April 2024, with a more detailed report subsequently issued to National Grid on 16 May 2025, based on the originally proposed unit weight of 174.4 tonnes.
- 4.5.33 The study undertaken by Wynns of behalf of National Grid has identified an appropriate route for the transport of the three SGTs.
- 4.5.34 The purpose of the study is to ensure that the selected route can accommodate the abnormal load without causing damage to infrastructure or compromising safety. The assessment has been conducted to help authorities and contractors to understand any modifications or precautions that may be necessary for the safe and efficient movement of the load.

- 4.5.35 Within the study, correspondence is included in the form of an email dated 15 August 2024, which details an agreement in principle with National Highways regarding the transportation from Goole to Chesterfield (the Site).
- 4.5.36 The route identified in the Wynns study comprises delivery of the SGTs by Girder frame trailers via the following route:
- exit Goole on A161 Normandy Way/Tom Pudding Way;
 - turn left M62 westbound at Junction 36;
 - turn left M18 south;
 - continue M18 (use junction slip roads at junction 6 and 2);
 - merge M1 south;
 - continue south M1 to Junction 28;
 - circumnavigate the Junction 28 interchange and return northbound M1;
 - exit M1 northbound at Junction 29 onto westbound towards A617 towards Chesterfield;
 - at Horns Bridge Roundabout, circumnavigate the roundabout take the fifth exit and return eastbound on A617;
 - turn left onto B6425 Hassocky Lane;
 - turn left onto A632 Chesterfield Road;
 - turn left onto Calow Lane;
 - continue along Calow Lane to Chesterfield Substation, passing the existing substation; and
 - turn left to the new substation access road to the west of the existing substation.

4.6 Operational Phase

Access

- 4.6.1 There are three PRowS which interact with the Scheme. The two PRowS and the proposed permanent diversions are described below:
- PRow NE5/25/1 will need to be realigned onto a slightly amended alignment to the south of the existing substation but it will broadly maintain its existing west to east alignment. The PRow will be appropriately screened and will be outside the security fencing of the substation. The only parts of the PRow without screening will be the sections that cross over two underground cables that connect the proposed substation with the existing substation; screening cannot be installed here due to potential interaction between vegetation roots and the cables.
- PRow NE5/16/1 will need to be permanently diverted to ensure that an accessible route remains open to the west and south of the proposed substation. The PRow would be temporarily realigned during construction before being permanently diverted for the operational phase. The diverted route would run parallel to the south western part of the Scheme boundary. The PRow would be suitably screened to maintain the amenity value of the PRow.

PRoW NE5/17/2 – this footpath runs north to south along Hallflash Lane. During construction, it is proposed that a short section of this footpath be potentially temporarily closed for a very short period to facilitate drainage works. No permanent changes are required to this PRoW.

Operational Activities

- 4.6.2 Throughout the operational phase, the substation will not be regularly manned. Welfare facilities, including toilets, showers, mess hall, and meeting rooms, will be located within the GIS building. When maintenance of the substation is undertaken, the number of staff on-site will increase to 10 for the duration of the works.
- 4.6.3 Vehicle movements throughout operation and when maintenance is undertaken are anticipated to be a maximum of 10 movements per day.
- 4.6.4 Day-to-day operational noise associated with staff on-site will be minimal and contained within normal working hours.
- 4.6.5 Substations are not generally lit or permanently illuminated. Floodlights, 4-6m in height, will be installed but only used if access is required in an emergency during the hours of darkness. Security lighting will also be used when an intruder alarm is activated at night; in this scenario, a light will be activated for approximately 3 minutes whilst the alarm is remotely assessed by National Grid.

4.7 Environmental Mitigation and Biodiversity Net Gain (BNG)

- 4.7.1 The landscaping on the Scheme has been designed to provide environmental mitigation and Biodiversity Net Gain (BNG). A plan of the landscaping design is shown in Appendix E of the EAR.

The landscaping design comprises:

- re-instating the existing vegetation habitat along Calow Lane after the completion and removal of the temporary works;
- species rich hedgerow planting along the re-routed PRoW NE5/25/1;
- native scrub planting along the east side of the new 400kV substation to provide screening for Hall Flash Farm and Hallflash Lane;
- existing vegetation to be retained along the boundary with Hall Flash Farm;
- wetland species planting around the attenuation ponds;
- reinstating hedgerow planting along the south west boundary of the Site after completion of the temporary works to provide screening;
- species rich hedgerow planting along the re-routed PRoW NE5/16/1;
- native species woodland planting in the west of the Site to mitigate the loss of existing broadleaved woodland;
- mixed scrub planting along the existing hedgerow on the south and south west Site boundary;
- retaining the existing woodland habitat in the west of the Site where possible;
- re-instating existing woodland habitat in the west of the Site after the completion and removal of the temporary works;
- native species woodland planting in the north west of the Site to mitigate the loss of existing broadleaved woodland;

new native hedgerow with intermittent broadleaved tree planting along the north west Site boundary to provide screening for Laurel Farm; and
native species rich hedgerow planting adjacent to the west of existing substation boundary to replace that removed to facilitate the overhead line route.

5. Design and Access Statement

5.1.1 This section of the PDAS provides an overview of how, taking into account National Grid's statutory duties, the policy framework, engagement with stakeholders and environmental assessment, the design of the Scheme has evolved. It focuses on the following principal elements of the proposal's evolution:

- design objectives;
- technology options;
- design panel meeting;
- use;
- scale and amount;
- drainage;
- appearance;
- environmental mitigation and enhancement measures;
- access;
- compliance with the Horlock Rules; and
- analysis and feedback from Design:Midlands Review.

Design Objectives

5.1.2 Due to the nature of the Scheme and the need to ensure operational stability, security and safety, there is limited flexibility in terms of design, architecture and the selection of materials relative to other types of development. This is expressly recognised in NPS EN-5 (DESNZ, 2025b) which states at Paragraphs 2.4.3 to 2.4.4 that:

'...the Secretary of State should bear in mind 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.'

While the above principles should govern the design of an electricity networks infrastructure application to the fullest possible extent – including in its avoidance and/or mitigation of potential adverse impacts (particularly those detailed in Section 2.10 below) – the functional performance of the infrastructure in respect of security of supply and public and occupational safety must not thereby be threatened'.

5.1.3 In this regard, the GIS substation and other buildings associated with the Scheme have been designed in accordance with National Grid Technical Specifications.

5.1.4 Notwithstanding the limited flexibility associated with the design of substations, the Scheme has had regard to the design principles established in the Development Plan, national planning policy and the Horlock Rules, and opportunities to positively shape the proposal, informed by the Site's context and constraints as well as the views of stakeholders, have informed the design process. In this context, the following key design objectives have underpinned and guided the evolution of the design of the Scheme:

To avoid internationally and nationally designated areas of the highest amenity, cultural, heritage or scientific value.

To deliver, where possible, environmental enhancement including a net gain in biodiversity.

To conserve, and where possible enhance, local features of historic and landscape importance.

To minimise the land required for the Scheme.

To minimise harm to the Green Belt where possible.

To ensure that there is no unacceptable impact on neighbouring amenity.

To propose lighting appropriate to the Site's context.

To ensure that the Scheme minimises as far as is practicable greenhouse gas emissions and is climate change resilient.

To locate the new substation in close proximity to the existing 400kV overhead line network to minimise the need for additional, ancillary infrastructure.

To maintain suitable separation distances between built development and sensitive ecological features (trees/woodlands, ancient woodlands, ditches, hedgerows) where possible.

To provide a safe and suitable access to the proposed substation.

Technology Options

- 5.1.5 There are two technology options available when designing a substation. These are:
- Air Insulated Switchgear (AIS); and
 - Gas Insulated Switchgear (GIS).
- 5.1.6 Both AIS and GIS substations contain the same compartments and components as each other; the main difference lies with the means of insulation. An AIS system largely utilises air as an insulator between electrical conductors and earth whilst GIS substations are self-contained systems that largely use a gas with much better insulating properties than air as an insulator. AIS substations are the most common type, accounting for more than 70 per cent all over the world. GIS solutions allow the high voltage equipment to be much closer to each other, enabling the substation to have a much smaller footprint than an AIS solution, reducing its potential environmental impacts.
- 5.1.7 National Grid policy is that AIS substations represent the preferable option where possible but a GIS solution may be progressed instead when an AIS solution is not technically viable due to site constraints and other factors. In this case, the Scheme has progressed with a GIS substation as it provides considerable technical, and cost benefits. Adopting a GIS technology, which requires less land (minimum 10ha) than an AIS solution (minimum 18ha) enables the location of the Scheme immediately next to the existing substation requiring simple connections or diversions to the existing overhead line network avoiding a confusing appearance.

Use

- 5.1.8 The proposed use of the Site is for the construction and operation of the new 400kV substation. The substation is required to upgrade the existing transmission network from 275kV to 400kV to maintain system compliance and prevent overloading circuits as they transport the generated energy.
- 5.1.9 The Scheme will support the UK's net zero target by adding capacity to accommodate increasing power flows of energy generated mostly from offshore wind, in Scotland and North East England, which is expected to double within the next 10 years, to areas of demand south to the Midlands and beyond. By reinforcing the network in the centre of the country, the Scheme would facilitate the connection of more renewable and low-carbon electricity, to allow clean green energy to be carried around the network.

Layout

- 5.1.10 The proposed works in its entirety comprises the following:
- New 400kV GIS substation and associated infrastructure.
 - Up to three 400/275kV 1100MVA SGTs.
 - GIS building which will be approximately 76m long by 25m wide and 15m high.
 - Six overhead line gantries, which are bridge-like structures with platforms used to support equipment and cabling. The gantries will be approximately 12m high.
 - A small workshop building and storage unit are proposed. Both buildings will be 6.5m long by 2.5m wide with a height of 4.5m.
 - The compound will be surrounded by a 2.4m high palisade security fence with a 4m high electric pulse fence installed to the rear of the palisade to secure the site and avoid trespassers, including CCTV surveillance.
 - The substation includes electrical plant for controlling directing, switching and transforming high voltage electricity. This plant includes:
 - SGTs and associated cooler banks;
 - GIS switchgear;
 - GIB connecting the GIS switchgear to other plant;
 - CVT;
 - CSEs;
 - earth switches;
 - surge arresters;
 - diesel generator; and
 - protection and control equipment.

Scale and Amount

- 5.1.11 The total application site area is 14.5ha.
- 5.1.12 There are three permanent buildings proposed as part of the Scheme:
- The new 400kV GIS building will be 76m by 25m and 15m high from ground level.
- The small workshop building will be 6.5m long by 2.5m wide with a height of 4.5m.
- The small storage unit will be 6.5m long by 2.5m wide with a height of 4.5m.
- 5.1.13 The GIS building will house 13 GIS bays with each bay 3m wide and up to 8m long. Each GIS bay will connect to the wider substation through a series of overground GIBs with diameters of 400mm and lengths of up to 180m. Welfare facilities, including toilets, showers, a mess hall, and offices, will be located within the GIS building.
- 5.1.14 The SGTs, including the coolers attached to them, will be approximately 20m by 10m with heights of 10m. The noise enclosures will be around the SGTs only (not the attached cooler banks) and will be up to 12m long, 8m wide and 6m high to contain the primary noise emitting components. Other equipment includes protection and control equipment, switching devices, cooler banks for each transformer, a diesel generator and a water tank emergency firewater supply.
- 5.1.15 The six overhead line gantries that will be constructed are to be 2.5m x 22m with heights of 12.5m.
- 5.1.16 The four CSE cables will be underground with dimensions of up to 2,500mm² cross sectional area and lengths of 340m.
- 5.1.17 Within the substation, the majority of electrical equipment will be mounted on steel posts fixed to concrete foundations. The top of the electrical equipment, and GIB or GIS busbars connecting equipment, will be typically up to 9m above ground level.
- 5.1.18 The permanent security fencing will comprise a 2.4m high palisade security and safety fence, with a 4m high electric pulse fence installed to the rear of the palisade. This arrangement is designed to secure the site and prevent unauthorised access.
- 5.1.19 The provision for the parking is for six vehicles, and will include the provision of two electric vehicle parking spots.

Removal Works

- 5.1.20 Some redundant equipment within the existing 275kV substation will be removed. The perimeter fence will be retained for security purposes. Gravel or other suitable low maintenance substrate will be installed across this part of the Site. Any known contamination or potential sources of contamination will be removed/remediated including assets below ground (such as oil filled cables).
- 5.1.21 Three pylons will be removed as part of this Scheme. One is located to the north of the western part of the existing substation, one is to the north of the new substation, and one is to the south of the new substation. These locations are shown on Appendix C Chesterfield New 400kV Substation Proposed Site Layout, of the EAR. There will be temporary overhead cables connecting the pylon for removal to the north of the new substation and the new pylon to the south west of the new substation.

- 5.1.22 Several underground cables connecting the western part of the existing 275kV substation will be removed and replaced with new cables in the construction phase which will connect the existing 275kV substation to the GIS compound.
- 5.1.23 Additionally, an existing 132kV underground cable that currently travels southward from the existing substation will be removed.

Drainage

- 5.1.24 Appropriate drainage structures will be put in place across the Site. Two attenuation ponds will be constructed as per the following:
 - One in the north of the Site alongside the new access road. This attenuation pond will discharge into an existing chamber and utilise the existing site discharge arrangement. The attenuation pond will have a storage volume water depth of 0.5-65m³, a pond invert level of 111.0m AOD, total pond depth of 1.0m, and pond earthworks side slopes of 1:3.
 - One will be located to the south east of the proposed substation. The attenuation pond will discharge to a cut-off ditch, which will ultimately lead to an unnamed tributary of the Calow Brook. The attenuation pond will have a storage volume water depth of 0.9-750m³, a pond invert level of 106.9m AOD, total pond depth of 1.2m and pond earthworks side slopes of 1:3.
- 5.1.25 In addition, a new drainage outfall will be constructed at the eastern side of the Site, adjacent to Hallflash Lane.
- 5.1.26 Filter drains will be located throughout the Site, adjacent to access routes and parking areas, at a shallow depth to collect surface water runoff. Oily water from SGT bunds will be filtered through a suitably sized Oil Water Interceptor, which will discharge to an attenuation pond.

Appearance

- 5.1.27 Due to engineering and safety requirements associated with electricity infrastructure, there is little flexibility in terms of the appearance of the proposed substation.
- 5.1.28 The GIS, workshop and store buildings will be of steel portal frame construction on a concrete base with a profile of steel cladding to reduce contrast, minimise visual impact and aid assimilation with the colours of the wider landscape. The GIS building will be designed to comply with the suite of National Grid Technical Specification, European Standards and National Annexes, British Standards and Codes of Practice, as appropriate. Additionally, National Grid (2014a) Technical Specification TS 2.10.10 - GIS and Other Substation Buildings Design which includes compliance with Eurocodes such as BS EN 1990 to BS EN 1999 have also been incorporated.
- 5.1.29 The 400kV GIS substation will adopt an SF6-free solution to significantly reduce carbon emissions. Where possible, low-carbon materials (e.g. low carbon concrete) will be used to further minimise emissions associated with the Scheme and materials/equipment will be sourced from existing National Grid assets and from local suppliers where possible.
- 5.1.30 There is no scope to vary the colour and finish of the electrical equipment inside the GIS hall. Modular steel fabricated building and cladding for the buildings are typically specified in standard industrial finishes (such as metal sheeting), which are selected

to minimise maintenance and withstand environmental exposure. External steel support structures and enclosures would be finished in galvanised steel or appropriate protective coatings.

- 5.1.31 For the GIS control building, there is scope for variation in the external finishes. Buildings must be located with due consideration for access, maintenance, and operational clearance. These buildings are expected to be modular steel-fabricated with metal sheet cladding for the GIS hall but may allow variations in colour to suit the surrounding landscape.
- 5.1.32 There is no scope to vary the colour and finish of the electrical equipment needed. Typically, busbars and clamps are manufactured from aluminium (dull silver grey). Insulators are either porcelain (usually reddish brown/grey) or silicone (usually grey) and the manufacturers of equipment vary in their preference. Steel support structures within the compound would be left in a galvanised finish (dull silver grey) to avoid maintenance requirements in close proximity to 'live' equipment.

Lighting

- 5.1.33 Exterior and interior lighting would be provided at the site to allow for safe movement and the operation (and maintenance) of equipment. Lighting columns would typically be 12.5 m tall. All lighting would be designed in accordance with the appropriate design standards. The position of lighting columns would be subject to detailed design and would be determined by safety and operational requirements. Lighting would be directional and is intended to support safe movement of pedestrians and vehicles around the site (and minimise light spill to the local environment). The lighting would therefore not be on by default, and only whilst there are activities happening at the site as dictated by operational requirements. Additional task lighting may be required when undertaking specific maintenance activities. Details of the lighting lux levels are provided on Drawing PDD-203717-LAY-231.

Landscaping and Enhancement

- 5.1.34 The planning application is accompanied by an illustrative landscape mitigation and enhancement plan detailing the planting which is proposed to reduce the landscape and visual impacts of the Scheme. The measures proposed include the following:
- re-instating the existing vegetation habitat along Calow Lane after the completion and removal of the temporary works;
 - species rich hedgerow planting along the re-routed PRow NE5/25/1;
 - native scrub planting along the east side of the new 400kV substation to provide screening for Hall Flash Farm and Hallflash Lane;
 - existing vegetation to be retained along the boundary with Hall Flash Farm;
 - wetland species planting around the attenuation ponds;
 - reinstating hedgerow planting along the south west boundary of the Site after completion of the temporary works to provide screening;
 - species rich hedgerow planting along the re-routed PRow NE5/16/1;
 - native species woodland planting in the west of the Site to mitigate the loss of existing broadleaved woodland;

- mixed scrub planting along the existing hedgerow on the south and south west Scheme boundary;
- retaining the existing woodland habitat in the west of the Site where possible;
- re-instating existing woodland habitat in the west of the Site after the completion and removal of the temporary works;
- native species woodland planting in the north west of the Site to mitigate the loss of existing broadleaved woodland;
- new native hedgerow with intermittent broadleaved tree planting along the north west Scheme boundary to provide screening for Laurel Farm; and
- native species rich hedgerow planting adjacent to the west of existing substation boundary to replace that removed to facilitate the overhead line route.

- 5.1.35 The proposed landscaping mitigation measures will contribute towards the Scheme exceeding a +10 per cent BNG. The BNG Report (Appendix G of the EAR) submitted with the planning application has calculated the biodiversity value of the habitat that will be lost as a result of the Scheme and measures are proposed to offset these impacts.

Green Infrastructure Plan

- 5.1.36 A Green Infrastructure Plan (GIP) (Ref. 30184504-ARC-EGN-ZZ-DR-ZZ-00101-S2) and is included as figure 5.8 in Appendix E of the EAR. The GIP has been prepared in response to the recommendations received from the Design Panel. The Panel advised that the submission should include:

'A site analysis which should include (although not exclusively) mapping views to and from the site, both long and short; information on the landscape character from hedgerow and field boundary patterns, trees, topography, blue infrastructure; buildings within the landscape, etc.'

- 5.1.37 While the proposed design has consistently been developed with a clear response to its context, a standard professional approach within landscape design, it was identified that there was a lack of narrative regarding green and blue infrastructure within the wider area.
- 5.1.38 The GIP illustrates the landscape context within a 1km radius of the Site and should be read in conjunction with the accompanying landscape design and mitigation drawings.
- 5.1.39 Together, these documents demonstrate how the Scheme responds to its landscape setting in terms of character, landscape patterns, and integration with surrounding green and blue infrastructure. The GIP also highlights how the design fulfils its primary functions, including providing screening and achieving BNG targets.

Access

Internal access, circulation and parking

- 5.1.40 The proposed internal road and pedestrian area layout for the substation compound has been designed to allow the safe movement of vehicles and pedestrians and had regard for relevant health and safety legislation and good industry practice. The site

access roads are designed to allow for maintenance access around the substation. The internal access roads will be 6m wide and surfaced with tarmac.

- 5.1.41 From the site entrance off Calow Lane, an access road will be constructed that goes southward from Calow Lane into the proposed substation where it will split off in five directions throughout the proposed substation.
- 5.1.42 The access route crosses proposed underground cables in four places along the route. Two of these cables are permanent and located within the footprint of the proposed substation. The remaining two cables are temporary and will be located in the north west of the Site, in association with the temporary CSE compounds.
- 5.1.43 Two temporary access tracks will be used during construction. One is to the north west of the proposed substation and loops around a temporary CSE compound. The other goes from the north west of the proposed substation and down along the western side of the Site, along an existing track within Furnace Hillock, to a second CSE compound to the west of the proposed new 400kV substation.
- 5.1.44 Car parking is to be provided to the north of the proposed GIS building, with provision of six parking spaces, including the provision of two EV charging points.
- 5.1.45 The parking design ensures safe and convenient access to the control building and other key facilities. The substation would be unmanned on a permanent basis with regular maintenance visits to the substation.
- 5.1.46 During operation, access to the Site will be via Calow Lane, to the north of the Site. This access will be used when maintenance is required. It is anticipated that maintenance will be carried out by 10 staff 10 times a year.

Public Rights of Way

- 5.1.47 Key elements of the existing walking and cycling infrastructure along the proposed construction route are as follows. Footways are present on Calow Lane, north of the junction with Calow Green, coinciding with areas of settlement. These footways are relatively narrow and located along the northbound side of the carriageway where residential properties front the road, to the north of the junction with Calow Green. However, the footway is not continuous along the route, and there is a warning sign for equestrians and an absence of footways approximately 100m east of the junction with Dark Lane. On the A632 Chesterfield Road, a southern footway is provided between Calow Lane and the B6425 Deepsick Lane.
- 5.1.48 There is no footway or designated cycling infrastructure along the B6425 Deepsick Lane, Moor Lane, Hassocky Lane, or the A617 section of the route.
- 5.1.49 Three PRoWs, all of which are footpaths, have been identified in relation to the Scheme as necessitating diversion or temporary or permanent closure as a result of the proposed works:
 - PRoW NE5/25/1 – this footpath runs east to west through the middle of the Site. This footpath is to be permanently slightly realigned between the existing substation and the new 400kV substation;
 - PRoW NE5/16/1 – this footpath runs east to west through the southern section of the Site. During the construction and operational phases, it is proposed that this footpath be diverted further to the south within the Site and potentially temporarily closed during construction; and
 - PRoW NE5/17/2 – this footpath (which links to NE5/17/1 and NE5/17/3) runs north to south along Hallflash Lane. During construction, it is proposed that a

short section of this footpath be potentially temporarily closed for a very short period to facilitate drainage works. No permanent changes are required to this PRow.

5.2 Compliance with the Horlock Rules

- 5.2.1 As set out in Section 2.4, the Horlock Rules provide guidelines for the siting and design of new substations. Paragraph 2.9.18 of NPS EN-5 states that the Horlock Rules '*should be embodied in applicants' proposals for the infrastructure associated with new overhead lines*'. Accordingly, the Horlock Rules have been an important consideration in the design and siting of the proposed substation. A summary of how the design and siting of the proposed substation has met the Horlock Rules is presented in Table 5.1.

Table 5.1 Accordance with the Horlock Rules

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
<p>Rule 1:</p> <p>In the development of system options including new substations, consideration must be given to environmental issues from the earliest stage to balance the technical benefits and capital cost requirements against the consequential environmental effects, in order to avoid as far as possible adverse effects.</p>	<p>Environmental issues were a key factor in the site selection process. In this regard, the site selection process considered environmental constraints associated with the identified areas of search and potential preferred siting options in respect of (<i>inter alia</i>) biodiversity, landscape and visual, cultural heritage, flood risk and air quality.</p> <p>Environmental considerations have also influenced the selection of the preferred access option, technological solution and mitigation and enhancement measures, as detailed in the sections above.</p> <p>Overall, the Scheme is in accordance with Rule 1.</p>
<p>Rule 2</p> <p>The siting of substations, sealing end compounds and line entries should seek to avoid areas of the highest amenity, cultural or scientific value by the overall planning of the system connections.</p>	<p>The Site is not within, nor does it contain, any international or national environmental designations. The environmental assessments submitted with the planning application also confirm that the Scheme will not have any significant adverse effects on internationally or nationally designated sites or assets, including in respect of ecology, landscape and the historic environment.</p> <p>Overall, the Scheme is in accordance with Rule 2.</p>
<p>Rule 3</p> <p>Areas of local amenity value, important existing habitats and landscape features should be protected as far as reasonably practicable.</p>	<p>There are no designated sites within the Site, however the Duckmanton Railway Cutting Derbyshire Wildlife Trust Reserve and SSSI is 1km to the north east, discussed further in Chapter 4 Ecology of the EAR, and there is one listed building within 1km of the Site and a further 15 within 2km of the Site, this is discussed further in Chapter 6 Cultural Heritage and Archaeology of the EAR.</p> <p>Furnace Hillock is a copse of trees located within the western part of the Site. These trees are protected by a Tree Preservation Order (TPO), and further details are provided in Appendix E Chesterfield New 400kV Substation Drawings of the EAR. Vegetation clearance will be undertaken along the</p>

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
	<p>western part of Furnace Hillock to enable the construction of a temporary access road. Vegetation clearance will also be undertaken at the eastern side of Furnace Hillock to enable permanent earthworks, overhead lines and temporary cables. National Grid has sought to minimise the loss of trees within Furnace Hillock as far as reasonably practicable.</p> <p>The proposed location of the Site has also been chosen in part to minimise overhead line and cable length reconfiguration, which will reduce potential impacts on areas of local amenity value, important existing habitats and landscape features.</p> <p>Overall, the Scheme is in accordance with Rule 3.</p>
<p>Rule 4</p> <p>Siting of substations, extensions and associated proposals should take advantage of the screening provided by landform and existing features and the potential use of site layout and levels.</p>	<p>A key factor in the selection of the Site was due to its position directly adjacent to the existing electricity substation minimising the need for modifications and diversions to the existing overhead line network.</p> <p>Views towards the Site from many of the residential receptors to the south of the Site are at least partially screened by existing hedgerow along the A617 corridor to the south and south west and will be further obscured by proposed mitigation planting.</p> <p>Additional planting is proposed as part of the Scheme to provide boundary reinforcement and minimise further the landscape and visual effects of the Scheme across other directions.</p> <p>The Landscape and Visual Impact Assessment has concluded that the visual impact for residential and recreational receptors will not be significant, once the proposed mitigation planting has reached a level of maturity where it can perform its intended screening function.</p> <p>Overall, the Scheme is in accordance with Rule 4.</p>
<p>Rule 5</p> <p>Proposals should keep visual, noise and other environmental effects to a minimum.</p>	<p>Careful consideration was afforded to the proximity of sensitive receptors, including residential dwellings, in order to minimise impacts on amenity.</p> <p>As noted above in respect of Rules 3 and 4, the Scheme will not result in significant adverse effects on visual amenity.</p> <p>Air quality and noise impacts arising from construction activities associated with the Scheme will be managed through the implementation of a CEMP.</p> <p>The substation will be within a building, minimising potential noise emissions during operation. Additionally, the design includes noise enclosures which would be used around the three SGTs to reduce operational noise outside of the Site. On this basis, the Noise Impact Assessment (Appendix O of the EAR) submitted with the planning application confirms that noise impacts of the Scheme are anticipated to be negligible to all receptors. The operation of the substation will not result in significant emissions to air.</p>

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
<p>Rule 6</p> <p>The land use effects of proposals should be considered when planning the siting of substations or extensions.</p>	<p>Overall, the Scheme is in accordance with Rule 5.</p> <p>Adopting a GIS technology, which requires less land (minimum 10ha) than an AIS solution (minimum 18ha) enables the location of the Scheme immediately next to the existing substation which will appear as an extension to the existing infrastructure. The proximity between the existing and proposed substation would also limit the extent of modifications required to the existing overhead line network. The Scheme will not result in the loss of Best and Most Versatile (BMV) agricultural land. The land across the Site is Grade 3b non BMV land and non-agricultural land.</p> <p>An Outline Soil Management Plan has been prepared and is submitted as part of the planning application (Appendix R of the EAR).</p> <p>A detailed Soil Management Plan will be prepared post planning consent and implemented during construction and operation to protect agricultural land quality and soil resources, ensuring that good practice measures are implemented for soil stripping, stockpiling and reinstatement.</p> <p>The Site is located in a mineral safeguarding zone, 'Surface Coal Safeguarding Area'. However, as records of opencast mining indicate the surface coal reserves have already been worked in the area, and the substation would have a relatively small footprint, it is not thought that the Scheme would lead to significant mineral sterilisation.</p> <p>Overall, the Scheme is in accordance with Rule 6.</p>
	<p>Overall, the Scheme is in accordance with Rule 5.</p>
<p>Rule 7</p> <p>In the design of new substations or line entries, early consideration should be given to the options available for terminal towers, equipment, buildings and ancillary development appropriate to individual locations.</p>	<p>The requirement for overhead line works has been kept to a minimum. Indeed, this was a key consideration in determining the preferred site for the proposed substation. Whilst the overhead line works do not form part of the planning application for the Scheme, they have been designed alongside the proposals for the new substation, and their associated environmental effects have been considered in the environmental assessments submitted with the planning application.</p> <p>Overall, the Scheme is in accordance with Rule 7.</p>
<p>Rule 8</p> <p>Space should be used effectively to limit the area required for development, consistent with appropriate mitigation measures and to minimise the adverse effects on existing land use and rights of way, whilst also having regard to future extension of the substation.</p>	<p>A GIS technological solution has been adopted to minimise land-take, and the layout of the Scheme has been carefully considered taking into account the presence of existing boundaries including the existing Chesterfield Substation. National Grid considers the Scheme represents the minimum amount of land required to accommodate the proposed substation.</p> <p>As set out in respect of Rule 6, the Scheme will not result in significant effects on other land uses.</p>

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
	<p>PRoW NE5/25/1 will be realigned slightly south of the existing substation, maintaining a west–east orientation, it will be screened except at underground cable crossings.</p> <p>PRoW NE5/16/1 will potentially be temporarily realigned during construction and then permanently diverted parallel to the south western Scheme boundary, with screening provided to maintain amenity.</p> <p>Given that adequate accessibility provision will be provided, it has been assessed that a permanent slight effect is anticipated which is considered not significant.</p> <p>Overall, the Scheme is in accordance with Rule 8.</p>
<p>Rule 9</p> <p>Design of access roads, perimeter fencing, earth shaping, planting and ancillary development should form an integral part of the site layout and design to fit in with the surroundings.</p>	<p>The Scheme includes a perimeter fence, the creation of a new access road from Calow Lane into the northern part of the Site, as well as planting and ancillary development as appropriate.</p> <p>The design of these Scheme components was carefully considered to minimise adverse environmental impacts.</p> <p>Overall, the Scheme is in accordance with Rule 9.</p>
<p>Rule 10</p> <p>In open landscape especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance.</p>	<p>The Landscape and Visual Impact Assessment submitted as part of the planning application describes the Site as predominantly comprising the existing 275kV National Grid Chesterfield Substation, with agricultural parcels to the south; a number of existing pylons are also present within the Scheme boundary. The Site is bounded by Calow Lane to the north and Hallflash Lane to the east. The land parcels that immediately surround the areas are predominantly agricultural in nature. The A617 is present to the south west of the Site, beyond which are the southern areas of Chesterfield. Predominantly to the west of the Scheme boundary is developed land, and land to the north, south and east is more rural in nature.</p> <p>At the local (Site) scale, the character of the landscape is already heavily influenced by the presence of the existing substation and highly visible electrical transmission infrastructure, however the surrounding landscape is largely rural in nature.</p> <p>Once operational, the noise and activity associated with the construction phase will no longer influence the character of the setting. The land use of a proportion of the Site will have changed from farmland to an industrial use. However, given the close proximity of the existing substation and associated electrical transmission infrastructure, it is anticipated that this will lead to a moderate to minor adverse level of effect at Year 1, reducing to minor adverse at Year 15.</p> <p>Overall, the Scheme is in accordance with Rule 10.</p>

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
<p>Rule 11</p> <p>The inter-relationship between towers and substation structures and background and foreground features should be studied to reduce the prominence of structures from main viewpoints. Where practicable, the exposure of terminal towers on prominent ridges should be minimised by siting towers against a background of trees rather than open skylines.</p>	<p>The Site is not located on a prominent ridge. The ancillary overhead line works associated with the wider Scheme have been kept to a minimum and there will be no net increase in the number of permanent pylons associated with the overhead line modification works.</p> <p>Overall, the Scheme is in accordance with Rule 11.</p>

5.3 Design:Midlands Substation Design Review

- 5.3.1 In accordance with NEDDC planning application validation requirements, a design review of the Scheme was undertaken with Design:Midlands. The design review took place on 26 September 2025 and involved panel members from Design:Midlands, NEDDC and National Grid. A copy of the Design:Midlands report and recommendations is provided in Appendix A of this PDAS.
- 5.3.2 A summary of the Design:Midlands recommendations and how National Grid has had due regard to this feedback is provided in Table 5.2 below.

Table 5.2 National Grid responses to Design:Midlands recommendations

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
<p>Provision of a robust 'Vision' for the substation - what the project is about, why it is important and how can it set an exemplar for future substations</p>	<p>The vision for the substation is encapsulated within the need for the Scheme and wider Project. Rising electricity demand is expected as power generation for residences, business operations and transport undergoes transformation. The UK government has committed to reach net zero emissions by 2050. This means achieving a balance between the greenhouse gases put into the atmosphere and those taken out. Decarbonising the energy system is vital to achieve net zero; the fossil fuels that once powered the economy are to be replaced with sources of low-carbon electricity.</p> <p>There is an increased growth forecast in offshore wind capacity in Scotland and the North East of England, as well as increasing power flows to and from European power grids. This would put pressure on the existing network, such that reinforcement of the transmission network has been identified as necessary to secure the operation of the transmission system and ensure reliable, economical and long-term supply.</p> <p>To achieve this, National Grid needs to upgrade the high voltage power network in England to connect these new sources of offshore energy to the energy network. These plans are part of the biggest</p>

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
	<p>overhaul of the energy network in a generation, the Great Grid Upgrade, which would see significant investment and improvement in the nation's energy infrastructure as the UK continues its transition towards net zero and more sources of low carbon power are developed.</p> <p>The proposed 400kV substation at Chesterfield is a key component of the Project which is specifically referenced in the Clean Power 2030 report by the NESO (2024) as one of four projects which, if not delivered by 2030, would have a significant impact on the ability of the country to deliver clean power.</p> <p>The Scheme proposals will support the UK's net zero target by reinforcing the electricity transmission network between the north of England and the Midlands and facilitate the distribution of planned offshore wind generation to regional and local levels, allowing clean green energy to be carried across the network.</p>
<p>Undertake a comprehensive site analysis to demonstrate a comprehensive understanding of the site context (immediate and broad) in particular views to and from the site</p>	<p>A site analysis has informed the Scheme design. Submission is accompanied by the GIP, prepared in direct response to recommendations from the Design Panel for a more comprehensive site analysis to inform the Scheme design. The GIP illustrates the landscape context within a 1km radius of the Site. When read in conjunction with the Landscape and Visual Impact Assessment and associated landscape drawings, the submission clearly demonstrates an understanding of both the immediate and wider site context. The Scheme responds appropriately to local character, landscape patterns, and the integration of surrounding green and blue infrastructure, while also fulfilling its primary functions of providing screening and achieving BNG targets.</p> <p>The GIP forms part of Appendix E of the EAR.</p>
<p>Utilise the site analysis to inform the proposals i.e. how has the substation been designed to respond to views, landscape, topography etc</p>	<p>The site analysis has informed the substation design and the proposed landscaping solution for the Site. The GIP supported by:</p> <ol style="list-style-type: none"> 1. Representative Viewpoint Figures, which will cover the viewpoint locations; 2. ZTV Figures-Screening features and Bare Earth will showcase areas with low, moderate and high visual sensitivities; and 3. TYPE 3-Visualisations.
<p>Further consider the proposals for the building – is it needed, if yes, what is the flex, does it need to be of this scale, height, form etc</p>	<p>The requirements National Grid adheres to set out the basic dimensions that must be maintained between equipment, and between live equipment and the ground or any ancillary structures, buildings, masts, roads and fences. Without adequate clearance between items of electrical equipment and vehicles requiring access into the substation, more than one part of the substation may need to be turned off, which may compromise the integrity of the system and supply to local users. For these reasons, National Grid designs its systems so that no more than one part of the system needs to be switched off for any work to be done on it. Generally, the distance required between equipment, and between live equipment and other structures, depends on the system voltage and the size of any</p>

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
	<p>vehicles or working platforms required to access equipment which is not at ground level. The safe working distance for 400kV is 3.1 m. This limits the opportunity to minimise the scale, but the proposed design is as small as possible to ensure efficiency.</p> <p>The GIS technology proposed at Chesterfield allows electrical equipment to be placed closer together compared to conventional AIS, due to its use of insulating gas. As a result, the overall footprint of the substation is reduced, albeit the need for the required separation distances still limits the flexibility in terms of reducing the footprint further. Equipment such as transformers and shunt reactors will require adequate clearances and bunding (where applicable) to prevent fire spread and environmental contamination.</p>
Engage an architect to design the building – an architectural rather than engineered approach	<p>Good design of electricity transmission infrastructure is primarily governed by application of the Horlock Rules, alongside an iterative design approach informed by stakeholder engagement, relevant sections of national policy (NPS EN-1 and EN-5), which is considered to be a material consideration for this planning application and the embedded environmental design mitigation as part of the environmental appraisal process.</p> <p>Such good design principles are then intertwined with the technical design requirements alongside the regulatory and other constraints such as operational, safety and security requirements for new electricity transmission infrastructure.</p> <p>The design is therefore shaped by safety, operational, and environmental regulations. Functional constraints limit aesthetic flexibility but do not negate opportunities for landscape integration.</p> <p>National Grid has not appointed an architect to inform the design of the building. The parameters for this structure are broadly fixed (as outlined above).</p> <p>For the GIS control buildings, there is scope for variation in the external finishes. Buildings must be located with due consideration for access, maintenance, and operational clearance. These buildings are expected to be modular steel-fabricated with metal sheet cladding for the GIS hall but may allow variations in colour to suit the surrounding landscape.</p>
Explore an exemplar design for the pylons – do they need to look the same as the existing?	<p>The Scheme will result in the removal of three existing pylons, replaced on a like-for-like basis. The alternative pylon design from a standard height lattice pylon comprises a ‘low-height pylon’ or ‘T-pylon’. It is considered that neither option would be appropriate in this setting.</p>
Provision of a Landscape Strategy for the substation including a set of design parameters / principles to ensure a	<p>National Grid considers that there has been an iterative process between the engineers and the landscape team which has led to the current design, this has included the landscape mitigation plan which illustrates how the proposed planting could reduce the landscape and visual impacts of the Scheme.</p>

Horlock Rules	How the Scheme is in accordance with the Horlock Rules
contextual and sensitive response	
Enhance and improve the existing PRoWS i.e. a route people want to walk	The landscape design and routeing of PRoWs have been amended to better reflect the existing field boundaries. Potential to add some orientation boards also, particularly for the east–west route between the existing and proposed substations.
Provision of SuDS which are multifunctional (more than drainage) and integrated within the landscape	<p>The drainage strategy presented in Appendix M of the EAR describes the approach adopted in designing the sustainable urban drainage scheme for the Chesterfield scheme. The construction of the scheme would result in an increase in surface water runoff rates and volumes if left unmitigated. On-site attenuation storage is required to restrict the runoff rate from the scheme and its contributing surface water drainage catchment to the greenfield runoff rates.</p> <p>The SUDs proposal involves the creation of two attenuation ponds will be constructed as per the following:</p> <p>One in the north of the Site alongside the new access road. This attenuation pond will discharge into an existing chamber and utilise the existing site discharge arrangement. The attenuation pond will have a storage volume water depth of 0.5-65m³, a pond invert level of 111.0m AOD, total pond depth of 1.0m, and pond earthworks side slopes of 1:3.</p> <p>One will be located to the south east of the proposed substation. The attenuation pond will discharge to a cut-off ditch, which will ultimately lead to an unnamed tributary of the Calow Brook. The attenuation pond will have a storage volume water depth of 0.9-750m³, a pond invert level of 106.9m AOD, total pond depth of 1.2m and pond earthworks side slopes of 1:3.</p> <p>Both of the attenuation ponds have been incorporated into the landscape design and will contain marginal planting with wet species rich grassland.</p>
Explore opportunities to tell the story of the substation i.e. engaging schools, interpretation boards etc	The landscape design now includes provision for placemaking measures, with seating and wayfinding along the realigned PRoW NE5/16/1 to provide some local context and understanding as to the purpose and role of the substation in providing an essential role in everyday life.
Provision of a comprehensive planning application which demonstrates the design process for the substation.	The planning application submission meets the requirements of NEDDC planning application validation requirements and seeks to provide a comprehensive and clear submission which demonstrates how the Scheme design has sought to respond positively to the Site and wider environment whilst meeting national requirements to provide the infrastructure needed to achieve net zero and enhance the UK's energy security of supply.

6. Planning Policy and Guidance

6.1 Introduction

- 6.1.1 This section of the statement reviews the relevant national and local planning policies and guidance that are material to the determination of this application.

6.2 Overview

- 6.2.1 Section 70(2) of the TCPA 1990 and Section 38(6) of the Planning and Compulsory Purchase Act 2004 set out that planning applications must be determined in accordance with the Development Plan, unless material considerations indicate otherwise.

Development Plan

- 6.2.2 For the purposes of Section 70(2) of the TCPA 1990 and Section 38(6) of the Planning and Compulsory Purchase Act 2004, the statutory Development Plan for the area consists of the following:

North East Derbyshire Local Plan 2014-2034 (adopted 2021);
North East Derbyshire Local Plan 2014-2034 Policies Map 3 (Inset F);
North East Derbyshire Local Plan 2014-2034 Policies Map 4 (Inset G);
Derby and Derbyshire Minerals Local Plan (adopted 2002); and
Derby and Derbyshire Waste Local Plan (adopted 2005).

Material Considerations

- 6.2.3 The following documents are material considerations in the determination of the application for the Scheme:

Access For All Supplementary Planning Document (SPD);
Developer Contributions SPD;
Sustainable Buildings SPD;
National Planning Policy Framework (NPPF) (December 2024);
Planning Practice Guidance (PPG) (first published March 2014);
Overarching National Policy Statement for Energy (EN-1) ('NPS EN-1'); and
National Policy Statement for Electricity Networks Infrastructure (EN-5) ('NPS EN-5').

6.3 Development Plan

The North East Derbyshire Local Plan

- 6.3.1 The North East Derbyshire Local Plan (NEDLP) was adopted in November 2021 (NEDDC, 2021).
- 6.3.2 The Local Plan sets out the Council's vision, objectives and policies to guide the future sustainable growth and development of the area. The plan is used to guide decisions on planning applications and areas where investment should be prioritised. It forms part of the Development Plan for North East Derbyshire and replaces the 'saved' policies of the 2005 Adopted North East Derbyshire District Local Plan.
- 6.3.3 In the NEDLP, the Site is located outside of defined settlement boundaries. It is therefore located in the Open Countryside.
- 6.3.4 The NEDLP policies of most relevance to the Scheme are summarised in Appendix B.

Derby and Derbyshire Minerals Local Plan

- 6.3.5 The Derby and Derbyshire Minerals Local Plan was adopted in April 2000.
- 6.3.6 The aim of the Minerals Local Plan is to reconcile mineral working with other competing interests as far as possible. It aims to strike the best balance between the need for minerals and the need to protect the environment and safeguard resources, and as far as possible, to put into practice the principles of sustainability.
- 6.3.7 The City Council is the Mineral Planning Authority for the area within the City boundary whereas the County Council is the Mineral Planning Authority with sole responsibility for the remaining part of Derbyshire (outside the Peak District National Park). The Minerals Local Plan is a statutory Local Plan prepared in accordance with the TCPA 1990.
- 6.3.8 The plan area covers the whole of the City of Derby and the County of Derbyshire outside the Peak District National Park.
- 6.3.9 The Minerals Local Plan is separated into Part 1 and Part 2. The relevant policies from both documents are summarised Appendix C.
- 6.3.10 Derby City Council is working with Derbyshire County Council to prepare a new Joint Minerals Local Plan for Derbyshire and Derby. The draft Minerals Local Plan is currently at examination. This plan will cover the period to 2038 and, when adopted, will replace the saved policies in the adopted Minerals Local Plan 2000.

Derby and Derbyshire Waste Local Plan

- 6.3.11 The Derby and Derbyshire Waste Local Plan was adopted in March 2005.
- 6.3.12 The Waste Local Plan covers the administrative areas of Derby City Council and Derbyshire County Council outside the Peak District National Park.
- 6.3.13 The Waste Local Plan sets out detailed policies for the control of development, which apply throughout the plan area, and specific proposals for the development or protection of particular areas of land.

6.3.14 There are no relevant policies relating to the Scheme.

6.4 Material Considerations

6.4.1 As a part of the Development Plan, Supplementary Planning Documents (SPDs) are to be considered by developers during planning applications. These documents constitute material considerations in the determination process; accordingly, due regard has been given to the relevant SPDs. A summary of these documents is provided in Appendix D.

Access For All SPD;
Developer Contributions SPD; and
Sustainable Buildings SPD;

6.4.2 The following national policy documents are also material considerations in the determination of the Scheme:

National Planning Policy Framework (NPPF);
Planning Practice Guidance (PPG);
Overarching National Policy Statement for Energy (EN-1);
National Policy Statement for Electricity Networks Infrastructure (EN-5); and
2025 Consultation on Revisions to Energy National Policy Statements.

6.4.3 Other material considerations relevant to the Scheme are outlined below. These considerations establish the international and national imperatives for renewable energy development in response to climate conscious initiatives:

International climate policy context;
National climate and energy legislation and policy context; and
Clean Power 2030 Action Plan: A New Era of Clean Electricity (DESNZ, 2025c).

National Planning Policy Framework (NPPF)

6.4.4 The National Planning Policy Framework (NPPF), first published in 2012 and most recently revised in December 2024 (a further technical amendment was made in February 2025), sets out the government's planning policies for England and how these are expected to be applied. The NPPF is a material consideration in determining planning applications.

6.4.5 At the heart of the NPPF is a presumption in favour of sustainable development through plan-making and decision-taking. Paragraph 11 sets out that for decision-taking this means:

'c) approving development proposals that accord with an up-to-date development plan without delay; or

d) where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:

i. the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or

ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole’.

- 6.4.6 Paragraphs 110 and 115 of the NPPF encourage sustainable patterns of development, particularly by promoting sustainable transport, reducing the need to travel, and minimising traffic impacts.
- 6.4.7 Paragraph 116 states that *‘Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network, following mitigation, would be severe, taking into account all reasonable future scenarios’.*
- 6.4.8 Paragraph 135, as summarised, states that planning policies and decisions should ensure that developments are designed to function well and enhance the overall quality of their area throughout their lifespan. Developments should be visually attractive through high-quality architecture, thoughtful layouts, and effective landscaping. They must respect local character and history, including the surrounding built environment and landscape, while allowing for appropriate innovation and change. A strong sense of place should be established or maintained by carefully arranging streets, spaces, building types, and materials to create distinctive, welcoming environments for living, working and visiting. Sites should be optimised to support an appropriate mix and amount of development, including green and public spaces, and to enhance local facilities and transport links. Finally, developments should create safe, inclusive, and accessible places that promote health, wellbeing, and a high standard of amenity for all users, ensuring crime and the fear of crime do not undermine quality of life or community resilience.
- 6.4.9 Paragraph 139 states that development that is poorly designed should be refused, particularly if, after considering relevant local design guidance and supplementary documents such as design codes, it does not align with local design policies or government guidance. In contrast, significant weight should be given to developments that reflect these policies and guidance, as well as to outstanding or innovative designs that promote high sustainability or help elevate design standards in the area, provided they are compatible with the surrounding form and layout.
- 6.4.10 Paragraph 161 gives support to transitioning to net zero by 2050. To achieve this the planning system should help *‘shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure’.*
- 6.4.11 Paragraph 165 states that in order to help increase the use and supply of renewable and low carbon energy and heat, plans should in part consider areas for renewable and low carbon sources and supporting infrastructure. Further, opportunities should be identified for development to draw energy supply from renewable or low carbon sources.

- 6.4.12 Paragraph 168 states (in part) that LPAs when determining planning applications for renewable or low carbon energy developments and their associated infrastructure should:
- ‘a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal’s contribution to a net zero future’; and*
- ‘c) in the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site’.*
- 6.4.13 Paragraph 170 states that development should be avoided when in areas at risk of flooding *‘by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.’*
- 6.4.14 Paragraph 172 states plans should take into account all sources of flood risk and the current and future impacts of climate change by applying a sequential, risk-based approach to the location of development, so as to avoid, where possible, flood risk to people and property.
- 6.4.15 Paragraph 173 states that *‘A sequential risk-based approach should also be taken to individual applications in areas known to be at risk now or in future from any form of flooding’.*
- 6.4.16 Paragraph 175 gives further context, stating that *‘The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk)’.*
- 6.4.17 Paragraph 177 provides further detail, stating that *‘Having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification’.*
- 6.4.18 Paragraph 181 states that *‘When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:*
- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*
- d) any residual risk can be safely managed; and*
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.’*

- 6.4.19 Paragraph 187, in summary, states that planning policies and decisions should enhance the natural and local environment by protecting and improving valued landscapes, sites of biodiversity or geological importance, and soils, in line with their statutory or identified status. They should recognise the intrinsic character and beauty of the countryside, the benefits of natural capital and ecosystem services, and the value of high-quality agricultural land, trees and woodland. The character of undeveloped coastlines should be maintained, with improved public access where suitable. Development should minimise impacts on biodiversity and deliver net gains, including through resilient ecological networks and features supporting priority species. It should also prevent and mitigate risks from pollution, land instability, and other hazards, aiming to improve local environmental conditions wherever possible. Additionally, the remediation and mitigation of degraded, contaminated, or unstable land should be undertaken when appropriate.
- 6.4.20 Paragraph 197 states that *'Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner'*.
- 6.4.21 Paragraph 198, as summarised, states that planning policies and decisions should ensure that new development is suitable for its location by considering the likely effects, including cumulative impacts, of pollution on health, living conditions, and the natural environment, as well as the sensitivity of the site and surrounding area. This includes minimising and mitigating adverse noise impacts, protecting tranquil areas valued for their peace and recreation, and limiting light pollution to safeguard local amenity, dark landscapes, and nature conservation.
- 6.4.22 Paragraph 212 states that the conservation of designated heritage assets should be prioritised, with greater importance given to more significant assets, regardless of the degree of potential harm. Paragraph 213 states that clear and convincing justification should be provided for development which would lead to any harm to a designated heritage asset's significance.
- 6.4.23 Paragraph 215 details that *'Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use'*.
- 6.4.24 Paragraph 216 continues, noting that, *'the effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset'*.
- 6.4.25 Paragraph 220 sets out the baseline for consideration of development impacting conservation areas, stating that, *'not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 214 or less than substantial harm under paragraph 215, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole'*.

- 6.4.26 Paragraph 221 states that '*Local planning authorities should assess whether the benefits of a proposal for enabling development, which would otherwise conflict with planning policies but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies*'.
- 6.4.27 Paragraph 225 states that the '*Local planning authorities should not normally permit other development proposals in Mineral Safeguarding Areas if it might constrain potential future use for mineral working*'.

Planning Practice Guidance (PPG)

- 6.4.28 Planning Practice Guidance (PPG), first published in 2014, provides guidance on planning policy identified in the NPPF.

Air Quality

- 6.4.29 The PPG for Air Quality (MHCLG, 2019a) was first published on 6 March 2019 and was last updated on 1 November 2019.
- 6.4.30 The PPG notes that all development plans can influence air quality in a number of ways, including what development is proposed and where, and the provision made for sustainable transport. The guidance places value in considering air quality issues at the plan-making stage as this can ensure a strategic approach to air quality and help secure net improvements in overall air quality where possible.
- 6.4.31 The PPG notes that assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions). The scope and content of supporting information is best discussed and agreed between the LPA and applicant before it is commissioned.
- 6.4.32 The PPG states that mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. Further, it is important that LPA's work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented.

Biodiversity Net Gain

- 6.4.33 The PPG for BNG (MHCLG, 2024b) was first published on 14 February 2024 and was last updated on 1 May 2024.
- 6.4.34 Under the statutory framework introduced by Schedule 7a of the TCPA 1990 (inserted by Schedule 14 of the Environment Act 2021), this objective is for development to deliver at least a 10% increase in biodiversity value relative to the pre-development biodiversity value of the on-site habitat. This increase can be achieved through on-site biodiversity gains, registered off-site biodiversity gains or statutory biodiversity credits.

Climate Change

- 6.4.35 The PPG for Climate Change (MHCLG, 2019b) was first published on 12 June 2014 and was last updated on 15 March 2019.

- 6.4.36 The guidelines reinforce the Climate Change Act 2008 legally binding target to reduce the UK's greenhouse gas emissions by at least 80% in 2050 from 1990 levels.
- 6.4.37 The guidelines states that LPAs can assist in mitigating climate change by reducing emissions. To help achieve this they can provide opportunities for renewable and low carbon energy technologies.

Renewable and low carbon energy

- 6.4.38 The PPG for Renewable and Low Carbon Energy (MHCLG, 2023) was first published on 18 June 2015 and was last updated on 14 August 2023.
- 6.4.39 The guidelines reinforce that planning has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environmental impact is acceptable.

National Policy Statements and Need

- 6.4.40 Whilst the substation proposals at Chesterfield will be determined in accordance with the TCPA 1990, the NPSs for Energy are a material consideration for this application, which will enable the delivery of specific Nationally Significant Infrastructure Projects (NSIPs) and the overall ambition of the Great Grid Upgrade. Although this project does not meet the qualification criteria for NSIPs, it is of national importance.
- 6.4.41 In addition to highlighting the need for electricity infrastructure the NPSs for Energy also contain relevant policy relating to specific considerations in relation to design and functionality of an electricity network that are not reflected in local development plan policy.
- 6.4.42 On 13 November 2025, the government laid revised versions of the Energy NPS's before parliament for a 21-sitting day consultation period in accordance with the requirements of the Planning Act 2008. At the time of authoring this planning statement it was established that the updated NPSs would be designated prior to the submission of this planning application in December 2025. The relevant NPSs are:
- NPS EN-1 Overarching Energy National Policy Statement for Energy (DESNZ, 2025a); and
- NPS EN-5 National Policy Statement for Electricity Networks (DESNZ, 2025b).
- 6.4.43 The recently published updates include alignment with Clean Power 2030 targets and endorsement of the Centralised Strategic Network Plan. The 2025 revisions have strengthened the process for delivering major new infrastructure, reinforcing the government's ambition to deliver clean power by 2030.
- 6.4.44 The Clean Power 2030 report explicitly identifies the Project (and the Brinsworth to Chesterfield project) as one of four schemes which will provide significant additional capacity on the network to facilitate flow from north to south. The Project needs to be delivered by 2030 to enable an affordable and secure clean power system.

Overarching National Policy Statement for Energy (EN-1)

- 6.4.45 Paragraph 3.3.65 of NPS EN-1 states that '*There is an urgent need for new electricity network infrastructure to be brought forward at pace to meet our energy objectives*' and Paragraph 3.3.66 notes that '*The security and reliability of the UK's current and*

future energy supply is highly dependent on having an electricity network which will enable new renewable electricity generation, storage, and interconnection infrastructure that our country needs to meet the rapid increase in electricity demand required to transition to net zero while maintaining energy security. The delivery of this important infrastructure also needs to balance cost to consumers, accelerated timelines for delivery and the minimisation of community and environmental impacts.'

- 6.4.46 Paragraph 1.2.1 NPS EN-1 states that *'In England, this NPS, in combination with any relevant technology specific NPSs, may be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended)'*. The delivery of this project is integral to the delivery of new electricity networks and the urgent need as identified in NPS EN-1 is an important material consideration for this application.
- 6.4.47 NPS EN-1 outlines that aside from connecting new sources of electricity generation with new sources of demand there are other drivers for new electricity network infrastructure. Paragraph 3.3.67 states that *'As the electricity system grows in scale, dispersion, variety and complexity, work will be needed to protect against the risk of large-scale supply interruptions in the absence of sufficiently robust electricity networks [...] development of new lines of 132kV (and over 2km) and above will also be necessary to preserve and guarantee the robust and reliable operation of the whole electricity system'*.
- 6.4.48 NPS EN-1 acknowledges that the consenting of onshore reinforcements can take significant time noting at Paragraph 3.3.73 that *'completion of these onshore reinforcements has often taken longer than the completion of the offshore wind farms for which they are being built'*. As a consequence, delays could present a material barrier to the government's ambition to deliver up to 50GW of offshore wind by 2030. Furthermore, Paragraph 3.3.81 outlines that *'delays in the approval of associated new network developments could cause significant economic waste and set back the strategically vital goals of decarbonisation and energy security'*.
- 6.4.49 NPS EN-1 emphasises the significance of delivering high quality energy infrastructure to uphold its dedication to reaching net zero while guaranteeing the UK maintains a secure, dependable, and cost-effective energy provision. NPS EN-1 outlines the government's strategy for executing crucial energy infrastructure projects in England and Wales. It affirms the substantial requirement to introduce new energy infrastructure for supporting economic growth, boosting productivity, enhancing competitiveness, supporting social wellbeing and decarbonising the energy system to meet the government's net zero targets.

Critical National Priority (CNP) Infrastructure

- 6.4.50 The need for nationally significant low carbon infrastructure is further reinforced by the government's conclusion that there is a critical national priority (CNP) for its provision (Paragraphs 3.3.62 and 4.2.16 of NPS EN-1).
- 6.4.51 Although the Project itself is not defined as an NSIP it is a crucial part in enabling NSIP projects and delivering the overarching Great Grid Upgrade. The policy relating to CNP is therefore a material consideration insofar as the NPS is material and relevant to this TCPA application.

- 6.4.52 Paragraph 3.3.63 of NPS EN-1 states that '*Subject to any legal requirements, the urgent need for CNP infrastructure to achieving our energy objectives, together with the national security, economic, commercial, and net zero benefits, means that it is likely the need case will outweigh any other residual impacts not capable of being addressed by application of the mitigation hierarchy, in all but the most exceptional circumstances. Government strongly supports the delivery of CNP infrastructure and it should be progressed as quickly as possible*'. This helps to reinforce the importance of delivering low carbon infrastructure by recognising that the need for it is so critical that the benefits will generally outweigh any residual adverse impacts in all but the most exceptional circumstances.
- 6.4.53 Paragraph 3.3.70 recognises that the grid is a network and that all parts of that network have an important role in delivering new electricity networks: 'As all new grid projects have a role in efficiently constructing, operating and connecting low carbon infrastructure to the National Electricity Grid, the scope of networks CNP infrastructure is not limited to those associated specifically with a particular project'.
- 6.4.54 As set out in Paragraph 4.2.29 of NPS EN-1, '*the Secretary of State will take as the starting point for decision-making that such [CNP] infrastructure is to be treated as if it has met any tests which are set out within the NPSSs, or any other planning policy, which requires a clear outweighing of harm, exceptionality or very special circumstances.*' This means that the Secretary of State will take as a starting point that CNP infrastructure will meet the non-exhaustive list of tests (as set out in Paragraph 4.2.30).
- 6.4.55 Although the proposed 400kV substation at Chesterfield is being consented under the TCPA 1990 rather than as a Development Consent Order under the Planning Act 2008, the definition of CNP is considered to be a material consideration in the determination of this planning application.
- 6.4.56 The Project forms part of National Grid's wider transmission reinforcement strategy identified through the Electricity System Operator's HND and subsequent CSNP, which together set out nationally critical reinforcements required to connect new offshore generation and strengthen the onshore 400kV network. The proposed substation provides a vital node in this system, supporting the transfer of renewable generation and system resilience across northern England. Consequently, substantial weight should be afforded to the national need and strategic importance of the development, consistent with the approach in EN-1 and EN-5, irrespective of the consenting route.

National Policy Statement for Electricity Networks Infrastructure (EN-5)

- 6.4.57 Although the primary purpose of NPS EN-5 is to be applied to decisions for NSIPs, it is also a material consideration in the determination of planning applications for energy infrastructure.
- 6.4.58 NPS EN-5 applies to electricity networks in England with a voltage of 132kV or higher which are carried on towers/poles or buried underground, as well as associated infrastructure including substations.
- 6.4.59 Emphasising the crucial role of electricity networks in bolstering the new electricity generation infrastructure necessary for the UK's transition to net zero, NPS EN-5, in Paragraph 1.1.6, reaffirms the government's stance on CNP Infrastructure, stating:

'...government has concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure. This includes: for electricity grid infrastructure, all power lines in scope of EN-5 including network reinforcement and upgrade works, and associated infrastructure such as substations. This is not limited to those associated specifically with a particular generation technology, as all new grid projects will contribute towards greater efficiency in constructing, operating and connecting low carbon infrastructure to the National Electricity Transmission System. These are viewed by the government as being CNP infrastructure and should be progressed as quickly as possible.'

6.4.60 Paragraphs 2.4.3 to 2.4.4 state that:

'...the Secretary of State should bear in mind 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.'

While the above principles should govern the design of an electricity networks infrastructure application to the fullest possible extent – including in its avoidance and/or mitigation of potential adverse impacts (particularly those detailed in Section 2.10 below) – the functional performance of the infrastructure in respect of security of supply and public and occupational safety must not thereby be threatened'.

6.4.61 At Paragraphs 2.2.1 to 2.2.2, NPS EN-5 states:

'The Secretary of State should bear in mind that the initiating and terminating points – or development zone – of new electricity networks infrastructure is not substantially within the control of the applicant.'

Siting is determined by:

The location of new generating stations or other infrastructure requiring connection to the network, and/or

System capacity and resilience requirements determined by the NESO.'

6.4.62 With specific regard to substations, Paragraphs 2.2.8 to 2.2.9 of NPS EN-5 state that:

'There will usually be a degree of flexibility in the location of the development's associated substations, and applicants should consider carefully their location, as well as their design.'

In particular, the applicant should consider such characteristics as the local topography, the possibilities for screening of the infrastructure and/or other options to mitigate any impacts'.

6.4.63 At Paragraph 2.9.18, reference is made to the Horlock Rules, whereby its principles should be embodied in applicants' proposals for the infrastructure associated with new overhead lines.

6.4.64 In applying NPS EN-1 and NPS EN-5 to the planning balance, substantial weight should be afforded to the urgent national need for new and reinforced electricity transmission infrastructure identified within those policy statements. The adopted NPS EN-1 confirms that the need for additional electricity network capacity is immediate and significant to maintain security of supply and enable the transition to net zero, while the adopted NPS EN-5 reiterates that reinforcement and expansion of the transmission system are critical national priorities. The Scheme directly supports these objectives by facilitating the transfer of low-carbon generation and

strengthening the resilience of the national grid in northern England. Accordingly, when balancing local planning considerations against potential environmental or amenity effects, the Scheme's contribution to nationally critical energy objectives should attract substantial positive weight, consistent with the national policy framework and the government's overarching energy strategy.

6.5 Other Material Considerations

International Climate Policy Context

- 6.5.1 The government's energy policy is driven by a global need, and international commitments, to move towards net zero emissions, and achieving this through developing new sources of renewable energy and transmitting it from where it is generated to where it is needed.
- 6.5.2 Although there had been previous international agreements, most recent policy derives from the Paris Agreement which was adopted under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) in 2015. This had as an objective, the holding of the increase in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change.
- 6.5.3 The Conference of Parties (COP26) held in Glasgow in 2021 agreed on accelerated action on climate change this decade, reaffirmed the long-term goal to limit global warming to 1.5°C above pre-industrial levels, and resolved to pursue efforts to achieve this, recognising that limiting global warming to 1.5°C *'requires rapid, deep and sustained reductions in global greenhouse gas emissions, including reducing global carbon dioxide emissions by 45 per cent by 2030 relative to the 2010 level and to net zero around mid-century'*.
- 6.5.4 COP27 held in Sharm el-Sheikh in 2022 again reaffirmed the commitment to limiting global warming to 1.5°C and agreement to provide 'loss and damage' funding to vulnerable countries hit hard by climate disasters.
- 6.5.5 COP28 held in Dubai in 2023 closed with an agreement that signals the 'beginning of the end' of fossil fuels by outlining a 'just and equitable transition', underpinned by deep emissions cuts and financial commitments.
- 6.5.6 At the 2024 United Nations Climate Change Conference (COP29) held in Baku, Azerbaijan, the United Kingdom made significant commitments to address climate change which included:

Enhanced Emission Reduction Target: The UK announced a new Nationally Determined Contribution, pledging to reduce greenhouse gas emissions by 81 per cent by 2035 compared to 1990 levels. This target reflects an increase from the previous goal of a 78 per cent reduction and aligns with recommendations from climate advisers.

Climate Finance Commitment: Developed nations, including the UK, agreed to triple climate finance to developing countries, setting a new target of \$300 billion annually by 2035. This funding aims to assist developing nations in mitigating and adapting to the impacts of climate change.

COP29 maintained the process of international climate diplomacy, negotiating key agreements on finance and carbon markets.

- 6.5.7 At Belem in Brazil the UK Government reaffirmed its ambition under the Paris Agreement and committed to ambitious emissions reductions. The UK Government endorsed the overall COP30 outcome document which calls for increased climate finance flows and re-emphasised its intention to support vulnerable communities (both domestic and international).

National Climate and Energy Legislation and Policy Context

- 6.5.8 The Climate Change Act 2008 forms the basis for the UK's approach to tackling and responding to climate change. It requires that emissions of carbon dioxide and other greenhouse gases are reduced and that climate change risks are adapted to. The Act also establishes the framework to deliver on these requirements.
- 6.5.9 Through the Climate Change Act 2008, the UK government set a target to significantly reduce UK greenhouse gas emissions by 2050 and a path to get there. The Act also established the Committee on Climate Change to ensure that emissions targets are evidence-based and independently assessed. In addition, the Act requires the government to assess the risks and opportunities from climate change for the UK, and to adapt to them. The Committee on Climate Change's Adaptation Committee advises on these climate change risks and assesses progress towards tackling them.
- 6.5.10 The Climate Change Act 2008 originally committed the UK to reducing its greenhouse gas emissions by 80 per cent by 2050, compared to 1990 levels. However, in 2019 this was changed to a target to reduce greenhouse gas emissions by 100 per cent by 2050, compared to 1990 levels; this is commonly known as 'net zero'.
- 6.5.11 In recent years there has been a succession of reports, strategies and policy statements released by the government aiming to support the realisation of the 2050 net zero target and enable the transition to clean, green and home-grown energy. The Scheme would contribute to fulfilling the aims of these strategies, demonstrating its national importance and need. These include the following:

January 2018: A Green Future: Our 25 Year Plan to Improve the Environment (HM Government, 2018). This is the government's long-term strategy, first published in January 2018 and updated in February 2023. The plan sets out ambitious goals across air, water, land biodiversity and waste.

March 2020: Net Zero: Opportunities for the Power Sector (National Infrastructure Commission, 2020). This paper sets out updated evidence and analysis of the electricity system in the context of the 2050 net zero greenhouse gas emissions target.

November 2020: The Ten Point Plan for a Green Industrial Revolution (DESNZ and Department for Business, Energy and Industrial Strategy (BEIS), 2020) is a £12 billion government backed drive aiming to help create up to 250,000 green jobs and accelerate the UK's transition to net zero. Measures included in the plan include advancing offshore wind, promoting electric vehicles and boosting green transport.

November 2020: National Infrastructure Strategy: Fairer, Faster, Greener (HM Treasury, 2020). This paper sets out the government's plan to deliver on its ambition to '*deliver an infrastructure revolution: a radical improvement in the quality of the UK's infrastructure to help level up the country [...] and put the UK on the path to net zero emissions by 2050*'.

December 2020: Energy White Paper: Powering our Net Zero Future (BEIS, 2020). This outlines the government's plan to support the UK in becoming a net zero greenhouse gas emitting country by 2050.

October 2021: Net Zero Strategy: Build Back Greener (HM Government, 2021). This strategy sets out policies and proposals for decarbonising all sectors of the UK economy to meet the net zero target by 2050.

April 2022: British Energy Security Strategy (HM Government, 2022). This document is built on the Net Zero Strategy and was published in response to the Russian invasion of Ukraine and the 2022 energy price crisis. The Strategy sets out the key actions to accelerate delivery of clean energy, recognising the importance in delivering climate goals whilst simultaneously providing energy security and securing greater energy independence.

September 2022: The Growth Plan 2022 (HM Treasury, 2022). This included measures to support the energy market and supply reform and price relief to stabilise bills, strengthen energy security and support sustainable economic growth.

January 2023: Mission Zero – the Skidmore Review (January 2023) (DESNZ, 2023). This independent review considered how the net zero target could maximise economic growth while also increasing energy security and affordability for consumers and businesses.

February 2023: Environmental Improvement Plan 2023 (Department for Environment, Food and Rural Affairs (Defra), 2023). This plan is the government's first revision of the 25 Year Environment Plan, and it provides a comprehensive delivery plan for the government's approach to halting and then reversing the decline in nature.

March 2023: Powering Up Britain (HM Government, 2023a) and Powering Up Britain: Energy Security Plan (HM Government, 2023b). These documents provide an update of the strategy for secure, clean and affordable British energy for the long-term future.

June 2023: 2023 Progress Report to Parliament (Climate Change Committee, 2023). This statutory report provides a comprehensive overview of the UK government's progress to date in reducing greenhouse gas emissions.

October 2023: The Energy Act 2023 established the Independent System Operator and Planner, now named National Energy System Operator (NESO), to oversee system planning and integrate net zero objectives into energy operations. NESO is tasked with strategic planning across electricity and gas systems, co-ordinating transmission projects, planning system expansion and embedding net zero objectives into network development.

March 2024: Beyond 2030: A National Blueprint for a Decarbonised Electricity System in Great Britain (National Grid ESO, 2024a). This transitional plan is a stepping-stone before NESO develops the fully Centralised Strategic Network Plan which will be published in 2026.

July 2024: Future Energy Scenarios: ESO Pathways to Net Zero (National Grid ESO, 2024b).

November 2024: NESO Clean Power 2030: Advice on achieving clean power for Great Britain by 2030 (NESO, 2024).

December 2024: Clean Power 2030 Action Plan: A new era of clean electricity (DESNZ, 2025c). This report provides the strategic initiative aimed at transitioning to cleaner energy sources and reducing carbon emissions and was issued following NESO's Clean Power 2030: Advice on achieving clean power for Great Britain by 2030 publication.

June 2025: The UK's Modern Industrial Strategy (Department for Business and Trade, 2025) provides a 10-year roadmap to unlock £25.6 billion in British Business Bank Funding. It identifies eight high growth sectors including clean energy. The Strategy also identifies that high electricity prices and grid connection delays are a barrier to electrification in the UK's energy-intensive industries and to the delivery of net zero commitments. The Industrial Strategy references new powers in the Planning and Infrastructure Bill, currently before Parliament, to amend regulatory processes and accelerate connections for strategically important projects. This will include a power to 'designate' government strategic documents, including the Industrial Strategy, to inform allocation of connections, enabling the government to reserve future capacity on the grid, reducing waiting times for businesses with major investments in Great Britain.

December 2025: DESNZ designated revised NPSs for energy. The two most relevant NPSs are:

- NPS EN-1 (DESNZ, 2025a); and
- NPS EN-5 (DESNZ, 2025b).

- 6.5.12 All the above national drivers stress the importance of transforming the energy generation of the UK to renewables so that the country can meet its legal target of net zero greenhouse gas emissions by 2050.
- 6.5.13 More recently the government has had an ambition for Great Britain to be supplied with clean power by 2030⁴. This forms part of a plan to Make Britain a Clean Energy Superpower (Prime Minister's Office, n.d.). To achieve the Clean Power 2030 goal the NESO was formally commissioned by the Secretary of State and DESNZ to provide independent advice on the pathway towards the 2030 ambition. The following reports have subsequently been released:
- Clean Power 2030 (NESO, 2024); and
 - Clean Power 2030 Action Plan: A New Era of Clean Electricity (DESNZ, 2025c).

Clean Power 2030

- 6.5.14 In November 2024, NESO published its independent analysis on how DESNZ can achieve its ambitious clean power goal.
- 6.5.15 In the Clean Power 2030 report, NESO set out pathways for how Great Britain can reach a clean power system by 2030. The report identifies that offshore wind will provide over half of Great Britain's generation, with onshore wind and solar providing another 29 per cent. New dispatchable low carbon technologies, such as carbon capture and storage or hydrogen, add significant value to the system, with even relatively small levels of operational capacity materially reducing the overall challenge for the rest of the programme.
- 6.5.16 Associated with the new energy generation the report identifies the need for a major network expansion, in line with published plans for the transmission network and with further strengthening at distribution level.

- 6.5.17 The NESO's (2024) Clean Power 2030 Report explicitly identifies the Project (and the Brinsworth to Chesterfield) project in Annex 2 as one of four schemes which will provide significant additional capacity on the network to facilitate flow from north to south. The Chesterfield to High Marnham Project (and the Brinsworth to Chesterfield Project) needs to be delivered by 2030 to enable an affordable and secure clean power system, the delivery of the Project is inherently linked to the subsequent construction and operation of the Scheme.
- 6.5.18 The report notes the need to accelerate these transmission projects to ensure that they can help to deliver the new sources of clean power generation by 2030.

Clean Power 2030 Action Plan: A New Era of Clean Electricity

- 6.5.19 Following the publication of the NESO (2024) Clean Power 2030 report, the government published the Clean Power 2030 Action Plan (DESNZ, 2025c) setting out the government's view of the pathway to 2030 and setting targets required to achieve clean power by 2030. The Clean Power 2030 Action Plan outlines strategies to accelerate the transition to a cleaner energy system by 2030, focusing on reducing greenhouse gas emissions, increasing renewable energy use, and promoting energy efficiency.
- 6.5.20 The Action Plan identifies that, in a typical weather year, the 2030 power system will see clean sources produce at least as much power as Great Britain consumes in total over the whole year and at least 95 per cent of Great Britain's generation; reducing the carbon intensity of the nation's generation from 171gCO₂e/kWh in 2023 to well below 50gCO₂e/kWh in 2030.
- 6.5.21 To achieve this, the Action Plan outlines the ambition to secure the following generation mix:
- 42–50 GW of offshore wind;
 - 27–29 GW of onshore wind; and
 - 45–47 GW of solar power.
- 6.5.22 These will be complemented by flexible capacity, including 23–27GW of battery capacity and 4–6GW of long-duration energy storage.
- 6.5.23 The Action Plan identifies a series of challenges which need to be addressed to secure the 2030 targets and in particular the need for construction of generation and transmission projects to commence by 2026 if they are to be operational by 2030. The Action Plan notes that around twice as much new transmission infrastructure will be needed in the nation's grid by 2030 as has been built in the past decade.

6.6 Summary

- 6.6.1 The review of the policy context for the Scheme presented in this section has established the following:

Section 70(2) of TCPA 1990 and Section 38(6) of the Planning and Compulsory Purchase Act 2004 confirm that planning applications must be determined in accordance with the Development Plan unless material circumstances indicate otherwise.

The development plan for the purposes of the Chesterfield Substation includes:

- NEDLP;
- Derby and Derbyshire Minerals Local Plan;
- Derby and Derbyshire Waste Local Plan; and
- SPDs included in Appendix D.

The NPPF establishes a presumption in favour of sustainable development, sets out that significant weight should be placed on the need to support economic growth and productivity and requires that planning decisions should address the locational requirements of different sectors.

Infrastructure, including energy infrastructure, investment is a key pillar underpinning the government's wider economic policies and objectives.

There is a recognised, urgent need for new electricity transmission and distribution infrastructure in the UK. The Scheme forms part of the Brinsworth to Chesterfield and Chesterfield to High Marnham Project, which is specifically referenced in NESO's Clean Power 2030 report as one of four schemes which will provide significant additional capacity on the network to facilitate flow from north to south. The Project needs to be delivered by 2030 to enable an affordable and secure clean power system.

Although the application will be determined in accordance with TCPA 1990, the NPSs for Energy are a material consideration for this application, which will enable the delivery of NSIPs (which are recognised as having a critical national priority) and the Great Grid Upgrade.

The determination of this planning application against the Development Plan and other identified material considerations should be made in the context of the urgent need to deliver this infrastructure upgrade.

7. Planning Assessment

7.1 Introduction

- 7.1.1 Section 70(2) of TCPA 1990 and Section 38(6) of the Planning and Compulsory Purchase Act 2004 confirms that planning applications should be determined in accordance with the Development Plan unless material circumstances indicate otherwise.
- 7.1.2 This established a presumption in favour of granting permission for developments which are in accordance with the development plan.
- 7.1.3 This principle has been developed and clarified by subsequent appeal history and case law, which has confirmed that a particular proposal does not need to accord with each and every policy in a development plan; the key issue is that it accords with the overall thrust of development plan policies taken as a whole. Therefore, in order to be approved for planning permission, the primary test is that the Scheme complies with the North East Derbyshire Local Plan 2014-2034 (adopted 2021), North East Derbyshire Local Plan 2014-2034 Policies Map 3 (Inset F), North East Derbyshire Local Plan 2014-2034 Policies Map 4 (Inset G), Derby and Derbyshire Minerals Local Plan (adopted 2002) and the Derby and Derbyshire Waste Local Plan (adopted 2005). Where there are no up-to-date policies then reference should be made to the NPPF (MHCLG, 2024a).
- 7.1.4 This section identifies those issues anticipated to be material considerations in the determination of the planning application and assesses them in the context of the policy environment discussed. The main planning issues raised by this application are considered within the remainder of this section under the following headings. Each section contains a summary of review and reports undertaken for each respective topic to assist in navigation and understanding of the wider environmental reports:
- Principle of the Development;
 - Design Overview;
 - Ecology (including Biodiversity and Arboriculture);
 - Landscape and Visual Character;
 - Historic Environment;
 - Traffic and Transport;
 - Air Quality;
 - Noise and Vibration;
 - Land and Ground Conditions;
 - Agriculture and Soils;
 - Minerals;
 - Water Resources and Flood Risk;
 - Socioeconomics and Human Health; and
 - Electric and Magnetic Fields (EMFs).

7.2 Principle of the Scheme

- 7.2.1 National Grid as a statutory undertaker has a statutory responsibility to meet the needs of the modern economy in supplying electricity to the regional DNOs and end users including industrial, business and domestic users.
- 7.2.2 The establishment of the Scheme would enable National Grid to fulfil its statutory obligations to provide a secure, reliable and efficient electricity supply, while also strengthening its capacity to meet both current and future customer demand. This will be achieved through the delivery of essential infrastructure, specifically the elements included within this planning submission, such as new substations, upgraded transmission lines and the associated reinforcement of other proposed network assets. These improvements are designed not only to enhance the resilience and flexibility of the electricity network, making it better able to withstand fluctuations in demand and supply, but also to facilitate the transition to a low-carbon energy system.
- 7.2.3 By providing the necessary capacity and technical capability to integrate increased volumes of renewable and low-carbon energy sources, the Scheme will directly support the decarbonisation of the electricity sector. This is a fundamental component of the government's broader climate and sustainability agenda, including the statutory commitment to achieve net zero carbon emissions by 2050. Furthermore, at the national policy level, there is unambiguous support for critical infrastructure projects of this kind. Such projects are explicitly recognised as essential for maintaining energy security, supporting economic growth, and enabling the UK's transition to a sustainable and resilient low-carbon energy future.
- 7.2.4 The Development Plan does not contain explicit policy relating to the development of new substations. However, Policy SDC10 of the NEDLP states that NEDDC will support development for, *'the generation of renewable energy including biomass power generation, combined heat and power, and other micro generation systems will be permitted where either individually or cumulatively with other renewable energy development'*. Renewable energy development in this context includes utilities assets such as new substations, and on this basis, Policy SDC10 of the Development Plan provides general policy support for infrastructure such as the Scheme.
- 7.2.5 Continued, Policy SDC10 of the NEDLP permits renewable energy development so long as there are no significantly adverse effects on:
- The visual amenity and character of the area including landscape and visual impacts;
 - The amenity of local residents, in terms of noise, dust, odour, reflected light, traffic or visual intrusion;
 - The ecology of the area, in particular in relation to protected species and to any sites of biodiversity value, ancient woodland, and veteran trees;
 - The historic environment, including the effect on the significance of heritage assets and their setting and important views associated with valued landscapes and townscapes; and
 - Airport radar and telecommunications systems.

- 7.2.6 As demonstrated in subsequent planning analysis, with mitigation, it has been assessed that the Scheme does not inflict significantly adverse impacts on the aforementioned features highlighted by the policy.
- 7.2.7 Continued, Policy SDC10 of the NEDLP requires proposals to detail associated developments such as access roads, ancillary buildings, and transmission lines, with the latter to be placed underground where possible to reduce visual impact. Applications must include a satisfactory restoration scheme for post-decommissioning. These details are provided in the submitted drawings. This application does not concern the timeline of the Scheme, the substation is sought to be a permanent development.
- 7.2.8 Regarding underground transmission lines, the Scheme is designed to connect to existing overhead infrastructure. Undergrounding would necessitate extra infrastructure to transition from overhead to underground cables. Under the Electricity Act 1989, National Grid must maintain an efficient and economical electricity transmission system. Section 37 requires consent for overhead lines unless those lines are within National Grid, controlled land (e.g. substations), where such consent is not needed. These statutory provisions support the use and operation of overhead transmission lines on National Grid land.
- 7.2.9 The Site is within the Open Countryside, Policy SS9 of the NEDLP provides a list of development types that would be approved in countryside locations. This is not an exhaustive list and does not preclude other forms of development. As demonstrated in this PDAS the principle of the Scheme is entirely appropriate for location. Irrespective, the policy states any proposed development will only be supported if it is consistent with other policies in the development plan or within national policies. In all cases development is required to respect, *'the form, scale and character of the landscape, through careful siting, scale, design and use of materials'*. As to be set out in more detail in subsequent analysis chapters, it has been demonstrated that the Scheme is acceptable to these necessities, so this criterion is therefore engaged.
- 7.2.10 The Derby and Derbyshire Minerals Local Plan identifies the Site as being located within a 'Surface Coal Safeguarding Area'. Accordingly, as the Site is situated within a designated consultation area, it requires consultation with the Mineral Planning Authority. Policy MP17 of the Minerals Local Plan seeks to resist proposals for any development that would result in the sterilisation or prejudice the future extraction of mineral deposits. Notwithstanding, Policy MP17 does provide for certain exemptions, including where *'there is an overriding need for the development'*. As set out in Section 8 of this PDAS, there is a clear and demonstrable need for the Scheme, which satisfies the criteria for exemption as outlined in Policy MP17. As noted in Paragraph 9.2.25 of the EAR that accompanies the planning application, it is also demonstrated that the Scheme is unlikely to lead to significant sterilisation, *'records of opencast mining indicate the surface coal reserves have already been worked in the area, and there will be a relatively small footprint of the substation, it is not thought that the Scheme would lead to significant mineral sterilisation'*. Nonetheless, consultation with the Mineral Planning Authority will be required in relation to the development within the 'Surface Coal Safeguarding Area'. On this basis, the principle of the Scheme is judged to be in accordance with Policy MP17 of the Derby and Derbyshire Minerals Local Plan.
- 7.2.11 It is noted that the Scheme is located within Flood Zone 1, will achieve a minimum of 10 per cent net BNG, and will not result in significant harm to heritage or environmental assets. Furthermore, the Scheme will not have a significant impact on

the landscape and will be accompanied by appropriate mitigation measures to ensure that all potential impacts are adequately addressed.

- 7.2.12 At a national policy level, although the proposed 400kV substation at Chesterfield is being consented under the TCPA 1990 rather than as a Development Consent Order under the Planning Act 2008. NPS EN-1 and NPS EN-5 identify the need for new and reinforced electricity transmission infrastructure as a CNP to maintain security of supply and deliver the transition to net zero. The Project, in which the proposed new 400kV Chesterfield Substation sits within, is part of National Grid's broader transmission reinforcement strategy. This strategy has been outlined by the Electricity System Operator's Holistic Network Design and subsequent Centralised Strategic Network Plan, which together set out nationally critical reinforcements required to connect new offshore generation and strengthen the onshore 400kV network. The proposed substation provides a vital node in this system, supporting the transfer of renewable generation and system resilience across northern England. Consequently, substantial weight should be afforded to the national need and strategic importance of the development, consistent with the approach in NPS EN-1 and NPS EN-5, irrespective of the consenting route.
- 7.2.13 To reiterate, the Scheme is being brought forward to ensure that there is sufficient capacity to meet demand from National Grid's customers and help reinforce the existing network in the wake of increasing capacity of renewable energy creation. The combination has meant that sections of the existing network have been identified as requiring upgrades to secure the operation of the transmission system, ensuring reliable, economical and long-term supply.
- 7.2.14 The need for the Scheme is substantiated by NPSs, specifically NPS EN-1 and NPS EN-5, which identify substations as critical components of national infrastructure that should be progressed expeditiously. The Scheme incorporates appropriate landscaping and mitigation measures, and its justification is further reinforced by the presence of the existing Chesterfield Substation in close proximity, as well as clear national-level policy support.
- 7.2.15 In conclusion, the principle of the Scheme is unequivocally established by multiple national policy documents, including NPS EN-1 and NPS EN-5, and is further supported by the Development Plan and overriding objectives relating to increasing renewable energy infrastructure provision. The proposal largely adheres to local planning policies and there are significant material considerations in favour of the Scheme. Where there are limited areas of non-compliance, these are outweighed in the overall planning balance by the benefits of the Scheme.

7.3 Design Overview (Layout, Design and External Appearance)

- 7.3.1 The NEDLP, NPPF, NPS EN-1, and NPS EN-5 collectively advocate for high-quality design in new developments, including energy infrastructure. In alignment with these national policies, Policies SS1, SS9, and SDC12 of the NEDLP establish specific requirements to ensure that development respects the form, scale, and character of the surrounding landscape. This is achieved through careful consideration of the siting, scale, design, and use of materials, taking into account the site and its context with regard to layout, form, height, massing, scale, size, elevational treatment, materials, streetscape, and rooflines. The objective is to ensure that built form is effectively integrated into the local setting while making a positive contribution to the quality of the local environment.

- 7.3.2 Moreover, Policy SDC12 of the NEDLP emphasises the importance of boundary treatments and landscaping that are well-designed and create strong physical features, providing visual and functional separation from the site's surroundings without leading to overlooking. Where appropriate, effective landscape buffers are required to facilitate a seamless transition between urban and rural environments. Additionally, development plans should incorporate measures to minimise opportunities for crime and anti-social behaviour, further enhancing the safety and functionality of the local environment.
- 7.3.3 The Access for All SPD mandates that development projects integrate seamlessly into the existing urban form or surroundings, ensuring that inclusion is both maintained and managed effectively. In alignment with this directive, Policy SDC10 specifies that developments should provide comprehensive details regarding associated elements, such as access roads, ancillary buildings, and transmission lines. Policy ID8 extends transport considerations, emphasising that proposals will be evaluated based on their impact on existing PRoWs. Development projects that result in the loss or deterioration of the quality of existing PRoWs will not be permitted unless equivalent alternative provisions are made.
- 7.3.4 Furthermore, Policy SDC12 of the NEDLP underscores the necessity for developments to make adequate provision for private amenity space, storage and recycling facilities, and vehicle and cycle parking. This ensures that developments not only integrate effectively into their surroundings but also cater to the functional needs of their inhabitants and contribute positively to the overall quality of the urban environment.
- 7.3.5 Due to the nature of the Scheme and the need to ensure operational stability, security and safety, there is limited flexibility in terms of design, architecture and the selection of materials relative to other types of development. This is expressly recognised in NPS EN-5, at Paragraph 2.4.3, which states that *'the Secretary of State should bear in mind 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'*. At Paragraph 2.4.4, NPS EN-5 goes on to state that *'the functional performance of the infrastructure in respect of security of supply and public and occupational safety must not thereby be threatened'*. In this regard, the substations and other buildings associated with the Scheme have been designed in accordance with National Grid Technical Standards.
- 7.3.6 Good design of electricity substation infrastructure is primarily governed by application of the Horlock Rules, alongside an iterative design approach informed by stakeholder engagement, relevant sections of national policy (NPS EN-1 and EN-5), which is considered to be a material consideration for this planning application and the embedded environmental design mitigation as part of the environmental appraisal process.
- 7.3.7 Such good design principles are then intertwined with the technical design requirements alongside the regulatory and other constraints such as operational, safety and security requirements for new electricity transmission infrastructure.
- 7.3.8 The design is therefore shaped by safety, operational, and environmental regulations. Functional constraints limit aesthetic flexibility but do not negate opportunities for landscape integration.

- 7.3.9 Notwithstanding the limited flexibility associated with the design of substations, the Scheme has had regard to the design principles established in the Development Plan and nationally planning policy, as well as the Horlock Rules. In addition, the design review undertaken with Design:Midlands has informed the design proposals subject to this planning application submission. In particular:
- a GIS technological solution has been adopted for the new substation in order to minimise land-take and impacts on landscape character and amenity, including consideration of minimised overhead line to connect to existing infrastructure;
 - baseline assessments of the Site have determined that it is not subject to significant constraints relating to ecology, water, landscape, or heritage considerations;
 - for the GIS control buildings, there is scope for variation in the external finishes. Buildings must be located with due consideration for access, maintenance, and operational clearance. These buildings are expected to be modular steel-fabricated with metal sheet cladding for the GIS hall but may allow variations in colour to suit the surrounding landscape
 - the location of the proposed substation directly adjacent to the existing substation requires minimal changes to the existing overhead line network avoiding a confusing appearance and is likely to minimise changes to the existing views from main viewpoints. It is anticipated that the extent and scale of impacts experienced by the surrounding receptors would be partially tempered by the receptors potentially having visual familiarity with the existing OHLs in this area;
 - a lighting regime will be adopted to minimise light spill;
 - a planting regime will be implemented in accordance with the illustrative landscape mitigation and enhancement plan to minimise visual impacts; and
 - appropriate security measures are included in the design of the Scheme, including fencing and controlled site access, to reduce the opportunity for crime.
- 7.3.10 As set out above, good design of electricity substation infrastructure is primarily governed by application of the Horlock Rules, alongside an iterative design approach informed by stakeholder engagement, relevant sections of national policy (NPS EN-1 and EN-5), which is considered to be a material consideration for this planning application and the embedded environmental design mitigation as part of the environmental appraisal process. It is important to acknowledge that the design of the Scheme is shaped by safety, operational, and environmental regulations.
- 7.3.11 Considering the nature of the Scheme and the design measures incorporated therein, the Scheme is considered to comply with the spirit of the policies in the NEDLP, as well as national planning policies regarding design and layout. Furthermore, the Scheme has been strategically located and designed to minimise environmental and amenity impacts to the greatest extent possible. Subject to the receipt of planning permission, for the GIS control buildings, there is scope for variation in the external finishes. These buildings are expected to be modular steel-fabricated with metal sheet cladding for the GIS hall but may allow variations in colour to suit the surrounding landscape.

7.4 Ecology (including Biodiversity and Arboriculture)

- 7.4.1 Under the Electricity Act 1989 and Natural Environment and Rural Communities Act 2006, National Grid has a statutory duty to conserve and enhance biodiversity. Schedule 7A of the Town and Country Planning Act 1990 (as inserted by Schedule 14 of the Environment Act 2021)., meanwhile, requires that development subject to planning permission provides a 10% gain in biodiversity.
- 7.4.2 National and local planning policies also seek to conserve and enhance biodiversity. Policy SDC2 of the NEDLP protects existing trees, woodland and hedgerows for their wildlife, landscape, and/or amenity value. The policy states that where trees, woodland or hedgerows will be lost to development and this is considered to be acceptable, suitable replacement planting on-site where it is practicable to do so, or off-site if not, will be required. Policy ID7 of the NEDLP continues that to ensure the quality of new or improved green infrastructure, development proposals shall protect trees, woodland and hedgerows in line with Policy SDC2 of the NEDLP.
- 7.4.3 Policy SDC4 of the NEDLP sets out that that the Council will protect and enhance the District's natural environment and seek to increase the quantity and quality of biodiversity and geodiversity by in part promoting the qualitative enhancement of all sites of biodiversity and geodiversity value (including designated SSSIs, LNRs, LWSs and Regionally Important Geological Sites (RIGS), and other sites with protected and priority species) by supporting measures that improve wildlife habitat connectivity and create new wildlife habitats. It goes on to state that measures could include maintaining trees, native vegetation and improving green infrastructure for the benefit of wildlife.
- 7.4.4 As set out above, there is no specific Development Plan policy relating to the development of new substations. Policy SDC10 of the NEDLP applies to renewable energy developments and permits renewable energy development so long as the ecology of the area, in particular in relation to protected species and to any sites of biodiversity value, ancient woodland, and veteran trees is protected.
- 7.4.5 Whilst there is no local policy on BNG, the Scheme includes proposals to secure a minimum of 10% BNG in line with the Environment Act 2021 and is linked with the proposed Landscape Mitigation Strategy. In fitting with Policy SDC2 of the NEDLP, which sets out a preference that new planting uses species and varieties native to the area, suitable native tree species local to the area will be planted as on-site scattered tree replacement (re-provisioning) as part of the BNG and landscape strategy.
- 7.4.6 The NPPF, Paragraph 187, requires planning policies and decisions to contribute to, and enhance, the natural and local environment by protecting and enhancing sites of biodiversity value and minimising impacts on, and providing net gains for, biodiversity. Paragraph 193 stipulates that:
- planning permission should be refused where significant harm to biodiversity resulting from a development cannot be avoided, mitigated, or, as a last resort, compensated for;
- development which is likely to have an adverse effect on a SSSI should not be permitted except where the benefits clearly outweigh the impacts on site specific features of special scientific interest and the national network of SSSIs;

development resulting in the loss or deterioration of irreplaceable habitats should be refused, unless there are exceptional reasons and a suitable compensation strategy exists; and

development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

- 7.4.7 At Paragraph 5.4.49, NPS EN-1 explains how the Secretary of State should approach the consideration of effects on biodiversity in determining DCO applications, stating that appropriate weight should be attached to designated sites, protected species, habitats and other species of principal importance, and to biodiversity and geological interests within the wider environment. With specific regard to regional and local sites, both NPS EN-1 and NPS EN-5 set out that, in the context of new nationally significant infrastructure, these should not be used in themselves to refuse development consent.
- 7.4.8 With specific regard to arboriculture, national and local planning policies seek to retain, and encourage the planting of new, trees. In this regard, Paragraph 193(c) of the NPPF stipulates that *'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists'*.
- 7.4.9 Consistent with the requirements of the Development Plan, NPPF and NPS EN-1, an Ecology Report (Appendix F of the EAR) has been produced to assess the potential effects of the Scheme on ecology and biodiversity and this has been submitted with the planning application along with a BNG Report (Appendix G of the EAR) and Arboricultural Impact Assessment (Appendix S of the EAR). The assessment presented in the EAR has informed a suite of measures to mitigate adverse impacts on biodiversity and these are set out in the OCEMP (Appendix D of the EAR) which is also submitted with the planning application.

Statutory designated sites

- 7.4.10 The Site is not located on, or adjacent to, any statutory designated nature conservation sites. There is one SSSI within 2km of the application site, Duckmanton Railway Cutting SSSI, located circa 1.05km north east of the Site. The designation is for geology and grassland flowers conservation.
- 7.4.11 The closest other statutory designations are the Peak District Moors Special Protection Area (SPA) and South Pennine Moors Special Area of Conservation (SAC). The Peak District Moors SPA is located circa 8.8km west of the Site and comprises an extensive tract of moorland and moorland-fringe habitat, supporting several important species assemblages, including higher plants, lower plants and insects, as well as breeding birds. The South Pennine Moors SAC is located circa 8.8km west of the Site and partly comprises Annex I habitats.
- 7.4.12 As noted in Table 4.2 of the EAR, the qualifying features for these designations will not be affected by the Scheme due to type, distance and lack of feasible impact pathways.

Non-statutory designated sites

- 7.4.13 There are 16 non-statutory designated sites within 2km of the Site.
- 7.4.14 The closest designations are Land Between Spital and Hady pLWS and Land North of Somerset House, Calow LWS. These designations are 850m north west and 940m north respectively from the substation site. There are no details available for the Land Between Spital and Hady pLWS. The Land North of Somerset House, Calow LWS comprises semi-improved neutral grassland with a species composition indicative of the MG9 (False Oat-grass sub community) National Vegetation Classification grassland.
- 7.4.15 Table 4.2 of the EAR confirms that all non-statutory designations will not be affected by the Scheme.

Habitats

- 7.4.16 An Extended Phase 1 survey has been carried out and is reported within Appendix F of the EAR. The desk study identified four Habitats of Principal Importance (HPIs) within 2km of the Site. All four were deciduous woodland; the nearest is within the Site boundary.
- 7.4.17 The EAR details that the Site predominantly comprises broadleaved woodland, scattered trees, scrub, improved grassland, cultivated/disturbed land – arable, hedgerows and other habitats.
- 7.4.18 As shown in Table 4.2 of the EAR, broadleaved woodland, hedgerows and scattered trees were scoped in for further assessment. Table 4.3 details the control, enhancement and monitoring measures for these potential receptors and impacts.
- 7.4.19 Table 4.3 of the EAR identifies that the broadleaved woodland at Furnace Hillock may be affected during construction, primarily through the permanent loss of approximately 0.22ha of woodland, which is classified as an HPI. Potential construction-related impacts include vegetation loss, habitat fragmentation, disturbance to species, pollution from surface water runoff, dust deposition, and adverse effects on Root Protection Areas (RPAs). During the operational phase, noise impacts have been identified as a potential concern. Arboricultural impacts on Furnace Hillock are discussed below.
- 7.4.20 Policy SDC4 of the NEDLP commits the Council to protect and enhance all sites of biodiversity and geodiversity value supporting measures that improve habitat connectivity and create new habitats. This includes maintaining trees, native vegetation, and enhancing green infrastructure for wildlife benefits.
- 7.4.21 Mitigation measures have been embedded within the Scheme's design to address these impacts. Opportunities for habitat retention have been maximised, with retained woodland areas to be protected in accordance with BS 5837:2012 (British Standards Institution, 2012) and the protocols established in the CEMP. Pollution prevention measures will be implemented, such as undertaking activities involving potential pollutants (e.g., concrete or fuel) within designated controlled areas and employing dust containment strategies to minimise dust migration.
- 7.4.22 The existing perimeter fencing will be retained to continue segregating the woodland, thereby minimising disturbance from site personnel and the public. Additionally, the creation and retention of hedgerows, woodland, and scrub will serve as a buffer between the new substation infrastructure and the wider Site, supporting biodiversity,

reducing noise, and providing visual screening and aesthetic enhancement. Appropriate native tree species, local to the area, will be planted as part of woodland replacement in accordance with the BNG and landscape strategy.

- 7.4.23 No other operational ecological effects on this feature are anticipated.
- 7.4.24 Table 4.3 of the EAR identifies that the Scheme will result in the permanent loss of approximately 0.68km of hedgerow. Associated impacts include the loss of vegetation, habitat fragmentation, pollution from surface water runoff, dust deposition, and potential effects on RPAs.
- 7.4.25 As detailed above, Policy SDC2 of the NEDLP requires the protection of existing trees, woodland, and hedgerows for their wildlife, landscape, and amenity value. Where removal is justified, suitable replacement planting, preferably on-site, or off-site if necessary, is required. Policy ID7 of the NEDLP reinforces the need to protect these features to ensure high-quality green infrastructure in line with SDC2 of the NEDLP.
- 7.4.26 A range of mitigation measures has been incorporated into the Scheme's design. Opportunities for habitat retention have been maximised, with retained hedgerow areas to be protected in accordance with BS 5837:2012 (British Standards Institution, 2012) and as detailed within the CEMP. Pollution prevention measures will be implemented to minimise adverse effects on hedgerow habitats, including the management of activities involving potential pollutants within designated areas and the containment of dust-generating processes.
- 7.4.27 In addition, the re-provisioning of hedgerows will be achieved through the planting of suitable native tree and hedge species, consistent with the BNG and landscape strategy. It is anticipated that no adverse ecological impacts will occur during the operational phase of the Scheme.
- 7.4.28 Table 4.3 of the EAR indicates that the Scheme will result in the permanent loss of approximately 70m of scattered trees, which are located within, or immediately adjacent to the Site and would require full or partial removal to facilitate the Scheme. Associated impacts include vegetation loss, habitat fragmentation, pollution from surface water runoff, dust deposition, and effects on RPAs.
- 7.4.29 A range of mitigation measures has been incorporated into the Scheme's design. Habitat retention has been integrated into the Scheme's design, with retained areas to be protected in accordance with BS 5837:2012 (British Standards Institution, 2012) and the CEMP. Pollution prevention measures will be implemented to protect tree habitats, including controlled handling of pollutants and dust containment. Native tree species will be planted on-site as replacement for lost trees in line with the BNG and landscape strategy. No adverse operational impacts are anticipated.

Species

- 7.4.30 There were 45 records of protected and/or notable plant species returned by the desk study. The closest record was bluebell (*Hyacinthoides non-scripta*) located within the Site and verified during the field survey within Furnace Hillock pLWS.
- 7.4.31 There were no Invasive Non-Native Species identified as present within the Site. The closest record of Himalayan balsam (*Impatiens glandulifera*) was recorded approximately 220m south east of the Site boundary.

- 7.4.32 A desk study identified records of seven notable invertebrate species, with the nearest records (dingy skipper (*Erynnis tages*) and small heath (*Coenonympha pamphilus*)) located 1.4km north east of the Site. The Site itself primarily comprises intensively managed arable land with limited habitat diversity, offering only small areas of suitable habitat (woodland ride and hedgerows) for common invertebrates. Due to the distance of notable species records, limited habitat connectivity, and lack of diverse vegetation, the Site is considered unlikely to support notable or protected invertebrate species or a significant assemblage of invertebrates.
- 7.4.33 The desk study identified records of great crested newt (*Triturus cristatus*), smooth newt (*Lissotriton vulgaris*), and common toad (*Bufo bufo*), with the nearest record being great crested newt approximately 480m north west of the Site. Two European Protected Species licences for great crested newt were also noted 1.9km south west of the Site within Hunloke Country Park. Four ponds within 500m of the Site were assessed. Pond 1 was found to have poor suitability and returned a negative eDNA result for great crested newt. The ecological assessment concluded that great crested newts are likely absent from the Site, which offers only limited suitability for common and widespread amphibian species.
- 7.4.34 The desk study identified grass snake records (*Natrix helvetica*), mostly located 1.5km south of the Site and separated by the A617 Chesterfield Road. The Site offers some suitable habitat for common and widespread reptiles (e.g., common lizard) within woodlands, hedgerows, scrub, and a rubble pile. However, the surrounding landscape is largely agricultural and urban, providing limited reptile habitat. Consequently, the Site is not considered likely to support significant reptile populations.
- 7.4.35 The desk study identified records of 56 protected and/or notable bird species within 2km of the Site. The Site's woodland, trees, scrub, and hedgerows offer habitat for common and widespread breeding birds, while the arable land and improved grassland are suitable for ground-nesting species such as lapwing (*Vanellus vanellus*) and skylark (*Alauda arvensis*). Surveys from 2021 recorded 28 mainly common farmland bird species, typical for hedgerow-dominated landscapes. Extensive retained habitat in the wider area remains available for farmland birds. Due to the Site's small size and limited woodland (0.35ha), it is unlikely to support woodland specialists or qualifying species from the Peak District Moors SPA; only common and widespread birds are expected to be present.
- 7.4.36 The desk study recorded seven bat species within 2km of the Site, including a Brandt's bat (*Myotis brandtii*) and brown long-eared bat (*Plecotus auritus*) roost 630m south of the Site boundary. Two European Protected Species bat licence applications were also noted within 2km, including one for common pipistrelle (*Pipistrellus pipistrellus*) 1.1km north of the Site. The Site contains Furnace Hillock woodland and several mature trees, with initial assessments identifying one tree with low and three trees with moderate bat roosting potential. A subsequent walkover survey identified six additional trees with potential for roosting bats, and four trees (Ref. 7, 14, 16 and 17) were deemed suitable for hibernating bats.
- 7.4.37 Surveys recorded the highest bat activity mainly to the east of the Site, particularly around the Furnace Hillock pLWS woodland. Bats were most frequently observed along woodland edges and hedgerows, which provide suitable commuting and foraging routes both within the Site and to the wider landscape. The Site was primarily used by common species such as common pipistrelle, soprano pipistrelle (*Pipistrellus pygmaeus*), and Myotis species, with occasional records of noctule (*Nyctalus noctula*) and Leisler's bats (*Nyctalus leisleri*). The highest bat activity was noted during the spring season.

- 7.4.38 The desk study returned several records of badger (*Meles meles*). The closest record to the Site was located approximately 460m south west. The woodland and hedgerows and surrounding agricultural landscape were noted as suitable for foraging, dispersal and sett excavation. The April 2025 survey identified evidence of badger activity within the woodland on-site, although there was no evidence of badger setts during the field surveys.
- 7.4.39 No records or European Protected Species licence applications for otter were found within 2km of the Site. Over 60 records of water vole were identified, with the nearest records 220m east and 200m south west of the Site. As the Site lacks watercourses or water bodies, both otter and water vole are considered likely absent from the Site.
- 7.4.40 The desk study returned several records of hedgehog (*Erinaceus europaeus*) within 2km of the Site. The nearest record was located approximately 530m east of the Site. The woodland edges and hedgerows on Site provide suitable areas for commuting and foraging for hedgehog. It is likely that hedgehog is present on the Site.
- 7.4.41 The desk study returned seven records of brown hare (*Lepus europaeus*) within 2km of the Site. The nearest record was located approximately 970m east of the Site, on Hassocky Lane. Brown hare occur on open farmland, grassland habitats and at woodland edges, favouring a mosaic of arable fields, grasses and hedgerows. A record of brown hare was recorded to the south of the Site, while undertaking the Extended Phase 1 surveys.
- 7.4.42 As it is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to Scheme impacts, and will remain viable and sustainable (Chartered Institute of Ecology and Environmental Management, 2018), where receptors have been assessed as being of less than Local importance, or where the Scheme is not considered to have any impacts upon the receptors, these have been scoped out of further assessment.
- 7.4.43 Specific mitigation measures for those scoped in are listed in Table 4.3 of the EAR. These include common amphibians, reptiles, breeding birds, bats, badgers, hedgehogs and brown hares. It has been assessed that the control measures detailed in Table 4.3 of the EAR will ensure that no impacts are sustained upon assessed species during the construction and operational phases of the Scheme.

Arboriculture

- 7.4.44 Policy SDC2 of the NEDLP requires development to protect and integrate existing trees, woodland, and hedgerows for their ecological, landscape, and amenity value. Unacceptable loss or damage to protected or valuable vegetation will not be permitted. Where removal is justified, suitable replacement planting is required, with preference for native and locally sourced species.
- 7.4.45 Policy SDC10 of the NEDLP states that renewable energy proposals will be supported if they do not cause significant adverse effects on the visual character of the area, the amenity of residents, or local ecology, including protected species and habitats.
- 7.4.46 Policy ID7 of the NEDLP details that development should incorporate and enhance green infrastructure, improve connectivity and access, contribute to local character, and protect trees, woodland, and hedgerows as per Policy SDC2.

- 7.4.47 The NPPF promotes sustainable development and highlights the importance of green infrastructure, including trees, for ecosystem services, climate change adaptation, and BNG. It emphasises the protection of landscapes and specifically recognises ancient woodland and veteran trees as irreplaceable habitats, stating that their loss should only be permitted in wholly exceptional circumstances with suitable compensation.
- 7.4.48 The NPPF presumes in favour of sustainable development and requires LPAs to approve compliant proposals without delay, ensuring conservation and enhancement of the natural environment. If the local plan is absent or outdated, planning consent should be granted unless the NPPF would be breached.

Baseline

- 7.4.49 As indicated within the Arboricultural Impact Assessment (Appendix S of the EAR), a total of 86 arboricultural features were recorded within the study area; these were recorded as 47 individual trees (T), 24 groups of trees (G) and 15 hedgerows (H).
- 7.4.50 As shown on Table 7.1, each arboricultural feature was assigned to one of four categories, as listed below:
- 7.4.51 Category A features: three individual trees (T) and one group of trees (G) have been identified as Category A (trees of high quality) as part of the survey;
- 7.4.52 Category B features: 25 individual trees (T) and eight groups of trees (G) have been identified as Category B (trees of moderate quality) as part of the survey;
- 7.4.53 Category C features: 10 individual trees (T), 14 groups of trees (G) and 15 hedgerows (H) have been identified as Category C (trees of low quality) as part of the survey; and
- 7.4.54 Category U features: nine individual trees (T) and one group of trees (G) have been identified as Category U (trees of poor quality unsuitable for retention) as part of the survey.

Table 7.1 Tree categories recorded

Tree Category	No. of Individual Trees	No. of Groups of Trees	No. of Hedgerows
Category A (trees of high quality)	3	1	-
Category B (trees of moderate quality)	25	8	-
Category C (trees of low quality)	10	14	15
Category U (trees of poor quality unsuitable for retention)	9	1	-
Totals	47	24	15

- 7.4.55 It was confirmed by the NEDDC that no trees surveyed are subject to conservation area restrictions. However, two groups of trees are subject to tree preservation order restrictions under reference W1/171, as shown in Table 7.2.

Table 7.2 Tree Preservation Orders

Tree ID	Species	Relevant Features
G14	Mixed species: ash, pedunculate oak, hawthorn, sycamore	TPO covers all early mature and mature features believed to be present in 1979 when TPO W1/171 was confirmed.
G16	Mixed species: hawthorn, pedunculate oak, sycamore	TPO covers all early mature and mature features believed to be present in 1979 when TPO W1/171 was confirmed.

- 7.4.56 It was confirmed that there are no designated ancient woodlands in the study area and no veteran trees were identified during the survey.
- 7.4.57 As detailed in Table 7.3, a total of four individual trees (T9, T18, T41 and T42), nine groups (G8, G11, G12, G13, G14, G21, G22, G23 and G24) and four hedgerows (H2, H4, H7 and H9) are located within, or immediately adjacent to development works and would require full or partial removal to facilitate the proposals. A total of one arboricultural feature (G14) to be fully or partially retained within the study area will be subject to potential incursions within its calculated RPA.

Table 7.3 Trees requiring removal

Tree ID	Species	Partial (P) or Full (F) Removal and Canopy Cover Lost (m2) Hedgerow Lost (m)	Reason for Removal	Grade
T9	Ash (<i>Fraxinus excelsior</i>)	F 113.1m2	Removal recommended in line with good arboricultural practice.	U
T18	Hawthorn (<i>Crataegus monogyna</i>)	F 28.3m2	Within footprint of proposed earthworks.	C1
T41	Pedunculate oak (<i>Quercus robur</i>)	F 63.6m2	Within footprint of proposed construction area. Look to retain at detailed design stage where possible.	B1
T42	Sycamore (<i>Acer pseudoplatanus</i>)	F 63.6m2	Within footprint of proposed construction area. Look to retain at detailed design stage where possible.	B1
G8	Beech (<i>Fagus sylvatica</i>)	P 7.1m2	Within footprint of proposed drainage.	B2

Tree ID	Species	Partial (P) or Full (F) Removal and Canopy Cover Lost (m2) Hedgerow Lost (m)	Reason for Removal	Grade
G11	Alder (<i>Alnus glutinosa</i>)	F 533.5m2	Within footprint of proposed earthworks, high voltage cable drainage and 275kV cables.	B1
G12	Mixed species	F 709.3m2	Within footprint of proposed 275kV cables.	C2
G13	Mixed species: sycamore, alder, ash, hawthorn, Willow sp. (<i>Salix</i> sp.)	P 627.7m2	Within footprint of proposed cut and fill earthworks and 275kV cables.	C2
G14	Mixed species: ash, pedunculate oak, hawthorn, sycamore	P 1716.8m2	Within footprint of proposed access road, temporary 275kV cables, cut earthworks, drainage and substation.	B2
		P 436.0m2	Within footprint of proposed high voltage cables.	
G21	Hawthorn	P 220.0m2	Within footprint of proposed overhead line removals.	C1
G22	Mixed species: alder, goat willow (<i>Salix caprea</i>), hawthorn, silver birch (<i>Petula pendula</i>), crack willow (<i>Salix fragilis</i>)	F 645.7m2	Within footprint of proposed overhead line removals and drainage.	C1
G23	Mixed species: hawthorn, holly (<i>Ilex aquifolium</i>)	P 326.8m2	Within footprint of proposed overhead line removals.	C1
G24	Mixed species: sycamore, field maple, hawthorn, alder, ash	F 1369.2m2	Within footprint of proposed cut and fill earthworks and drainage.	C1
H2	Mixed species: hawthorn	P 130.0m	Within footprint of proposed high voltage cables.	C2
H4	Mixed species: black elder (<i>Sambucas nigra</i>), hawthorn	F 172.4m	Within footprint of proposed substation, drainage and fill earthworks.	C2

Tree ID	Species	Partial (P) or Full (F) Removal and Canopy Cover Lost (m2) Hedgerow Lost (m)	Reason for Removal	Grade
H7	Mixed species	F 98.8m	Within footprint of proposed fill earthworks and drainage.	C2
H9	Hawthorn	P 77.9m	Within footprint of proposed temporary 275kV cables.	C1

7.4.58 The Scheme has been calculated to result in the loss of a total of 70m of scattered trees, 0.22ha of woodland and 680m of hedgerow. A total of 6,860.7m² of canopy cover and 479.1m of hedgerow canopy will be removed as part of the Scheme. It has been assessed that the proposed tree removals are considered to represent a low to moderate impact to the overall visual public amenity and arboricultural value of the Site. The majority of trees to be removed are of moderate and low-quality Category B, C and U features. One Category B group (G14) is subject to TPO reference W1/171.

Mitigation

7.4.59 As a part of construction mitigation, site operations involving plant with booms, jibs, and counterweights will be carefully planned to prevent contact with retained trees, with all such activities conducted under the supervision of a banksman to ensure adequate clearance. All tree works are to be undertaken by a competent, qualified contractor in accordance with BS 3998:2010 Tree Work – Recommendations (British Standards Institution, 2010). Sufficient planning would also ensure that site compounds, storage areas, and service routes do not encroach upon the RPAs of retained trees, specifically the RPA of group G14, which must maintain a minimum 1m standoff from retained tree stems wherever possible and use a no-dig technique with timber edging and a porous substrate. Machinery or plant should not enter the RPA of G14.

7.4.60 For tree removal, all trees, groups and hedgerows that are scheduled for removal must be felled before the start of earthworks, demolition or construction. Pre-commencement ecological checks for nesting birds and roosting bats are required, with an ecological consultant to ensure compliance with relevant legislation. All tree works must be undertaken by an Arboricultural Association approved contractor in accordance with BS 3998:2010.

7.4.61 To offset the impact to visual public amenity associated with the loss of trees, a comprehensive tree replacement strategy has also been developed as a form of mitigation; it is also an integral component of the landscape strategy within the EAR. All new tree planting will be undertaken in accordance with BS 8545:2014 Trees: From Nursery to Independence in the Landscape – Recommendations (British Standards Institution, 2014). To ensure the suitability and sustainability of all proposed planting, consultation will be undertaken with both a qualified ecologist and an arboriculturist, all formative pruning and ongoing tree maintenance works will be carried out by an Arboricultural Association approved contractor and will comply with BS 3998:2010 Tree Work – Recommendations.

7.4.62 A site-specific Arboricultural Method Statement (AMS) may be secured through planning condition to protect trees to be retained over the course of the works.

- 7.4.63 The Scheme is compliant with the Development Plan, as it has been demonstrated that the arboricultural features identified for removal are specimens of moderate to low value located within the site boundaries. Those trees required for partial or complete removal have been assessed as contributing minimally to the character and amenity of the local area. The anticipated loss of canopy cover will be appropriately mitigated through the implementation of compensatory planting measures.
- 7.4.64 The Scheme does not impact irreplaceable habitats protected under the NPPF.

Biodiversity Net Gain (BNG)

- 7.4.65 The BNG Report reports that the Site has a baseline value of 27.39 Biodiversity Units (BU). The baseline is presented in Table 7.4 below. The baseline hedgerows on-site have been calculated as having a value of 5.05 BU, as shown in Table 7.5. There were no watercourses found on the Site. The ditches associated with a hedgerow did not meet the definition of a watercourse as per the User Guide, as they are not likely to retain water for more than four months of the year (Defra, 2024a).

Table 7.4 Baseline area habitats

Broad Habitat	Metric Habitat Type	Area (ha)	Distinctiveness	Condition	Strategic Significance	Baseline BU
Grassland	Modified Grassland	5.80	Low	Poor	Low	11.60
Grassland	Modified Grassland	0.11	Low	Moderate	Low	0.43
Cropland	Non-cereal Crops	3.57	Low	Condition Assessment N/A	Low	7.13
Woodland and Forest	Other Woodland; Broadleaved	0.45	Medium	Moderate	Low	3.58
Heathland and Shrub	Mixed Scrub	0.40	Medium	Moderate	Low	3.19
Heathland and Shrub	Mixed Scrub	0.23	Medium	Poor	Low	0.93
Heathland and Shrub	Bramble Scrub	0.072	Medium	Condition Assessment N/A	Low	0.29
Heathland and Shrub	Hawthorn Scrub	0.031	Medium	Poor	Low	0.12
Urban	Developed, sealed surface	3.76	Very Low	N/A – Other	Low	0
Urban	Bare Ground	0.05	Low	Poor	Low	0.11
Total (approx.)		14.47				27.39

Table 7.5 Baseline hedgerow habitats

Broad Habitat	Metric Habitat Type	Length (km)	Distinctiveness	Condition	Strategic Significance	Baseline BU
Hedgerow	Species-rich native hedgerow with trees - associated with bank or ditch	0.02	Very High	Good	Low	0.48
Hedgerow	Species-rich native hedgerow with trees - associated with bank or ditch	0.004	Very High	Good	Low	0.11
Hedgerow	Native hedgerow - associated with bank or ditch	0.074	Medium	Good	Low	0.89
Hedgerow	Native hedgerow - associated with bank or ditch	0.032	Medium	Good	Low	0.38
Hedgerow	Native hedgerow with trees - associated with bank or ditch	0.053	High	Good	Low	0.95
Hedgerow	Native hedgerow	0.254	Low	Moderate	Low	1.02
Hedgerow	Native hedgerow	0.171	Low	Good	Low	1.03
Hedgerow	Line of trees	0.036	Low	Poor	Low	0.07
Hedgerow	Line of trees	0.031	Low	Moderate	Low	0.13
Total (approx.)		0.68				5.05

- 7.4.66 As shown in Table 7.6, the Scheme will create 6.85ha of developed land or 47.2% of the land within the red line boundary (14.5ha); sealed surface. The remaining land will comprise retained habitat (0.22ha of other woodland; broadleaved) and habitat creation, which includes 1.48ha of habitat that will be reinstated to its previous use. The habitat creation will generate 47.32 BU.
- 7.4.67 As shown in Table 7.7, post development, there will be 0.59km of new hedgerow created which equates to 5.71 BU.

Table 7.6 Post-development on-site created area habitats

Broad Habitat	Metric Habitat Type	Area (ha)	Distinctiveness	Target Condition	Strategic Significance	Area based BU
Urban	Developed land; sealed surface	6.85	Very Low	N/A	Low	0.00
Grassland	Other neutral grassland	5.66	Medium	Moderate	Low	37.90
Woodland	Other woodland; broadleaved	0.68	Medium	Moderate	Low	3.20
Lakes-Ponds (priority)	Ponds (priority)	0.27	Medium	Poor	Low	1.07
Heathland and shrub	Mixed scrub	0.46	Medium	Moderate	Low	3.08
Heathland and shrub	Hawthorn scrub	0.31	Medium	Moderate	Low	2.06
Total (approx.)		14.24				47.32

Table 7.7 Post-development hedgerow

Broad Habitat Type	UKHabs Habitat	Length (km)	Distinctiveness	Condition	Strategic Significance	Hedge based BU
Hedgerow	Species-rich native hedgerow with trees – associated with bank or ditch	0.19	Very High	Good	Low	2.28

Broad Habitat Type	UKHabs Habitat	Length (km)	Distinctiveness	Condition	Strategic Significance	Hedge based BU
Hedgerow	Species-rich native hedgerow – associated with bank or ditch	0.07	High	Good	Low	0.79
Hedgerow	Species rich native hedgerow	0.301	Medium	Good	Low	2.36
Hedgerow	Species rich native hedgerow	0.032	Medium	Good	High	0.29
Total (approx.)		0.59				5.71

7.4.68 As detailed in the BNG Report, assessment based UK Habitat Classification (UKHab) surveys of the Site were conducted in March, April and September 2023 and updated in April 2025. The results of these field surveys have been referenced for BNG metric calculations.

7.4.69 The Scheme could deliver an on-site net gain of 21.72 habitat biodiversity units (+79.31%) and 0.66 hedgerow units (+13.10%), meaning the overall Scheme will result in a net gain in biodiversity on-site. The trading rules have also been satisfied with the proposed habitat creation.

Conclusion

7.4.70 In accordance with the requirements of the Development Plan, NPPF, and NPS EN-1, a comprehensive Phase 1 Habitat Report, BNG Report and Arboricultural Impact Assessment have been prepared and submitted with the planning application. The assessment and mitigation measures to address potential adverse impacts on biodiversity are detailed in the OCEMP, also submitted with the application.

7.4.71 National Grid is subject to statutory duties under the Electricity Act 1989 and the Natural Environment and Rural Communities Act 2006, which require it to conserve and enhance biodiversity. The Environment Act 2021 (Schedule 14) further mandates that any development requiring planning permission must deliver at least a 10% BNG.

7.4.72 While there is no specific local policy on BNG, the Scheme commits to delivering at least 10% BNG in accordance with national guidance, using native woodland, hedgerow and tree species for replacement planting (also adhering to Policy SDC2 of the NEDLP).

7.4.73 All relevant BNG trading rules have been satisfied through the proposed habitat creation.

- 7.4.74 Overall, the Scheme demonstrates compliance with statutory, national, and local requirements to conserve and enhance biodiversity, providing robust assessments and clear plans for net gain, tree replacement, and mitigation of ecological impacts.
- 7.4.75 The construction control measures will be included in the CEMP and their implementation will be monitored by National Grid.
- 7.4.76 Overall, the Scheme is assessed as being in accordance with the NEDLP, the NPPF, NPS EN-1 and NPS EN-5. By minimising adverse impacts on biodiversity and delivering an overall net gain, it is also in accordance with National Grid's statutory duties.

7.5 Landscape and Visual Character

- 7.5.1 National Grid has a statutory duty under the Electricity Act 1989 to conserve and enhance the natural beauty of the countryside. Local and national planning policies also seek to conserve and enhance landscape and visual amenity.
- 7.5.2 Policy SS1 of the NEDLP requires development to protect and/or enhance the character, quality and diversity of the District's green infrastructure and local landscapes, the wider countryside and ecological and biodiversity assets. In addition, Policy SDC3 of the NEDLP states that development proposals should be informed by, and be sympathetic to, the distinctive landscape areas identified in the Derbyshire Landscape Character Assessment (Derbyshire County Council, 2013a) and the Areas of Multiple Environmental Sensitivity (Derbyshire County Council, 2013b), or any successor document(s), and contribute, where appropriate, to the conservation and enhancement, or restoration and re-creation of the local landscape taking into account its wider landscape character type. Planning permission will not be granted for development outside the Peak District National Park which would damage or significantly affect the National Park purposes or its valued characteristics.
- 7.5.3 Policy SDC10 of the NEDLP permits renewable energy development so long as, in part, there would be no significant adverse effects on the visual amenity and character of the area including landscape and visual impacts.
- 7.5.4 At Paragraph 135, the NPPF sets out that planning decisions should ensure that developments are (*inter alia*) visually attractive, as a result of good architecture, layout and appropriate and effective landscaping, and that they are sympathetic to local character and history. At Paragraph 187, the NPPF requires that decisions should protect and enhance valued landscapes.
- 7.5.5 With regard to landscape and visual effects, NPS EN-1 (Paragraphs 5.10.5, 5.10.35 and 5.10.36) recognises that virtually all proposed energy infrastructure will give rise to landscape and visual effects and that the Secretary of State should judge whether these effects outweigh the benefits of the project. NPS EN-1 (Paragraphs 5.10.16 to 5.10.25) advises applicants to carry out a landscape and visual impact assessment of effects associated with the construction and operation of proposals.
- 7.5.6 NPS EN-5 (Paragraph 2.11.2) sets out that the Secretary of State should be satisfied that proposals, so far as is reasonably possible, comply with the Horlock Rules. Several of the Horlock Rules (as set out in Section 2.4 of this PDAS) relate to landscape and visual amenity considerations in the siting of substations.

Landscape Appraisal

- 7.5.7 There are no landscape-related designated sites within the study area, but the Duckmanton Railway Cutting SSSI and several Grade II listed buildings are present. The Scheme area is characterised by the existing 275kV Chesterfield Substation, surrounding agricultural land, and existing pylons. It is bordered by Calow Lane (north) and Hallflash Lane (east), with predominantly agricultural surroundings. The A617 lies to the south west, beyond which are urban areas of Chesterfield. Land to the west of the Site is mainly developed, while land to the north, south and east remains largely rural.
- 7.5.8 At national landscape character level, the Site it is situated wholly within National Character Area (NCA) 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield (Natural England, 2014).
- 7.5.9 At the regional scale, the landscape character of the Site is encompassed by following Landscape Character Types (LCTs) as described in The Landscape Character of Derbyshire (Derbyshire County Council, 2013): Coalfield Village Farmlands, Riverside Meadows and Estate Farmlands.
- 7.5.10 The Site itself falls within the 'Coalfield Village Farmland' LCT. This is defined as a broad industrial landscape characterised by villages, dairy farming and small woodlands.
- 7.5.11 In accordance with the Horlock Rules, the Scheme has been designed to minimise landscape impacts. Specifically:
- a GIS, as opposed to an AIS, technological solution has been adopted for the new substation in order to minimise land-take;
 - the position of the proposed substation adjacent to the existing electricity substation would minimise the need for modifications and diversions to the existing overhead line network and avoiding the need for additional pylons;
 - land temporarily acquired or possessed during construction will be reinstated to agriculture following completion of the works; and
 - the proposed colour and finishes to new structures will utilise a muted colour palette to reduce contrast, minimise visual impact and aid assimilation with the colours of the wider landscape.

Construction impacts

- 7.5.12 Measures contained in Table 5.2 of the EAR will be implemented to reduce landscape impacts of the Scheme. As listed, production of a CEMP will instil good practice construction working activities.
- 7.5.13 As detailed in Chapter 5 of the EAR, given the relatively small scale of the Scheme in relation to the scale of the NCA, it is not anticipated that there will be any effects that are likely to materially alter the character of the wider NCA.
- 7.5.14 At a LCT level, the effects upon notable characteristics such as pasture and arable fields, boundary vegetation and scrub vegetation will be noticeably affected at the local level, however effects upon the wider LCT will be limited.

- 7.5.15 At the local (Site) scale, the character of the landscape is already heavily influenced by the presence of the existing substation and highly visible electrical transmission infrastructure, however the surrounding landscape is largely rural in nature. During the construction phase, activity is likely to contribute to a considerable increase in the presence of noise and activity in an otherwise relatively tranquil setting, leading to a temporary moderate adverse effect. However, these effects will be temporary and short term, lessening with the use of considerate construction practices such as careful placement of compounds, controlled lighting, low material stockpiles and tree protection.

Operational impacts

- 7.5.16 As described in Section 5.6 of the EAR, the Scheme's infrastructure will introduce elements that are not wholly consistent with the existing landscape character, with the degree of incongruity varying throughout the operational phase. Accordingly, the appraisal as detailed in the EAR has assessed the anticipated landscape and visual effects, whereby broadly the Scheme will introduce substantial infrastructure into a partly rural setting, potentially affecting landscape and visual amenity for local residents and users of nearby PRowS, highways, and tracks. This assessment has explored mitigation at Year 1 of operation and at Year 15, when the proposed mitigation planting is expected to have reached maturity and residual effects are more fully realised.
- 7.5.17 At a national level, given the relatively small scale of the Scheme in relation to the scale of the NCA, it is not anticipated that there will be any effects that are likely to materially alter the character of the wider NCA.
- 7.5.18 Regionally, while the Site and its immediate surroundings are shaped by existing substation infrastructure, the wider LCT remains predominantly rural and is considered to have medium sensitivity to such development. Notable features like pasture, arable fields, and boundary vegetation will be affected locally, but impacts on the wider LCT will be limited. With proposed mitigation and the adjacent existing substation, the landscape can accommodate these localised changes without significantly altering its overall character. As a result, the level of adverse effect on the wider LCT is assessed as negligible.
- 7.5.19 At the Site level, the landscape is already significantly influenced by the existing substation and electrical transmission infrastructure, though the wider area remains predominantly rural. After construction, operational activities will no longer impact the setting. A portion of the Site will transition from farmland to industrial use, but due to the proximity of existing infrastructure, this change is expected to result in a moderate to minor adverse effect in Year 1, reducing to minor adverse by Year 15.
- 7.5.20 Whilst the Scheme will materially alter the landscape use of much of the Site from rural to industrial, the close proximity of the existing substation and the presence of existing electrical transmission infrastructure reduces residual effects considerably, such that the level of effect is no greater than minor adverse.
- 7.5.21 The measures outlined in Table 5.3 of the EAR specify the control and monitoring protocols for managing landscape and visual impacts during the operational phase of the Scheme. These measures include, but are not limited to, embedded design features and targeted planting strategies to provide visual mitigation.

Visual

- 7.5.22 As noted in Chapter 5 of the EAR, movement, change, and activity on construction sites are more noticeable to people than static features, meaning the evolving nature of the Scheme, visible machinery, and construction compounds will attract significant attention, further amplified by associated noise and lighting. However, these effects will be temporary and short term, lessening with the use of considerate construction practices such as careful placement of compounds, controlled lighting, low material stockpiles and tree protection. Most of these impacts will diminish once construction is completed and the Scheme becomes operational, with further reductions occurring as mitigation planting matures.
- 7.5.23 Once operational, the Scheme will introduce substantial infrastructure into a partly rural setting, potentially affecting visual amenity for local residents and users of nearby PROWs, highways, and tracks. Strategic mitigation measures, including new planting of hedgerows, woodland, and scrub, as well as retention of existing boundaries, will help integrate the development into the landscape. By Year 15, as mitigation planting matures, the Scheme will be more effectively screened and visually embedded in its setting. As a result, residual visual effects are not expected to exceed moderate to minor adverse levels.

Residential receptors

- 7.5.24 Several residential properties near the Scheme are considered highly sensitive due to their rural location. The assessment grouped properties where similar impacts are anticipated:
- Wrays Hill Farm and Laurel Farm, located to the west of the Site, are likely to experience direct views of construction activities, resulting in a temporary major adverse effect during the construction phase. In terms of mitigation, by Year 1 of operation, the proposed mitigation planting will not yet have reached maturity. Consequently, views of the Scheme will remain largely unobstructed, resulting in a major to moderate adverse level of effect. By Year 15, however, the mitigation planting is expected to have matured sufficiently to perform its intended screening function, thereby reducing the level of effect to moderate to minor adverse.
- Hall Flash Farm (south eastern boundary) has limited direct views due to window orientation, but some views from other elevations and gardens. Temporary effects are assessed as major to moderate adverse. In Year 1, proposed mitigation planting will not yet have reached maturity, therefore there will be some views of the Scheme, resulting in a moderate to minor adverse level of effect. By Year 15, proposed mitigation planting will have reached a level of maturity where it can perform its intended screening function, reducing the level of effect to minor adverse.
- Southwood Chase, located approximately 100m west of the Site, sits within a depression 4–5m lower than the adjacent landform and is bordered by established vegetation to the east and north east. This combination of landform and vegetation means that views of the Scheme will be largely obscured. In Year 1, before mitigation planting has matured, there may still be glimpses of the Scheme, but it will remain mostly hidden, resulting in a minor adverse effect. By Year 15, as the mitigation planting matures and provides effective screening, views of the Scheme are expected to be barely perceptible, reducing the level of effect to neutral.

- 7.5.25 Whilst there are a number of additional residential receptors that are likely to experience views of the Scheme to varying degrees (including those on Calow Lane and within urban areas including Spital, Hasland, Brimington Common and Calow), these views are likely to be sufficiently obscured by existing intervening vegetation and subsequently by proposed mitigation planting, reducing over time such that residual effects will be no greater than minor to negligible adverse.

Recreational receptors

- 7.5.26 There are several local authority PRoWs within the study area, all considered to be of medium sensitivity, which will experience varying degrees of visibility of the Scheme.
- 7.5.27 PRoWs NE5/25/1, NE5/17/3, NE5/17/2, NE5/16/1, NE5/17/4, and NE5/17/1 either pass through or run immediately adjacent to the Site, resulting in unavoidable and highly noticeable views. In Year 1, before mitigation planting matures, these routes will experience a moderate adverse effect, reducing to minor adverse by Year 15 as the planting establishes and provides screening.
- 7.5.28 PRoWs NE9/22/1, NE5/16/2, and NE9/18/1 are further away and have views restricted by existing field boundaries; they will experience a minor adverse effect in Year 1, reducing to negligible adverse by Year 15 as screening matures.
- 7.5.29 Additional PRoWs, highways, and access tracks are expected to have views sufficiently obscured by current and proposed vegetation, resulting in no greater than negligible adverse effects over time.

Conclusion

- 7.5.30 Overall, the effects of the Scheme will be limited in landscape terms. At the local (Site) scale, the character of the landscape is already heavily influenced by the presence of the existing substation and highly visible electrical transmission infrastructure. Notable visual effects will be restricted to the closest properties to the west, south and east and PRoWs that either directly run through or are adjacent to the Site; there are few locations from which receptors will view the substation.
- 7.5.31 Mitigation through strategic planting of hedgerows, scrub and trees, and by maintaining the Site's field and PRoW boundaries, will help integrate the development into the landscape over time, reducing effects considerably. By Year 15, proposed mitigation planting will have reached a level of maturity where it can provide sufficient visual mitigation to screen the development and embed it within its semi-rural setting. Wrays Hill Farm and Laurel Farm have been identified as the receptors most affected by the Scheme by Year 15 of mitigation. However, the visual impacts at these locations are not expected to exceed moderate to minor adverse levels, with all other visual impacts on remaining receptors assessed as being less than this. The implications of this assessment are that, even at its most noticeable, the impact of the Scheme is not considered severe or unacceptable.
- 7.5.32 When determining the acceptability of the Scheme in this context it is important to recognise that energy projects will often give rise to landscape and visual effects and that a judgement is therefore required as to whether the scale and significance of such effects is sufficient to outweigh the benefits of the project. This is expressly recognised in NPS EN-1 (Paragraph 5.10.35).
- 7.5.33 The Scheme will be compatible with the wider landscape context, and measures, including planting, are incorporated into the Scheme to minimise landscape and

visual effects. On this basis, the Scheme is assessed as being in accordance Policy SS9 of the NEDLP, which sets out that development can be considered acceptable if it respects the form, scale and character of the landscape, through careful siting, scale, design and use of materials. Policy SDC3 of the NEDLP permits development that will not cause significant harm to the character, quality, distinctiveness or sensitivity of the landscape, or to important features or views, or other perceptual qualities such as tranquillity. Given that the Scheme would cause mitigatable effects to the landscape through effecting landscaping, these are adhered to.

- 7.5.34 Policy SDC10 of the NEDLP requires no significant adverse effects on the visual amenity and character of the area including landscape and visual impacts. It has been assessed that whilst the Scheme will materially alter the landscape use of much of the Site from rural to industrial, the close proximity of the existing substation and the presence of existing electrical transmission infrastructure reduces residual effects considerably, such that the level of effect is no greater than minor adverse. Visually, with mitigation it has been assessed that residual visual effects are not expected to exceed moderate to minor adverse levels.
- 7.5.35 Whilst it is acknowledged that some residual adverse impacts may result from the Scheme, the proposed mitigation measures ensure that these impacts do not lead to any significant landscape or visual effects. Notwithstanding these mitigated impacts, it is essential to weigh them against the identified need for the Scheme, as detailed in Section 8. On balance, it is considered that the benefits of the Scheme clearly outweigh the residual impacts, the balance is considered to be firmly in favour of the Scheme. The Scheme is therefore assessed as being in accordance with NPS EN-1, NPS EN-5, the NPPF and the relevant policies within the NEDLP. By minimising adverse impacts on landscape and visual amenity, it is also in accordance with National Grid's statutory duties.

7.6 Historic Environment

- 7.6.1 National Grid has a statutory duty under Schedule 9 paragraph 1 of the Electricity Act 1989 to protect buildings and objects of architectural, historic or archaeological interest.
- 7.6.2 Policy SDC7 of the NEDLP states that development that affects heritage assets with archaeological interest will be permitted if it does not harm their archaeological value or setting, considering their significance. For non-designated archaeological assets, developers must provide sufficient information, such as desk-based assessments or field evaluations by qualified archaeologists, to assess significance and impact. Preservation in situ is preferred, but if not justified, excavation and recording should occur before any disturbance or removal.
- 7.6.3 Policy SDC9 of the NEDLP states that for development proposals affecting non-designated local heritage assets, they will be permitted if they sustain or enhance the asset's significance, features, character, and setting. Any proposals resulting in harm to or loss of such assets will be assessed by weighing the asset's significance against the extent of harm or loss proposed.
- 7.6.4 Policy SDC10 of the NEDLP requires proposals for renewable energy generation, individually or cumulatively, to not cause significant harm the historic environment, heritage assets and their settings, or important views in valued landscapes and townscapes.

- 7.6.5 Policy SDC12 of the NEDLP requires all new developments to be of high-quality design that contributes positively to the local environment. Proposals will only be permitted if they respond appropriately to local character and context, thereby preserving and, where possible, enhancing the quality and identity of existing communities and their surroundings.
- 7.6.6 Paragraph 207 of the NPPF requires applicants to describe the significance of any heritage assets (including their setting and archaeological potential) affected by development, providing a level of detail which is proportionate to the assets' importance. Paragraph 212 states that the conservation of designated heritage assets should be prioritised, with greater importance given to more significant assets, regardless of the degree of potential harm. Paragraph 213 states that clear and convincing justification should be provided for development which would lead to any harm to a designated heritage asset's significance. Paragraph 214 states that for development that causes substantial harm to designated heritage assets should be refused unless this harm is necessary to achieve overriding public benefits, or if no viable use or conservation option exists and the benefits of reusing the site outweigh the harm.
- 7.6.7 Paragraph 215 of the NPPF states that, *'where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use'*. Paragraph 216 continues, noting that, *'the effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset'*.
- 7.6.8 Paragraph 220 of the NPPF sets out the baseline for consideration of development impacting conservation areas, stating that, *'not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 214 or less than substantial harm under paragraph 215, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole'*.
- 7.6.9 Paragraphs 5.9.12 and 5.9.13 of NPS EN-1 requires that applicants for DCO projects provide a description of the significance of the heritage assets affected by development proposals and the contribution of their setting to that significance. Where a development site includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out an appropriate desk-based assessment and, where necessary, a field evaluation.
- 7.6.10 The following summary outlines the historic environmental features relevant to the planning application, as detailed in Chapter 6 of the EAR.

Designated heritage assets

- 7.6.11 There are no listed buildings (LBs) within the Site and one listed building The Church of St Peter (LB4) within the 1km study area.

- 7.6.12 The Church of St Peter (LB4) is a Grade II listed building on Chesterfield Road in Calow, about 950m north of the Site. Built in 1869 with a steeple added in 1887, it features Early English architectural style, distinguishing it from nearby residential buildings. Set within a churchyard with mature trees, its significance comes from its historical, aesthetic, and communal value as a prominent local place of worship, making it a highly valued heritage asset.
- 7.6.13 An assessment of the potential construction impacts on cultural heritage assets has been undertaken and reported in the EAR. Owing to the absence of cultural heritage assets within the Site boundary and the low significance of those assets located in the vicinity, no significant impacts to designated assets, including LB4, have been identified as a result of the Scheme's construction.
- 7.6.14 Furthermore, it has been assessed and reported in the EAR that no significant impacts on the setting of any designated heritage assets, including LB4, are anticipated during the construction of the Scheme.
- 7.6.15 The EAR concludes that no operational impacts have been identified for designated heritage assets within the site or the study area.
- 7.6.16 Paragraph 212 of the NPPF states that, *'when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). the significance of the Church of St Peter (LB4) derives from its historical, aesthetic and communal value. However, as the church is approximately 900m from the site and its setting does not extend to the site, construction activities will have no impact on its setting'*.
- 7.6.17 Due to the temporary nature of construction activities and that noticeable changes are not within or visible from the setting of cultural heritage assets, in accordance with Paragraph 214 of the NPPF, the Scheme will result in no harm to this designated asset.
- 7.6.18 Accordingly, it is considered that paragraph 215 of the NPPF is not engaged. Nevertheless, even if an alternative view was taken and an alternative assessment was made that the scheme would result in *'less than substantial harm'*, it is considered that Scheme demonstrably provides significant public benefits which would clearly outweigh any such harm or loss.
- 7.6.19 The Scheme, therefore, is considered to result in no harm to designated heritage assets.
- 7.6.20 As shown in Table 6.1 of the EAR, there are no specific mitigation measures for designated assets.

Non-designated heritage assets

- 7.6.21 There are no non-designated heritage assets within the Site and 10 within the 1km study area. These assets date to the post-medieval period and later.
- 7.6.22 Chesterfield and its environs were significant industrially in post-medieval times, utilising local clay, coal, and iron. Three post-medieval assets within 1km of the Site, including two former Victorian railway routes and a Georgian to Victorian Iron Foundry, reflect this history and are considered to be of low heritage value due to their limited evidential and historical significance.

- 7.6.23 No modern assets are recorded by the Historic Environment Record (HER) at the Site. However, various sources indicate significant 20th-century coal and ironstone mining activity, including underground workings at Bonds Main Colliery, Hall Flash Farm, and Calow Old Furnace, primarily in the southern part of the Site. The Site also partially overlaps an area identified as having been used for opencast coal prospecting from the 1940s to the mid-1990s, though mapped data may not show the full extent of past excavations.
- 7.6.24 Available borehole data from the British Geological Survey confirms several boreholes within the Site. One of these boreholes (SK46NW241) located west of Hall Flash Farm records a backfilled opencast coal mine to a depth of 33.30m. However, boreholes to the north (towards the existing substation) show no evidence of opencast backfilling and indicate potential deposits of archaeological material below the Made Ground.
- 7.6.25 In summary, mining activity occurred in the southern part of the Site in the early 20th century, and opencast coal workings took place in the mid-20th century, though the full extent of extraction is unknown. Where opencast mining occurred, earlier archaeological remains may have been removed, but due to the uncertain boundaries of these workings, there is still potential for unrecorded pre-modern buried remains within the Site. Additionally, there may be archaeological remains related to early 20th century mining in the southern area, but these are unlikely to be of high significance. Ongoing ground investigations may help clarify the extent of past opencast mining activities.
- 7.6.26 An assessment of potential construction impacts on cultural heritage assets has been undertaken. As outlined in Table 6.1 of the EAR, non-designated asset 4, an undated section of road, is currently recorded outside the Scheme boundary. Nevertheless, there remains potential for associated buried archaeological remains related to this asset to extend into the Site. Similarly, for non-designated asset 6, the former iron foundry site (post-medieval), there is potential for associated buried archaeological remains relating to past industrial activity to extend within the Site.
- 7.6.27 To address both assets, a geophysical survey was commissioned. The results of this survey do not confirm the presence of the assets within the Site. While further assessment or mitigation may be required by the LPA, the current evidence does not indicate a requirement for additional investigation in relation to this asset.
- 7.6.28 It has also been assessed that there is the potential for currently unrecorded buried archaeological remains to be present within the Site. These remains could be impacted by construction activities. As described above, a geophysical survey has been conducted, which identified evidence of coal mining activity, including a possible associated tramway. While there may be isolated areas of archaeological survival within the Site, the extensive industrial disturbance from coal mining suggests that earlier heritage assets are unlikely to have survived. Further assessment or mitigation may be requested by the LPA; however, based on current evidence, no additional investigation relating to this asset is considered necessary at this time.
- 7.6.29 Non-designated assets 13 (20th Century Coal Mine activity and possible tramway) and 14 (Post Medieval Coal Pits) may be impacted by the Scheme, as they are located within the Site and could contain associated buried archaeological remains relating to past industrial activity. However, as these assets are of negligible value, it has been assessed that no additional mitigation measures are necessary, and significant impacts during construction are not anticipated.

- 7.6.30 No potential operational impacts have been identified for non-designated heritage assets within the Site or study area. As such, no operational control measures have been identified for heritage assets within the Site or study area.
- 7.6.31 As per Paragraph 216 of the NPPF, *'in weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset'*. Given the high level of disturbance within the Site and the likelihood due any surviving remains to be low / negligible value, it is unlikely that archaeological mitigation will be required. As such, the impact from the works would be considered less than substantial harm for non-designated assets including archaeological remains.

Conclusion

- 7.6.32 Policies SDC7, SDC9, SDC10 and SDC12 of the NEDLP stipulate that the Council will support development proposals which safeguard the heritage significance and setting of both locally and nationally important heritage assets. In accordance with these policies, the Scheme has been carefully designed to avoid, reduce or mitigate potentially significant effects on cultural heritage and archaeology assets. The assessment presented within Chapter 6 Cultural Heritage and Archaeology of the EAR concludes that, with the adoption of mitigation measures during construction, there would be no significant impacts on the assets described above. No operational impacts are anticipated.
- 7.6.33 As demonstrated the Scheme has described the significance of heritage assets (including their setting) and has provided a level of detail which is proportionate to the assets' importance. With the implementation of the proposed mitigation measures, it is concluded within the EAR that there would be no significant impact on any heritage assets within the study area during the construction and operation of the Scheme. Accordingly, the policy assessment contained in Paragraph 214 of the NPPF is not engaged.
- 7.6.34 It is considered that any adverse effect assessed in the EAR should be considered 'harm' in the context of the NPPF, and therefore only effects assessed as neutral should be considered as indicating no harm to designated heritage assets. The assessment presented within the Cultural Heritage section of the EAR concludes that with the adoption of mitigation measures during construction, that there would be a temporary adverse impact on non-designated heritage assets. No adverse operational effects on designated assets are anticipated.
- 7.6.35 The Scheme has been assessed as not causing any significant construction impacts and no operational impacts to designated asset, LB4. In line with Paragraph 214 of the NPPF, the Scheme has been assessed as causing no harm to LB4, on the basis that the significance of the asset is derived from the building's historical and aesthetic value, as well as its communal value as a place of worship. The Church of St Peter is of high value. But the asset is c900m away from the site. As the Setting of church does not extend to the Site, it is considered that there would be no impact to its setting from construction activities or during the operation phase. Accordingly, Paragraph 215 of the NPPF is not engaged.
- 7.6.36 Whilst the potential impacts on non-designated heritage assets have been assessed as temporary, occurring during construction, Paragraph 216 of the NPPF is engaged. The Planning Practice Guidance (PPG) (Heritage) notes that harm can arise from change in setting or temporary development if it affects the way significance is experienced. However, the duration, reversibility, and extent of the impact are key factors.

'While the impact of total destruction is obvious, partial destruction is likely to have a considerable impact but, depending on the circumstances, it may still be less than substantial harm or conceivably not harmful at all, for example, when removing later additions to historic buildings where those additions are inappropriate and harm the buildings' significance. Similarly, works that are moderate or minor in scale are likely to cause less than substantial harm or no harm at all. However, even minor works have the potential to cause substantial harm, depending on the nature of their impact on the asset and its setting.'

- 7.6.37 It is acknowledged that the baseline and results of survey indicate likely construction impacts to non-designated heritage assets 13 and 14 which are located within the Site, as well as archaeological potential for further finds, deposits and features. In line with Paragraph 207 of the NPPF, further archaeological investigation/evaluation are expected to be required. It is understood, as per footnote 75 of the NPPF, that, *'non-designated heritage assets of archaeological interest, which are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets'*. A geophysical survey has been undertaken, the results of which suggest that coal mining activity in the Site will likely have removed all earlier activity. Further assessment or mitigation may be required by the LPA. However, current evidence does not indicate the need for further investigation relating these assets. It has been assessed that during construction, the impact on the non-designated assets would be considered less than substantial harm.
- 7.6.38 The evidence provided demonstrates that the Scheme has satisfactorily addressed all relevant site specific and cumulative impacts. The Scheme does not require the removal or loss of any assets with the impacts largely being related to the setting. The assessed impacts equate to *'no harm'* to designated assets during construction and operation. For non-designated heritage assets the level of harm has been assessed as being *'less than substantial harm'* to during construction and *'no harm'* during operation, the effects should be weighed against both the scale of any harm or loss and the significance of the non-designated heritage asset. When this is considered alongside the overall public benefits demonstrated by the established need for the Scheme (as detailed in Section 8 of this PDAS), it is concluded that the overall planning balance is in favour of the Scheme as it has been demonstrated to be consistent with both local and national policy.
- 7.6.39 Subject to the results of outstanding archaeological surveys, the Scheme is considered to be in accordance with the heritage policies of the Development Plan, the NPPF, NPS EN-1 and National Grid's statutory duties under the Electricity Act 1989.

7.7 Traffic and Transport

- 7.7.1 The NPPF, NPS EN-1 and NEDLP policies promote sustainable transport modes and seek to avoid adverse impacts on the highways network.
- 7.7.2 Policies SS1 and ID3 of the NEDLP advocate for the creation of well designed places that are accessible, maximise walking, cycling, and the use of public transport through the location and design of new development, with the aim of reducing congestion, and improving air quality and health. With appropriate transport statements or assessments, the policy informs that planning permission will only be refused on transport grounds if there would be an unacceptable impact on highway safety, or where the residual cumulative impacts on the road network would be severe.

- 7.7.3 Policy ID8 of the NEDLP seeks to protect all existing and proposed Greenways throughout the district as identified on the Policies Map. Proposals that would result in the loss of, or deterioration in the quality of existing PRowS will not be permitted unless equivalent alternative provision is made. Where diversions are required, new routes should be direct, convenient and attractive, and should not have an unacceptable adverse impact on environmental or heritage assets.
- 7.7.4 The NPPF (Paragraph 115) stipulates that (*inter alia*) applications for development should ensure that: sustainable transport modes are prioritised; safe and suitable access to the site can be achieved for all users; and any significant impacts from the development on the transport network or on highway safety can be cost effectively mitigated to an acceptable degree. At Paragraph 116, the NPPF goes on to state that development should only be refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe. For developments that will generate significant amounts of movements, Paragraph 118 requires that applications are supported by a vision-led transport statement or transport assessment. NPS EN-1 is broadly consistent with the policy contained in the NPPF.
- 7.7.5 The following summarises the traffic and transport features of relevance to the planning application as summarised in Chapter 11 of the EAR.

Baseline

- 7.7.6 The extent of highway network considered within this appraisal was informed by the proposed construction route identified for material and equipment delivery to the Site and by roads which will be used by construction staff traffic. The construction route consists of the Calow Lane, the A632, B6425 Hassocky Lane/Moor Lane/Deepsick Lane, and A617 (non-Strategic Road Network (SRN) section). Beyond these roads, the construction traffic will be distributed onto the M1 which forms part of the SRN. Traffic will then disperse further along numerous SRN routes with the effect of the additional traffic diluted. The proposed construction route is shown on Appendix E Figure 11.1 of the EAR.

Traffic

- 7.7.7 Table 11.1 of the EAR shows the future baseline traffic flows for an average weekday. The 12-hour (7am-7pm) HGV two-way flows on the roads that form the construction route are between 64 HGVs (on Calow Lane to the south of the junction with Back Lane) and 1,619 HGVs (on A617). Average weekday 12-hour (7am-7pm) total vehicle flows are between 2,887 on Calow Lane to the south of the junction with Back Lane and 27,461 vehicles on the A617.
- 7.7.8 As can be seen from Table 11.4 of the EAR, it is anticipated that during construction there will be a maximum total of 123 vehicles, which equates to 246 movements (two-way) per road assessed. This equates to 58 HGVs (two-way movements) and 188 cars/LGVs lights (two-way movements). Therefore, there will be approximately six HGV movements and 19 car/LGV movements an hour along the construction route.
- 7.7.9 Based on the indicative Construction Traffic Estimates (Ref: PDD-203717-TAB-003 Rev P01), construction will commence in September 2026 and end in August 2031. Peak construction traffic is anticipated to occur in 2027.

- 7.7.10 To assess the worst-case scenario with regards to the volume of traffic during the construction phase, the associated traffic with both construction HGVs and construction staff cars/LGVs has been assessed.
- 7.7.11 The Transport Appraisal has assumed that all construction vehicles travelling between the SRN and proposed site will use the construction route identified on the plan in Appendix E Chesterfield New 400kV Substation Drawings, Figure 11.1 of the EAR. Table 11.7 of the EAR presents the predicted increase in HGV and total traffic on road links that form the proposed construction routes as a result of the Scheme.
- 7.7.12 The predicted increase in construction HGV traffic on Calow Lane against the 2027 future baseline flows exceed the 30% threshold recommended in the Institute of Environmental Management and Assessment (IEMA) (2023) guidance. As such, an appraisal of potential residual effects on existing and future road users and potential receptors has been undertaken, which is detailed in the subsequent paragraphs.

Committed development and residual impact

- 7.7.13 Committed developments were assessed using two criteria: overlap of construction/operational traffic routes with the Scheme, and traffic generation during the Scheme's peak construction period (2027). Only one relevant development, application refs.: 22/01247/FL and 24/00865/FL, a battery energy storage system, was identified (see Table 11.8 of the EAR).
- 7.7.14 Table 11.9 of the EAR shows the predicted increases in HGV and total traffic on construction routes from both the Scheme and committed developments. The projected rise in HGV traffic on Calow Lane exceeds the 30% threshold set by IEMA (2023) guidance, so a detailed appraisal of potential residual effects on road users and receptors has been undertaken.
- 7.7.15 Although HGV traffic on Calow Lane is projected to increase by over 30%, the future baseline traffic is low. During peak construction, a maximum of 29 Scheme-related HGVs per day (58 movements) are expected, averaging three HGVs (six movements) per hour.
- 7.7.16 The total traffic increase from both the Scheme and committed developments remains below 30% for all assessed road sections.
- 7.7.17 As the daily increase in HGVs is not significant, only a minor impact is anticipated for PRoW users connecting to Calow Lane. Construction impacts will be temporary, with mitigation measures detailed in Section 11.3 of the EAR and the OCTMP to minimise adverse effects. Consequently, potential effects along Calow Lane will be short-term, negligible, and not significant.

Sensitive receptors

- 7.7.18 Table 11.2 of the EAR provides a summary of key potential sensitive receptors and their sensitivity within 150m of the construction route, all of which are located along the A617 section of the route. These are Temple Normanton Junior Academy, Williamthorpe Nature Reserve and All Saints Church, the first of which is considered a high sensitivity receptor with the other two being low.

Collision data

- 7.7.19 The latest three-year personal injury collision data (2021-2023) was obtained from Crashmap.co.uk (Crashmap, 2025) for the roads forming the construction route and for the Site access junction.
- 7.7.20 A total of 44 collisions were recorded along the construction route between 2021 and 2023, 93% were of slight severity, and the remaining 7% were classified as serious. No fatal collision was recorded along the construction route.
- 7.7.21 Along the section of Calow Lane to the east of Calow Green, a total of three collisions were recorded, all of which were slight in severity. Two of these collisions were located near the Calow Lane/Calow Green junction.
- 7.7.22 A total of three serious collisions were recorded along the construction route. One of these collisions occurred on Calow Lane, north of the junction with Calow Green. One of these occurred on the B6425 north of the junction with Calow Green. The final serious collision recorded occurred at the Heath Interchange.
- 7.7.23 No collisions involving pedestrians or cyclists were recorded along the full length of the proposed construction route.
- 7.7.24 There was a total of three collisions which involved a motorcyclist casualty, two of which are classified as slight in severity, and the remaining collision classified as serious. One of these collisions occurred on the B6425 Moor Lane, and the remainder occurred on the A617 and at the Heath Interchange.
- 7.7.25 There are a relatively high number of collisions that occurred at the Heath Interchange. Of the 29 collisions one was recorded as serious, and the remaining classified as slight in severity.
- 7.7.26 On the assessed section of the construction route forming the Local Road Network no collision clusters have been identified. However, it should be noted that on the SRN, on the A617 eastbound approach to the Heath Interchange, a collision cluster of seven slight collisions has been identified. All collisions were classified as slight in severity.

Cycling, walking and equestrian provision

- 7.7.27 Key elements of the existing walking and cycling infrastructure along the proposed construction route have been identified.
- 7.7.28 Footways present on Calow Lane, north of the junction with Calow Green coinciding with the settlements. These footways are considerably narrow and are present along the northbound side of the carriageway where residential property fronts the carriageway, to the north of the junction with Calow Green. This footway is not consistently present along the route, and there is a warning sign of equestrians and no footways approximately 100m east of the junction with Dark Lane.
- 7.7.29 A southern footway is provided on the A632 Chesterfield Road between Calow Lane and the B6425 Deepsick Lane.
- 7.7.30 No footway or designated cycle infrastructure along the B6425 Deepsick Lane/Moor Lane/Hassock Lane and A617 section of the route.

- 7.7.31 A review of the PRowS which are to be diverted and potentially temporarily or permanently closed depending on the works required, has been undertaken. Three PRowS, all of which are footpaths, have been identified and are highlighted below:
- PRoW NE5/25/1 – this footpath runs east to west through the middle of the Site. This footpath is to be permanently slightly realigned between the existing substation and the new 400kV substation;
- PRoW NE5/16/1 – this footpath runs east to west through the southern section of the Site. During the construction and operational phases, it is proposed that this footpath be diverted further to the south within the Site and potentially temporarily closed during construction; and
- PRoW NE5/17/2 – this footpath runs north to south along Hallflash Lane. During construction, it is proposed that a short section of this footpath be potentially temporarily closed for a very short period to facilitate drainage works. No further changes are required to this PRow.
- 7.7.32 The changes to PRow due to temporary closures and diversions during construction have been reviewed. In general, the receptor sensitivity of the PRow is considered low due to the availability of alternative routes and has a magnitude of impact of major due to the increase in walking distance of the diversion route.
- 7.7.33 However, this increase may not be considered as having an adverse effect given PRow are considered leisure routes. A temporary significance of effect of slight is anticipated which is considered not significant.
- 7.7.34 The wider PRow network connects north (Calow Lane area) to south towards Milehill in the south west and Hassocky Lane Solar Farm in the south east. all other PRowS that connect to the proposed construction route do not require any changes
- 7.7.35 No National Cycle Routes are located in the vicinity of the Site or along/across the construction route.

Public transport

- 7.7.36 Public transport in the vicinity of the Site is limited. However, there are a number of bus services along the construction route:
- Service no. 48 Clay Cross – Brampton on Calow Lane;
- Service no. 1 Langwith – Newbold on the A632; and
- Service no. 1A Hillstown – Newbold on the A632.
- 7.7.37 The closest bus stops to the Site served by these bus services are located on Calow Lane, approximately 88m walking distance, west of the Site access. There are two bus stops at this location (one travelling eastbound, and the other westbound), however it was noted that there are no footways present at this location. The bus service available is no. 48 available Monday to Saturday providing a service on Calow Lane three times a day.
- 7.7.38 No bus stops are located on the B6425 Deepsick/Moor Lane/Hassocky Lane or the A617 sections of the construction route.

Construction and operation impacts and mitigation

- 7.7.39 As described above, the predicted increase in construction HGV traffic on Calow Lane will exceed the 30% IEMA (2023) threshold compared to the 2027 baseline. An appraisal has been undertaken, concluding that, as construction is temporary and control measures (outlined in Table 11.5 of the EAR and to be included in the CTMP) will be implemented, effects on Calow Lane will be short-term, negligible, and not significant.
- 7.7.40 Temporary PRow closures and diversions have also been assessed. While receptor sensitivity is low due to alternative routes and the impact magnitude is major due to increased walking distance, these are leisure routes and the temporary effect is considered slight and not significant.
- 7.7.41 In addition to measures addressing traffic impacts, a range of control measures to mitigate other construction related impacts are incorporated within the OCTMP, as referenced in the OCEMP. The implementation of these measures will be monitored by National Grid and will include, but are not limited to, as detailed in Table 11.5 of the EAR, the following:
- Site access and security;
 - Pedestrian severance, amenity, fear and intimidation – Personnel and visitor access and safety;
 - HGV environmental effects including road users, accidents and safety, residents, and air/noise quality;
 - Seamless flow of movement, together with safety and security on-site;
 - Parking and loading;
 - Road safety;
 - Ensuring the construction routes are adequate for Abnormal Indivisible Load deliveries;
 - Road condition – ensuring that the surface of the highway altered for the Scheme remains in good repair and safe for the public traffic using the highway;
 - Accidents and safety;
 - Ensuring vehicles comply to minimise impact on road users and the public;
 - Sustainable travel – manage and improve the way employees travel to, from, and during work; and
 - Temporary disruption to PRow access.
- 7.7.42 During operation, Scheme-related traffic will be minimal, limited to infrequent maintenance, inspections (around 10 vehicle movements per year), and a small number of staff, so no material effect on the transport network or receptors is expected and no further assessment is required.
- 7.7.43 Two PRowS (NE5/25/1 and NE5/16/1) will be realigned, resulting in slightly longer routes. As these are mainly leisure paths and accessibility will be maintained, the permanent effect is expected to be slight and not significant.

- 7.7.44 No disruption to additional footpaths or the bridleway within 500m of the Scheme is anticipated during operation, so no impact on recreational routes beyond the Scheme boundary is expected.
- 7.7.45 The control measures set out in Table 11.6 of the EAR will be implemented during the operational phase. A permanent diversion of NE5/25/1 will be provided between the existing and proposed substation. Similarly, a permanent diversion of NE5/16/1 will be provided around the southern extent of the proposed substation.

Conclusion

- 7.7.46 Overall, the Scheme will not have unacceptable adverse highways and traffic (including safety) impacts, and the operational capacity of the highway will not be exceeded during both the construction and operational phases of the Scheme.
- 7.7.47 At Paragraph 116 of the NPPF, it is stated that development should only be refused on highways grounds if there would be an unacceptable impact on highway safety or if the residual cumulative impacts on the road network would be severe.
- 7.7.48 The construction route of Calow Lane, the A632, B6425 Hassocky Lane/Moor Lane/Deepsick Lane, and A617 (non-SRN section) is expected to not have an unacceptable adverse effect on amenity or the character of the area or unacceptable or significant adverse impacts on highways, traffic, or road safety. Owing to the temporary nature of construction traffic, taking into account the mitigation embedded into the Scheme and measures contained in the detailed CEMP, and given the very low volume of operational traffic vehicle movements associated with the Scheme, it is not anticipated that adverse transport related issues will arise.
- 7.7.49 The proposition of temporary closures and permanent relocation of PRowS has been assessed as not significant. In line with Policies SS1, ID3 and ID8 of the NEDLP, the Scheme's mitigation measures ensure that once operational, the Scheme will have maintained the permeability of the built environment, allowing for continued sustainable and safe travel through convenient and attractive routes that allow continued access to the countryside.
- 7.7.50 The Scheme is, therefore, in accordance with the Development Plan, the NPPF and NPS EN-1.

7.8 Air Quality

- 7.8.1 As required by the Environment Act (1995, amended 2021), Chesterfield Borough Council (CBC) has undertaken a review and assessment of air quality within their areas of jurisdiction. This process has indicated that within CBC's authority there is one declared Air Quality Management Area (AQMA), whilst there are no declared AQMAs in NEDDC's authority area.
- 7.8.2 This declared AQMA, 'Chesterfield No1', is located in Brimington, Chesterfield. The AQMA was declared in September 2015 for exceedances to the annual mean of nitrogen dioxide (NO₂). The AQMA covers eight residential properties in Brimington and is located 3.6km north of the Scheme.
- 7.8.3 As the Scheme is not located within or near the AQMA, there is no potential for the Scheme to further worsen an existing area of poor air quality. It is still important however to assess the baseline conditions of the area for the Scheme. Air quality monitoring data within the vicinity of the Scheme has been reviewed to quantify the baseline concentrations of air pollutants.

- 7.8.4 Policy SDC13 of the NEDLP requires all development proposals to be assessed in relation to their impact on air, light, noise, ground and water pollution. The policy highlights that planning permission will be refused for any proposal where pollution would pose an unacceptable risk to public health, quality of life or the environment. For those planning applications for development with the potential to pose a risk of pollution, the policy recommends that they should be accompanied by an assessment of the likely impact of the development on environmental quality.
- 7.8.5 The NPPF (Paragraph 199) states that:
'Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. ... Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan'.
- 7.8.6 Paragraph 5.2.8 of NPS EN-1, meanwhile, requires that, where a project is likely to have adverse effects on air quality, the applicant should undertake an assessment of the impacts of the project on air quality as part of an Environmental Statement.

Baseline

- 7.8.7 As detailed in Chapter 7 of the EAR, background air quality in the vicinity of the Site has been partly assessed against data from Chesterfield Borough Council (CBC) who undertake passive monitoring of NO₂ across their authority area using diffusion tubes. Reviewing the diffusion tube monitoring data within 3km of the Scheme shows that in 2023 (see Table 7.1 of the EAR), the most recent year of data available, there were no exceedances of the AQS objective for NO₂.
- 7.8.8 Historically, there have been no recent exceedances in the surrounding area. The highest monitored NO₂ concentration for 2024 within 3km of the Scheme was 33.8µg/m³ at diffusion tube 33, which is well below the AQS objective of 40µg/m³. This is also the highest annual mean concentration of NO₂ over the past five years, a 9.9µg/m³ increase from the previous year.
- 7.8.9 Although air quality monitoring data is available for 2020 and 2021, it is expected to have been heavily influenced by the COVID-19 pandemic where traffic flows decreased in response to restrictions including lockdowns and encouragement of home working. As such 2020 and 2021 air quality monitoring data is likely to be representative of air quality under specific conditions and constraints which are not representative of a 'normal' baseline.
- 7.8.10 As shown in Table 7.2 of the EAR, NO₂ background pollutant concentrations were recorded as 8.1µg/m³, PM₁₀ concentrations were recorded as 11µg/m³ and PM_{2.5} concentrations were recorded as 6.6µg/m³.

Construction traffic

- 7.8.11 Construction traffic flows for the Scheme were assessed against established thresholds in Institute of Air Quality Management (IAQM) (2017) Development Control guidance for human receptors and National Highways (2024) Design Manual for Roads and Bridges LA 105 for ecological receptors. As the Scheme is not near or within an AQMA, the less stringent IAQM criteria were applied (change of >500 Light Duty Vehicle (LDV) Annual Average Daily Traffic (AADT) or >100 Heavy Duty Vehicle (HDV) AADT).

- 7.8.12 Forecast construction traffic flows were assessed as remaining well below these thresholds. From 2026 to 2031, the largest change in traffic flows for LDVs occur in 2028 with an increase in flow of 94 AADT, and the largest change in traffic flows for HDVs occur in 2027 with an increase in flow of 14 AADT. These changes in flows are both well below the IAQM screening criteria. Therefore, an assessment of the effect of these traffic flows on human receptors was screened out.
- 7.8.13 Similarly, the Scheme's traffic flows did not exceed Design Manual for Roads and Bridges LA 105 criteria for ecological receptors (>1,000 AADT or >200 HDVs), so impacts on designated ecological sites were also screened out.

Construction and operation impacts and mitigation

- 7.8.14 Section 7.4 of the EAR evaluates the potential dust impacts of the Scheme during construction on local air quality. Dust generated from activities such as demolition, earthworks and vehicle movements, including mud tracked onto public roads, may cause nuisance to residents and impact sensitive ecological sites. There are two statutory ecological sites located within 3km of the Scheme. The first site is Duckmanton Railway Cutting, a SSSI located 1.0km north east from the Site. The second is the West Wood ancient woodland, located 1.9km north of the Site.
- 7.8.15 A construction dust risk assessment has been carried out due to the presence of sensitive human receptors within 250m of the Scheme boundary. The assessment was carried out in accordance with the IAQM Guidance on the assessment of dust from demolition and construction (IAQM, 2024). The assessment's purpose is to define the level of unmitigated construction dust risk as a means of defining proportionate control measures. The dust risk assessment is considered to be conservative as the screening distances are from the edge of the Scheme boundary, with the assumption that dust emissions could take place across the entirety of the Site.
- 7.8.16 The control measures listed in Table 7.3 of the EAR will be applied during the construction phase of the Scheme. These include a Dust Management Plan which will be implemented to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP and their implementation will be monitored by National Grid.
- 7.8.17 The implementation of the mitigation measures detailed in Table 7.3 of the EAR will result in the residual impact from all dust generating activities associated with the construction of the Scheme being negligible, in accordance with the 2024 IAQM guidance.
- 7.8.18 Emissions to air associated with the operation of the substation will be principally associated with vehicle movements, operation of the substation itself will not emit substantial pollutants to air.
- 7.8.19 During normal operation of the Scheme, the only traffic generated would be associated with infrequent (assumption of 10 vehicles per year) repair and routine maintenance and inspection activities and a small number of operational staff. This number of vehicle movements is well below screening thresholds, therefore an operational phase air quality assessment is scoped out. Operational impacts on local air quality are not considered to be significant.

Conclusion

- 7.8.20 Policy SDC13 of the NEDLP requires all development proposals to be assessed for their impact on air pollution. Planning permission will be refused if a proposal poses an unacceptable risk to public health, quality of life, or the environment. Applications with potential pollution risks should include an assessment of the likely impact on environmental quality.
- 7.8.21 Paragraph 199 of the NPPF requires planning policies and decisions to support compliance with air quality standards, considering AQMAs, Clean Air Zones, and cumulative impacts. Where possible, opportunities to improve or mitigate air quality should be identified, including traffic management and green infrastructure.
- 7.8.22 As outlined above, the Scheme, with the proposed mitigation measures in place, would not present an unacceptable risk to public health, quality of life, or the environment. Although the Site is not situated within an AQMA or any other designated air management zone, adequate mitigation measures have been incorporated to ensure that air quality is not significantly adversely affected. Accordingly, the Scheme is considered to be compliant with the Development Plan, as well as the requirements set out in the NPPF and NPS EN-1.

7.9 Noise and Vibration

- 7.9.1 Policy SDC10 of the NEDLP permits proposals for the generation of renewable energy provided in part that they either individually or cumulatively with other renewable energy developments, do not result in significant adverse effects on the amenity of local residents including the potential impacts related to noise, dust, odour, reflected light, traffic, and visual intrusion.
- 7.9.2 Policy SDC13 of the NEDLP states that for new development likely to pose a risk to pollution, planning submission should be accompanied by an assessment of the likely impact of the development on environmental quality, including the potential impact of noise. Regarding all types of pollution, any that would pose an unacceptable risk to public health, quality of life or the environment will be refused.
- 7.9.3 The Noise Policy Statement for England (NPSE) (Defra, 2010) sets out the long-term vision of government noise policy which is to promote good health and a good quality of life through the management of noise. The thresholds for assessing health effects and quality of life are important, particularly when considering and comparing different scenarios as well as establishing the need for, and extent of, noise mitigation. The NPSE introduces the concept of the NOAEL (No Observed Adverse Effect Level), LOAEL (Lowest Observed Adverse Effect Level), and SOAEL (Significant Observed Adverse Effect Level). The Noise PPG (MHCLG, 2019c) also introduces the concept of the UAEL (Unacceptable Adverse Effect Level).
- 7.9.4 Paragraph 187 of the NPPF states that planning decisions should contribute to and enhance the natural and local environment by (*inter alia*) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of noise pollution. Paragraph 198 stipulates that (*inter alia*) planning decisions should ensure that proposals are appropriate for their location, mitigate and reduce to a minimum potential adverse impact resulting from noise and avoid noise giving rise to significant adverse impacts on health and the quality of life.

- 7.9.5 NPS EN-1 (Paragraphs 5.12.6 and 5.12.7) states that, where noise impacts are likely to arise from a project, the applicant should prepare a noise assessment that is proportionate to the likely noise impact. Paragraphs 5.12.14 and 5.12.15 of NPS EN-1 require that the Secretary of State assesses whether development provide appropriate mitigation measures as well as demonstrating good design including through selection of the quietest cost-effective plant available and the containment of noise within buildings wherever possible.
- 7.9.6 Paragraph 5.12.17 of NPS EN-1 states that development should not be granted consent unless the Secretary of State is satisfied that the proposals:
- avoid significant adverse impacts on health and quality of life from noise;
 - mitigate and minimise other adverse impacts on health and quality of life from noise; and
 - where possible, contribute to improvements to health and quality of life through the effective management and control of noise.
- 7.9.7 Paragraph 2.9.44 of the NPS EN-5, meanwhile, sets out that the Secretary of State should ensure that relevant assessment methodologies have been used in the evidence presented, and that the appropriate mitigation options have been considered and adopted. It states that, if the applicant can clearly show that their chosen method meets all the required criteria, the Secretary of State is likely to accept that method as suitable.
- 7.9.8 As described above, the Horlock Rules also apply noise regulations alongside their recommendations for designing and positioning substations, alongside CSE compounds and line entries. Horlock Rule 5 states that proposals should keep visual, noise and other environmental effects to a minimum.
- 7.9.9 A Noise Impact Assessment Report (Appendix O of the EAR) accompanies this submission. Its findings have been summarised in Chapter 10 of the EAR.

Baseline conditions

- 7.9.10 The acoustic environment at the Site, as described in Chapter 10 of the EAR, is primarily influenced by traffic noise from the A617. Distant transformer and humming sound from the existing National Grid Chesterfield Substation was also noted across both monitoring locations. Additionally, distant animal cries, rustling trees, and bird song were also audible at both locations.
- 7.9.11 To further detail on the existing baseline sound from the existing National Grid Chesterfield Substation, the primary sources of noise at high voltage substations are typically reactive plant equipment like SGTs and shunt reactors, which produce a characteristic tonal hum. The substation currently houses four 240MVA 275kV/132kV SGTs and one 60MVA shunt reactor. Additional equipment includes switchgear, circuit breakers, disconnectors, and transformers, which generates impulsive, short-duration noise during infrequent operations for maintenance, outages, or emergencies. Switchgear noise is usually a dull thud or a click. Given the low noise levels, infrequent operation, and the acoustic attenuation provided by housing the equipment within a building, significant effects on noise-sensitive receptors are not anticipated from the source during the Scheme's construction and operation.

- 7.9.12 The existing substation is connected by two National Grid 275kV overhead lines, with one passing to the west and another connecting to the north and south. The existing AIS includes connections from nearby overhead lines, with terminal spans entering the substation. Under certain conditions, such as damp weather or surface contamination, insulators and GIBs may produce audible crackling or fizzing due to corona discharge, a phenomenon that occurs when electrical stress exceeds the corona inception level. While corona discharge can be heard near the substation, it is infrequent and not considered a significant source of noise.
- 7.9.13 Noise sensitive receptors
- 7.9.14 As outlined in Chapter 10 of the EAR, the most sensitive residential receptors potentially affected by the Scheme are those situated in close proximity to the Site. These receptors include Nether House Farm, a residential property located to the north east; 1 Calow Green, a residential property at Calow Green to the east; Hall Flash Farm, a residential property to the south east; Southwood Chase, a hospitality property to the west; and Laurel House, a residential property to the north west of the Site.

Construction and operation impacts and mitigation

- 7.9.15 During the construction phase of the Scheme, there is the potential for noise and vibration effects in the immediate vicinity of the Site; these effects may also extend along the wider road network due to construction-related traffic (site workers, HGVs, movement of plant, etc.). The level of noise and its effect on the nearest receptors will vary during the construction phase and will depend on the methods of working and timing of activities.
- 7.9.16 Appendix B of the OCEMP contains outline proposals to manage noise and vibration during construction, which will be updated for the detailed CEMP.
- 7.9.17 During the operational phase, the aforementioned noise-sensitive receptors have been identified as potentially subject to impacts from the Scheme. Mitigation measures include the installation of acoustic enclosures for the SGTs, which provide a noise reduction of 20dB(A) at 100Hz, with potentially greater attenuation at 200Hz. Acoustic modelling undertaken indicates that, following the implementation of these mitigation measures, noise impacts are anticipated to be negligible for all receptors. Consequently, the proposed acoustic mitigation for the SGTs, shunt reactor, power quality filter, circuit breakers, disconnectors, and relay room is considered appropriate and sufficient to address potential noise impacts arising from the Scheme.

Conclusion

- 7.9.18 Policy SDC10 of the NEDLP permits proposals for the generation of renewable energy provided that, either individually or cumulatively with other renewable energy developments, they do not result in significant adverse effects on the amenity of local residents, including potential impacts related to noise. Complementary to this, Policy SDC13 of the NEDLP requires that planning applications for new development likely to pose a pollution risk be accompanied by an assessment of the likely impact on environmental quality, including noise.
- 7.9.19 During construction it has been assessed that there is potential for noise and vibration impacts near the Site and along the wider road network from construction traffic. Impacts on nearby receptors will vary depending on work methods and timing. During the operational phase, the aforementioned noise sensitive receptors have been identified as potentially subject to impacts from the Scheme.

- 7.9.20 As set out in Paragraphs 187 and 198 of the NPPF, it is required that planning applications prevent and mitigate unacceptable noise pollution. These provisions ensure that developments are appropriate for their location and do not result in significant adverse impacts on health or quality of life. In addition, the Horlock Rules, particularly Rule 5, reinforce the need to minimise visual, noise, and environmental effects in the design and siting of substations and associated compounds.
- 7.9.21 It has been assessed that the proposed mitigation measures are adequate to address both construction and operational impacts associated with the Scheme. Demonstrating applicability to local and national policy including NPS EN-1 and NPS EN-5 requirements for appropriate assessments and demonstration of mitigation and good design, including use of quiet plant and containment of noise. It has been assessed that the acoustic mitigation measures for the SGTs, shunt reactor, power quality filter, circuit breakers, disconnectors, and relay room are considered appropriate and sufficient to effectively mitigate potential noise impacts arising from the Scheme.
- 7.9.22 Local policy states that planning permission will be refused for any proposal that would result in pollution posing an unacceptable risk to public health, quality of life, or the environment. With the implementation of mitigation measures, including SGT noise enclosures, the noise and vibration impacts associated with the Scheme are anticipated to be negligible for all receptors. Accordingly, the identified acoustic mitigation is considered appropriate and sufficient to address potential noise impacts arising from the Scheme. It is therefore in accordance with the Development Plan, the NPSE, NPPF, NPS EN-1, NPS EN-5 and the Horlock Rules.

7.10 Land and Ground Conditions

- 7.10.1 Policy SS1 of the NEDLP requires development to take account of any coal-mining related land stability and/or other public safety risks, and where necessary, incorporate suitable mitigation measures to address the risk. Further, the policy protects the productive potential of the District's best quality agricultural land, with the stance of avoiding sterilisation of mineral resources.
- 7.10.2 As per Policy SDC13 of the NEDLP, all development proposals will be assessed in relation to their impact on air, light, noise, ground and water pollution. Planning permission will be refused for any proposal where pollution would pose an unacceptable risk to public health, quality of life or the environment. Planning applications for development with the potential to pose a risk of pollution should be accompanied by an assessment of the likely impact of the development on environmental quality. Assessments of the risk of air, light, noise, ground or water pollution should relate to all stages of development.
- 7.10.3 Policy SDC14 of the NEDLP states that development proposals will not be permitted unless it is demonstrated that any land affected by contamination or instability will be appropriately mitigated to ensure the site is suitable for its intended use and does not pose unacceptable risks to human health or the built and natural environment. Proposals must also demonstrate that the development will not cause contamination or instability on the site or in the surrounding area. Where necessary, investigations and risk management measures must be completed to address any contamination or instability issues prior to commencement of development.

- 7.10.4 The NPPF and NPS EN-1 seek to ensure that proposals incorporate measures to mitigate the contamination of land and that, where necessary, appropriate remediation is undertaken. At Paragraph 5.11.3, NPS EN-1 recognises that, whilst the re-use of previously developed land can make a major contribution to sustainable development, this is not always possible for many forms of energy infrastructure.
- 7.10.5 NPS EN-1 notes that an energy infrastructure project will have direct effects on the existing use of a proposed development site and may have indirect effects on the use, or planned use, of land in the vicinity for other types of development. At Paragraph 5.11.8, NPS EN-1 requires that an applicant's Environmental Statement should identify existing and proposed land uses near development proposals and any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing. It sets out that applicants should also assess any effects of precluding a new development or use proposed in the development plan.
- 7.10.6 Consistent with the requirements of the Development Plan and national planning policy, a Ground Conditions and Contaminated Land Desk Study Report (Appendix N of the EAR) has been completed for the proposed substation site and submitted with the planning application.
- 7.10.7 This section provides a summary of Chapter 9 Land and Ground Conditions of the EAR.

Baseline

- 7.10.8 A site walkover on 24 April 2024 found the area to be mixed use, with agricultural fields in the centre and south and the existing Chesterfield Substation with associated infrastructure in the north.
- 7.10.9 Two public footpaths cross the Site south of the existing substation, and access is provided by pedestrian gates on Hallflash Lane and several cattle and vehicle gates around the boundary. A small woodland, Furnace Hillock, is located on the western edge, and a mound of construction waste was noted at the south west entrance.
- 7.10.10 The surrounding area is mainly semi-rural, with agricultural fields and some residential land; key features include the nearby A617 road to the north west, Calow Lane to the north, Hall Flash Farm and a watercourse to the east, and Calow Brook roughly 200m west of the Site.

Geology

- 7.10.11 The Site's geology comprises mainly coal measures bedrock, with Pennine Lower Coal Measures underlying most of the area and Pennine Middle Coal Measures present in the south, both featuring interbedded mudstone, siltstone, sandstone, and frequent coal seams.
- 7.10.12 Made Ground is mapped at the northern edge of the study area, likely linked to historical railway cuttings, and further south, approximately 400m, additional infilled ground is associated with past opencast mining.
- 7.10.13 Superficial deposits are generally absent beneath the Site, except for strips of alluvium (clay, silt, sand, and gravel) in the south and west, especially near Calow Brook and a nearby tributary.

- 7.10.14 There are six British Geological Survey borehole records for the Site. One record is depicted on Calow Road and is dated 1963 for oil exploration purposes, located in the centre of the Site, which recorded coal measures bedrock from the surface down to Millstone Grit at 339m. Five boreholes from a 1993 ground investigation found shallow Made Ground (up to 0.5m) west of the substation over clay to 2m, with siltstone/mudstone bedrock below to 5m. In the centre of the Site, Made Ground extended to 1.7–2.1m overlying silt/clay, with coal measures bedrock at 3–8m depth. The southernmost borehole recorded thick Made Ground to 23.3m, identified as backfilled opencast coal mine, consisting mainly of silty clayey gravel with sandstone, siltstone, mudstone, rare coal, and ironstone nodules.
- 7.10.15 No regionally important geological or geomorphological sites are designated within the Site and inferred faults and fossil horizons are recorded mainly in the south.

Hydrogeology

- 7.10.16 The Defra Multi-Agency Geographic Information for the Countryside (MAGIC) maps database (Defra, 2024b) classifies both the Site's bedrock and the alluvium deposits in the south and west as Secondary A aquifers, which are defined as permeable geological layers capable of supporting local water supplies and contributing to river base flows.
- 7.10.17 In the southern area, where >23m of granular backfill from historic opencast coal workings is present, no direct groundwater data is available. Groundwater is likely present due to the granular nature of the material, although the water table depth is uncertain. Groundwater vulnerability is assessed as low for superficial deposits and medium for the bedrock, resulting in an overall medium vulnerability classification for the Site.
- 7.10.18 The Groundsure report (2024) shows that the Site is not within a source protection zone.

Hydrology

- 7.10.19 There are five surface water features within the study area, of which one is located on the eastern Site boundary. All surface water features are tributaries to Calow Brook which flows to the south (Groundsure, 2024).

Unexploded Ordnance

- 7.10.20 The Unexploded Ordnance risk maps (Zetica, 2024) indicate the Site is located within an area of low risk, *'indicated as having 15 bombs per 1000 acres or less'*. The Preliminary Desk Study Assessment for the Site concluded that *'a detailed desk study, whilst always prudent, is not considered essential in this instance'*.

Radon

- 7.10.21 According to the UK Radon Risk Map (UK Health Security Agency, 2024), the northern half of the Site is in an area where 10% to 30% of properties are estimated to be above the radon action level. This appears to be associated with the sandstone bedrock geology (Groundsure, 2024).
- 7.10.22 In the southern half, and a small area in the north, radon is estimated to affect between 1% and 3% of properties. As such, new development or structures which will be occupied within the Site will require radon protection measures, as advised in the guidance in BRE Report BR 211 (BRE, 2015) and UK building regulations.

Mining, quarries and minerals

- 7.10.23 Two Coal Authority (2023a; 2023b) Consultants Coal Mining Reports and supporting mapping indicate significant historical mining activity at the Site and surrounding area.
- 7.10.24 There are six records of past underground mining beneath the Site (four coal, two ironstone), with three mine entries within the Site and three more within 200m. Probable unrecorded shallow workings and multiple unlicensed opencast mines span much of the Site, which is identified as a 'development high risk area'. No mine gas incidents or mine water treatment schemes are recorded.
- 7.10.25 Approximately 24 coal seams are present, with the shallowest (Blackshale) at 6m depth. The nearest ceased mineral working is Furnace Hollock sandstone quarry, 80m west. Groundsure data show 12 on-site surface ground workings (including sewage works, opencast workings, cuttings, and an unspecified heap) and 51 more within 250m, plus three records of historic underground coal workings just north of the Site.
- 7.10.26 The Site is located within a Surface Coal Safeguarding Area. Accordingly, NEDDC is required to consult with the Mineral Planning Association prior to any development. Given that records indicate the surface coal reserves in this area have already been worked and the proposed substation will have a relatively small footprint, it is considered unlikely that the Scheme would result in significant mineral sterilisation. Nevertheless, formal consultation with NEDDC remains necessary in relation to development within the Surface Coal Safeguarding Area.

Contamination

- 7.10.27 As part of a 2012 ground investigation, eight natural soil samples from the Site showed no chemical exceedances compared to industrial/commercial criteria; however, no asbestos screening was performed for made or reworked ground. Soil leachate testing of 11 samples revealed four cases of aluminium exceeding the drinking water standard of 200µg/l. Six groundwater samples from four wells showed minor exceedances for ammoniacal nitrogen, boron, and nickel, and significant exceedances for sulphate, with concentrations between 730 and 2,600mg/l (well above the drinking water standard limit of 250mg/l).
- 7.10.28 Historical investigations found no visual or olfactory contamination, except for anthropogenic materials like brick. Ground gas monitoring from five boreholes indicated very low hazard potential, with a CS1 rating in all locations.

Key receptors

- 7.10.29 As presented in Table 9.1 of the EAR, key receptors and their respective sensitivities have been assessed.
- 7.10.30 All geological receptors have been assessed as having negligible value and sensitivity. For human health, existing off-site neighbours (commercial and residential properties) and users of the development are considered to have medium sensitivity, while construction workers are assessed as having very high sensitivity. All hydrogeological receptors, including bedrock and superficial deposits, are assessed as having medium sensitivity. Surface water receptors, specifically Calow Brook and its tributaries (off-site), are considered to have high sensitivity. Lastly, the proposed substation development is assessed as having medium sensitivity.

Construction impacts and mitigation

- 7.10.31 During construction of the Scheme, workers will be exposed to soil and shallow groundwater, which may be contaminated, particularly during earthworks such as excavation and topsoil handling. Exposure could occur through ingestion, inhalation of dust, or skin contact, and nearby residents may also be affected by dust from construction activities. Workers are considered highly sensitive, while off-site neighbours are of medium sensitivity. If appropriate mitigation measures (such as a CEMP and Construction Phase Health and Safety Plan) are implemented, the impact is considered negligible, resulting in a slight adverse to neutral overall effect.
- 7.10.32 There is also potential for accidental spills of oils, chemicals, cement, and fuels during construction, which could lead to ground and water contamination. With recommended design and mitigation measures in place, the impact magnitude is negligible, and the overall effect is neutral for geology and slight adverse for groundwater and surface water (which are considered to be medium and high value, respectively).
- 7.10.33 Ground failure risks exist due to historical opencast mine workings, infilled ground, inferred faults, and coal seams in the south of the Site, necessitating a geotechnical ground investigation and mining risk assessment to inform mitigation. If these are properly addressed, the impact magnitude is negligible and the overall effect for structures is rated as neutral.
- 7.10.34 Construction control and monitoring measures have been illustrated in Table 9.2 of the EAR.
- 7.10.35 Primary mitigation measures for the Scheme will be incorporated into the design and construction phases to comply with relevant planning policies. These include conducting a detailed ground investigation (covering soil, ground gas, and groundwater), ongoing monitoring, and risk assessment to identify and manage contamination risks.
- 7.10.36 During construction, protocols such as a watching brief, baseline and repeat land quality surveys, and careful separation and analysis of suspected contaminated soils will be followed. Contaminated soils will be treated for reuse or safely disposed of, and their locations will be recorded if reused on-site. Chemical and fuel storage areas will be securely bunded with spill prevention measures and an emergency response plan in place.
- 7.10.37 Best practice dust and runoff control measures will be implemented, including covering stockpiles, damping down, and wheel washing. Excavated materials will be managed according to a SWMP and Materials Management Plan to ensure safe and sustainable reuse or disposal. Workers will be briefed on contamination risks, provided with appropriate Personal Protective Equipment, and required to follow site hygiene and health & safety protocols. Risk assessments for hazardous chemicals will be completed and included in the CEMP.

Operational impacts and mitigation

- 7.10.38 Where SuDS are used, surface water may infiltrate and reach site groundwater, potentially mobilising contaminants. The underlying groundwater is of medium value, but with the mitigation measures outlined in Table 9.3 of the EAR, any impact is expected to be negligible, resulting in a slight adverse effect overall.

- 7.10.39 Site users such as maintenance workers or visitors could be exposed to hazardous ground gases accumulating in buildings, posing asphyxiation or explosion risks, especially given sources like Made Ground and historic mine workings. As no ground gas monitoring data exists for the Site, a ground investigation is required to assess and mitigate this risk. Site users are considered of medium value, but with appropriate design and mitigation, the impact is expected to be negligible and the overall effect neutral.
- 7.10.40 Geology at the Site is of negligible value, and although the Site is in a mineral safeguarding zone for coal, shallow coal deposits appear to have already been extracted in the south and no coal seams are present under the substation footprint. Therefore, mineral resource loss would be limited, and the effect is minor adverse. Nevertheless, as detailed in Table 9.3 of the EAR, mitigation will include a geotechnical ground investigation and appropriate design.
- 7.10.41 Permanent structures could face ground stability risks due to historical opencast mining, infilled ground, inferred faults, and coal seams. A geotechnical investigation and mining risk assessment are required. As detailed in Table 9.3 of the EAR, to mitigate this a detailed land contamination ground investigation with further ground gas monitoring will be implemented alongside an assessment with design and implementation of appropriate design gas protection measures. With proper mitigation, the impact is negligible and the effect is neutral overall.

Conclusion

- 7.10.42 As outlined above, the Scheme demonstrates compliance with the relevant policies of the Development Plan. In accordance with Policy SS1 of the NEDLP, the Scheme has addressed coal-mining related land stability and other public safety risks, incorporating appropriate mitigation measures where required. The Scheme also complies with Policy SDC13 of the NEDLP through assessment of its potential impacts on ground and water pollution. Furthermore, in line with Policy SDC14 of the NEDLP, development will not proceed unless any identified contamination or instability is adequately mitigated to ensure the Site is suitable and safe for its intended use. The Scheme would not result in new contamination or instability, and all necessary investigations and risk management measures will be completed prior to commencement of development. Accordingly, the Scheme does not present unacceptable risks to public health, quality of life, or the environment, nor will it create any new, unmitigable contamination or land instability.
- 7.10.43 Based on current information, baseline conditions relating to ground conditions and hydrogeology are not expected to change significantly prior to construction. Widespread or significant contamination is not anticipated; however, this will be confirmed through the completion of site-specific ground investigation works to determine whether remediation is necessary.
- 7.10.44 During construction, robust mitigation, including a CEMP, health and safety protocols, and dust controls, will ensure contamination impacts are negligible to slight adverse. Risks from accidental spills and dust generation will be mitigated by proper controls, and surface water protection measures will be implemented, even though no receptors are nearby. Geology and groundwater impacts are assessed as neutral and not significant with these measures in place. Further geotechnical investigations and a piling risk assessment will inform design and minimise risks. Contaminated soils will be managed in line with SWMP and Materials Management Plan protocols, and workers will receive appropriate Personal Protective Equipment and training.

Gas protection will be considered if new data indicate a need. Overall, with comprehensive controls and monitoring, construction impacts on land quality, groundwater, and human health are considered negligible and fully compliant with planning policy.

- 7.10.45 Once operational, further studies will be carried out during operation to identify and address any safety or contamination risks. Groundwater and geology impacts are not considered significant, due to proposed design and mitigation measures, including land contamination investigations, remedial works, and geotechnical assessments. For human health, detailed investigations and remedial actions will be implemented as needed. Surface water protection will be ensured through a suitable drainage strategy and ongoing land quality measures. With appropriate mitigation measures, the Scheme is in line with policy.
- 7.10.46 Collectively, the Scheme has demonstrated compliance with the Development Plan, the NPPF and NPS ENS-1.

7.11 Agriculture and Soils

- 7.11.1 Policy SS1 of the NEDLP protects the productive potential of the District's best quality agricultural land. Accordingly, development proposals are required to avoid the unnecessary loss or degradation of such land.
- 7.11.2 The NPPF stipulates that planning policies and decisions should promote the effective use of land and recognise the benefits of the BMV agricultural land. Annex 2 of the NPPF defines BMV agricultural land as that which is in Grades 1, 2 and 3a of the Agricultural Land Classification. The NPPF establishes that, where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.
- 7.11.3 Similarly, NPS EN-1 sets out that applicants should seek to minimise impacts on BMV land and preferably use land in areas of poorer quality, except where this would be inconsistent with other sustainability considerations. However, at Paragraph 5.11.3, NPS EN-1 recognises that, whilst the re-use of previously developed land can make a major contribution to sustainable development, this is not always possible for many forms of energy infrastructure.
- 7.11.4 This section provides an overview of Chapter 12 Agriculture and Soils of the EAR. It summarises the baseline conditions for agriculture and soils, and the environmental appraisal of potential impacts on agriculture and soils arising from the construction and operation of the Scheme. Where potential environmental impacts are identified, appropriate control measures are prescribed to mitigate or avoid these impacts.
- 7.11.5 Available Ordnance Survey maps indicate the field south of Calow Lane moderately slopes to the south east from approximately 115m AOD down to 105m AOD. The existing Chesterfield Substation is gently sloping down from the west with the highest point at approximately 112m AOD and the lowest point at approximately 104m AOD in the east.
- 7.11.6 Government long-term flooding risk service information (Environment Agency, 2024) was consulted to assess the flooding risk of the Site. This states that flooding from surface water and small watercourses, rivers and the sea is low risk across the Site, which means that this area has a risk of flooding of less than 0.1% each year.

- 7.11.7 As described in Section 7.10 above, most of the Site is mapped as bedrock geology of the Pennine Lower Coal Measures, described as sedimentary mudstone, siltstone and sandstone bedrock formed between 129 and 318 million years ago during the Carboniferous period. Areas of the Pennine Lower Coal Measures Formation also comprise units just containing either sandstone (Deep Hard Rock and Silkstone Rock Formations) or mudstone and siltstone. Superficial deposits of alluvium (sedimentary deposits comprising of gravel, sand, silt or clay formed between 11,800 years ago and present day during the Quaternary period) are mapped running parallel to the west of the Site. However, no superficial geology is mapped within the Scheme boundary.

Previous soil survey data

- 7.11.8 Available national soil survey information suggests that the soils across the Site are predominantly characterised by the Neutral Restored Opencast Association, with soils across the northern extent of the Site mapped as comprising the Bardsey Association. The Neutral Restored Opencast coal workings comprise slowly permeable seasonally waterlogged compacted fine loamy and clayey disturbed soils, which are often stoney with thin topsoils. The Bardsey Association comprises slowly permeable seasonally waterlogged loamy over clayey and fine silty soils over soft rock.

Agricultural Land Classification

- 7.11.9 The Agricultural Land Classification surveys identified the major soil type across the Site as loam over clay. These soils are generally acidic medium or heavy clay loams over clay.
- 7.11.10 The land across the Site is Grade 3b non-BMV land (moderate quality agricultural land).
- 7.11.11 The distribution and grades of the surveyed areas across the Site are as follows:
- Agricultural Land Classification Grade 3b (non-BMV land) accounts for 10.8ha (74.5%); and
- non-agricultural land accounts for 3.7ha (25.5%).

Impacts and mitigation

- 7.11.12 Construction and operation of the Scheme has the potential to affect agricultural land quality and soil resources. However, the land across the surveyed area is not BMV land as defined by the NPPF (i.e. it is Grade 3b and below), and as such the loss of this land should not be afforded much weight in the planning consideration.
- 7.11.13 As detailed in Table 12.2 of the EAR, a detailed Soil Management Plan will be prepared post-planning consent and implemented during construction and operation to protect agricultural land quality and soil resources, ensuring that good practice measures are implemented for soil stripping, stockpiling and reinstatement.

Conclusion

- 7.11.14 Policy SS1 of the NEDLP safeguards the productive potential of the District's highest quality agricultural land. Consequently, development proposals must avoid the unnecessary loss or degradation of this land. The NPPF requires planning policies

and decisions to promote effective land use and recognise the benefits of BMV agricultural land, defined in Annex 2 of the NPPF as land in Grades 1, 2, and 3a of the Agricultural Land Classification. The land across the Site is Grade 3b (moderate quality agricultural land) and as such does not qualify as BMV.

- 7.11.15 Nevertheless, although the Site comprises low-grade agricultural land, National Grid is committed to implementing measures to minimise or prevent any potential adverse effects associated with the Scheme. While the Scheme may have indirect impacts on agricultural land, appropriate mitigation measures have been identified and incorporated where relevant, including a detailed Soil Management Plan to ensure the proper protection of agricultural land quality and soil resources.
- 7.11.16 The Scheme has therefore demonstrated its suitability to the Development Plan, the NPPF and NPS EN-1.

7.12 Minerals

- 7.12.1 The Site is located in a Mineral Safeguarding Zone in relation to the coal in the Lower and Middle Pennine Coal Measures (bedrock). Policy SS1 of the NEDLP requires development to avoid the sterilisation of mineral resources.
- 7.12.2 Policy MP17 of the Derby and Derbyshire Minerals Local Plan states that the Mineral Planning Authority will resist proposals for any development which would sterilise or prejudice the future working of important economically workable mineral deposits. The policy clarifies an exception to the resistant stance, in that development that causes such impacts to mineral deposits will be accepted if there is an overriding need for the development or where prior extraction of the mineral cannot reasonably be undertaken.
- 7.12.3 The policy furthers, stating that, *'Where the development of land for non-mineral purposes is considered essential and proven mineral deposits would be permanently sterilised, planning permission for prior extraction will be granted provided this does not prejudice the timing and viability of the proposed development and does not lead to unacceptable environmental effects'*.
- 7.12.4 Paragraph 225 of the NPPF states that LPAs should not normally permit other development proposals in Mineral Safeguarding Areas if it might constrain potential future use for mineral working. Accordingly, Paragraph 5.11.28 of the NPS EN-1 states that, *'where a proposed development has an impact upon a Mineral Safeguarding Area (MSA), the Secretary of State should ensure that appropriate mitigation measures have been put in place to safeguard mineral resources'*.
- 7.12.5 The Minerals Local Plan indicates the Site is within a 'Surface Coal Safeguarding Area'. Therefore, as the Site falls within a consultation area, the LPA, NEDDC, will be required to consult with the Mineral Planning Association. As records of opencast mining indicate the surface coal reserves have already been worked in the area, and there will be a relatively small footprint of the substation, it is not thought that the Scheme would lead to significant mineral sterilisation. Nonetheless, consultation with DCC will be required in relation to the development within the 'Surface Coal Safeguarding Area'.
- 7.12.6 Chapter 9 of the EAR notes that there is evidence that the shallow coal deposits have already been extracted in the south of the Site and no coal seams are mapped to underlie where the footprint of the substation is located. Notwithstanding, given the footprint of the Scheme, it is considered there will be limited mineral resource loss and the impact is considered to be minor adverse. The level of effect is considered to be slight adverse.

Conclusion

- 7.12.7 As set out above, MP17 of the Derby and Derbyshire Minerals Local Plan states that the Mineral Planning Authority will resist proposals for any development which would sterilise or prejudice the future working of important economically workable mineral deposits. In part, development will be accepted if there is an overriding need for the development. As established in Section 8, there is an overruling need for the new substation and associated infrastructure, and consequently, the Scheme meets the exception within the policy.
- 7.12.8 The EAR has, in any case, noted that the combination of prior extraction in the south of the Site and no coal seams being mapped to underlie where the footprint of the substation is located, mean that limited mineral resource loss is anticipated, with the impact considered to be minor adverse and the level of effect considered to be slight adverse. In this regard, the Scheme is in accordance with Paragraph 218 of the NPPF and NPS EN-1.
- 7.12.9 The Scheme is in accordance with Policy SS1 of the NEDLP and MP17 of the Derbyshire and Derby Minerals Local Plan.

7.13 Water Resources and Flood Risk

- 7.13.1 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 require all water bodies to achieve both good chemical status and good ecological status and for each river basin district.
- 7.13.2 Policy SS1 of the NEDLP requires new development to play a positive role in adapting to and mitigating the effects of climate change, including through the use of sustainable drainage systems.
- 7.13.3 Policy SDC11 of the NEDLP requires developments to assess and manage flood risk on- and off-site, usually via a Flood Risk Assessment (FRA). Proposals must not increase flood risk, must avoid net increases in surface water runoff, set aside space for surface water management, and include SuDS with plans for long-term maintenance, unless SuDS are demonstrably unsuitable.
- 7.13.4 Policy SDC13 of the NEDLP requires that development proposals protect and enhance surface and groundwater quality, supporting the water environment and its ecology in line with the Water Framework Directive. Applications with potential water pollution risks must include impact assessments for all development stages. Proposals presenting unacceptable risks to water quality, public health, or the environment will not be permitted.
- 7.13.5 Policy SDC13 of the NEDLP requires development to contribute positively to the water environment and its ecology, and will only be permitted where they do not adversely affect surface or ground water quality in line with the requirements of the Water Framework Directive. The policy highlights that planning permission will be refused for any proposal where pollution would pose an unacceptable risk to public health, quality of life or the environment. Proposals that may pose pollution risk will need to demonstrate assessments of the risk of, in part, water pollution at all stages of development.
- 7.13.6 Paragraph 175 the NPPF explains that *'the sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk)'.*

- 7.13.7 Paragraph 187 of the NPPF states that planning decisions should contribute to and enhance the natural and local environment by (inter alia) *‘preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality’*.
- 7.13.8 The NPPF, at Paragraphs 170 to 182, provides the basis for the consideration of flood risk in determining planning applications and requires that proposals seek to avoid inappropriate development in areas of flood risk and ensure that development does not increase flood risk elsewhere.
- 7.13.9 Paragraph 181 states that development *‘should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:*
within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;
it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
any residual risk can be safely managed; and
safe access and escape routes are included where appropriate, as part of an agreed emergency plan.’
- 7.13.10 NPPF policy on flood risk is reflected in NPS EN-1 and NPS EN-5.
- 7.13.11 This section provides an overview of Chapter 8 Water Resources and Flood Risk of the EAR. It summarises the baseline conditions for water resources and flood risk and presents the environmental appraisal of potential impacts associated with the construction and operation of the Scheme. Where potential environmental impacts are identified, appropriate control measures are prescribed to mitigate or avoid these impacts.

Water bodies

- 7.13.12 The nearest watercourse, an unnamed tributary of the Calow Brook, flows south along the western boundary of the Site, and the Site drains to this watercourse in accordance with the relatively steeply sloping topography. The unnamed tributary, an ordinary watercourse, joins the Calow Brook approximately 270m south of the Site. The Calow Brook, another ordinary watercourse, flows north west becoming the Spital Brook approximately 480m west of the Site at the Calow Lane bridge.
- 7.13.13 There is a drainage ditch approximately 60m south east of the southernmost extent of the Site. It runs approximately 110m along a field boundary, but does not appear to have hydraulic connectivity to the unnamed tributary of the Calow Brook.
- 7.13.14 Surface water runoff generated during construction could transport debris, silt or pollutants from the Site into nearby drains or surface watercourse, potentially degrading water quality. This risk will be managed through the pollution prevention and drainage measures set out in the CEMP, ensuring that contaminated water is not discharged to surface water receptors. In the event of a spillage or pollution incident, a response plan will be in place prior to construction that will define protocols to prevent detriment to the water environment.

- 7.13.15 The hydromorphology of watercourses, including Calow Brook, Spittal Brook and unnamed tributaries, could be affected by excess silt entering channels. The sediment build-up of additional silt in channel, or scour of the channel profile caused from uncontrolled discharges, could alter the channel hydromorphology. This risk will be mitigated by storing soil away from the water features and implementing sediment control measures to prevent its entry into watercourses.
- 7.13.16 Works will be undertaken in accordance with a CEMP to ensure that pollution prevention measures are in place during the construction phase, reducing any risk of works significantly impacting watercourses.
- 7.13.17 Direct control, enhancement, and monitoring measures, as outlined in Table 8.3 of the EAR, will be implemented to ensure the protection of water quality within and in the vicinity of Calow Brook, Spittal Brook, and the unnamed tributaries. These measures include the requirement that all excavated soil is stored at a safe distance from watercourses to prevent contamination. Furthermore, any permitted construction-related discharges to nearby watercourses will be attenuated and, where necessary, subject to appropriate treatment processes (such as settlement or filtration) prior to release, in order to minimise the risk of scour and sedimentation.
- 7.13.18 Table 8.4 of the EAR states that SuDS will treat operational surface water runoff and protect the water quality attributes of water environmental receptors.

Water quality

- 7.13.19 The study area drains to one Water Framework Directive surface water body catchment, namely the Spital/Calow/Muster Book Water Body (Environment Agency, 2023). Table 8.1 in the EAR details the current status and lists the Reasons for Not Achieving Good (RNAG) overall status for this water body.
- 7.13.20 Control measures will be applied during construction phase to reduce or avoid any potential impacts that may occur during the construction of the Scheme. Control measures listed in Table 8.3 of the EAR will be included in the CEMP and their implementation will be monitored by National Grid.
- 7.13.21 As listed in Table 8.3 of the EAR, these include establishing best practice controls and detailed method statements to protect the water environment and manage surface water runoff during construction. Key measures include pollution prevention for earthworks, excavation, dewatering, and fuel/chemical handling, with machinery refuelled only in bunded areas away from water bodies. Wastewater would be disposed of appropriately, and sustainable drainage features used where possible. An emergency spillage response plan, staff training, and accessible spill equipment is to be provided, with clear communication to the Environment Agency.
- 7.13.22 Further, materials are to be stored in designated compounds away from watercourses, and dewatering will comply with permits and include necessary treatment. These actions will safeguard water quality and existing abstractions and discharges.
- 7.13.23 During the operational phase, the increase in impermeable land cover relative to the existing land use may have potential impacts on the land drainage regime. This has the potential to cause impacts on water quality. The mitigation measures detailed in Table 8.4 of the EAR will be implemented during operation. The EAR has confirmed that the use of SuDS will provide treatment of operational surface water runoff and ensure the protection of water quality for identified environmental receptors.

Flood risk

- 7.13.24 The Site lies entirely within Flood Zone 1, as illustrated in Appendix E Figure 8.2 of the EAR. This is land defined as having a low probability of flooding from rivers and the sea, with an annual chance of flooding of less than 0.1% (1 in 1000). In the wider study area, the floodplain of the Calow Brook is located to the west of the Site (land categorised as Flood Zone 3, defined as having an annual chance of flooding greater than 1% (1 in 100)).
- 7.13.25 The Site is generally at a very low risk of flooding from surface water (defined as land with a less than 0.1% annual chance of flooding), with some small, isolated areas having a low to high risk within the existing substation (land with an annual chance of flooding between 1% and 3.33% and greater than 3.33% chance respectively).
- 7.13.26 Further details of the flood risk from all sources are included within Appendix L FRA of the EAR, which concludes a generally negligible to low risk of flooding to the Site for most sources, and a moderate risk from groundwater sources.
- 7.13.27 It has been assessed that temporary changes to land permeability during construction activities, such as the installation of temporary hardstanding or stockpiling of materials, may increase flood risk on Site or impede local drainage. To mitigate these effects, sustainable surface water drainage systems will be provided for construction compounds, and the pre-existing land drainage regime will be reinstated upon completion of the works.
- 7.13.28 Mitigation measures are suggested for flooding as detailed in Table 8.3 of the EAR. It is suggested that prior to construction, site-specific ground investigations and assessments of historic mining features will be undertaken to inform a hydrogeological risk assessment, including potential mine water rebound and groundwater interactions. During construction, groundwater levels will be monitored in real time, and a contingency plan will address dewatering and emergency response for uncharted mines. Sustainable drainage will be used in construction compounds to manage runoff and prevent increased flood risk. Existing land drainage routes will be maintained, with a pre-construction record compiled and new drains established as needed (subject to landowner agreement). All topsoil and excavated material will be reinstated to protect the land drainage regime.
- 7.13.29 During operation, increased impermeable land cover may affect the land drainage regime and surface water flood risk. These risks will be mitigated through the use of appropriate drainage systems and ongoing monitoring. Although there is some potential for groundwater flooding, the proposed mitigation measures will minimise this risk. No other significant operational impacts are anticipated, as the site design avoids functional floodplain areas.
- 7.13.30 Table 8.4 of the EAR details appropriate operational mitigation measures. It has been assessed that the permanent works present minimal risk to groundwater due to the absence of underground buildings. Additionally, passive drainage systems will be included in the design. Any increase in impermeable surfaces will be managed in accordance with planning policy and local SuDS guidance from the Lead Local Flood Authority. Attenuation basins will be provided on-site to manage surface water runoff, with SuDS designed to accommodate future climate change.

Conclusion

- 7.13.31 Policies SS1, SDC11 and SDC13 of the NEDLP collectively require new development to comprehensively assess and manage flood risk both on- and off-site, ensuring no increase in surface water runoff, and setting aside space for water management. Developments must protect and enhance surface and groundwater quality in line with the Water Framework Directive, with proposals that pose unacceptable risks to water quality, public health, or the environment being refused and all potential water pollution impacts assessed at every development stage. To contribute to meeting the Council's requirements, development proposals should give specific consideration to the incorporation of SuDS, taking into account flood risk and other water-related constraints as part of the design and planning process.
- 7.13.32 To meet these policy requirements the Scheme has included control, enhancement and monitoring measures as detailed in Table 8.3 and Table 8.4 of the EAR. With the mitigation measures implemented, there would be no significant residual impacts overall on the water environment receptors during construction and operation. It is noted that the capacity of drainage systems serving the Scheme have the potential to be exceeded during extreme rainstorms. As detailed in the FRA, this residual impact will be mitigated insofar as possible through maintenance and preserving the existing flow paths, and therefore there will be no net increase in flood risk to or arising from the Scheme.
- 7.13.33 The FRA confirms that, with the incorporation of SuDS and other embedded good practice measures, the Scheme will be resilient to the impacts of climate change and will remain safe from flooding throughout its operational lifetime. Furthermore, the Scheme will not result in any increased flood risk to land outside the Scheme boundary.
- 7.13.34 Accordingly, the Scheme is assessed as being fully compliant with the requirements of the Development Plan, the NPPF, NPS EN-1 and NPS EN-5.

7.14 Socioeconomics and Human Health

- 7.14.1 The NEDDC is committed to supporting local businesses, enhancing the local economy and promoting development that delivers social, environmental, and economic benefits to the district. Policy SS1 of the NEDLP emphasises fostering business expansion and growth, attracting and retaining a skilled workforce and improving access to job opportunities for local residents through targeted recruitment, training initiatives, and Local Labour Agreements. Additionally, the policy seeks to promote the social and economic wellbeing of North East Derbyshire's communities by supporting developments that help reduce social disadvantages and inequalities. This is complemented by measures to adapt to and mitigate the effects of climate change, such as the implementation of sustainable drainage systems, which contribute to the health and wellbeing of both communities and the environment through careful location, design, and operation of developments.
- 7.14.2 Policy SDC10 of the NEDLP highlights that, in assessing planning applications for renewable energy generation, significant weight will be placed on achieving broader environmental and economic benefits, with permission being granted depending upon the development inflicting no adverse effect on the area's visual character, local residents' amenity (including noise, dust, odour, light, traffic, and visual intrusion), local ecology (especially protected species, biodiversity sites, ancient woodland, and veteran trees), the historic environment (including effects on heritage assets, their settings, and key landscape or townscape views), and airport radar and telecommunications systems.

- 7.14.3 Policy SDC13 of the NEDLP requires all development proposals will be assessed for pollution impacts, and planning permission will be refused if they pose unacceptable risks to public health, quality of life, or the environment. Assessments of the risk of air, light, noise, ground or water pollution should relate to all stages of development.
- 7.14.4 Policy SDC14 of the NEDLP states that development proposals will only be permitted if any issues of land contamination or instability are properly mitigated to ensure the site is safe for its intended use and does not pose risks to human health or the environment. Proposals must also demonstrate they will not cause contamination or instability. Where necessary, developers must investigate and manage any contamination or instability before development begins.
- 7.14.5 Policy ID3 of the NEDLP requires proposals for major development to promote sustainable travel through measures identified in transport assessments, including demand management; improvements to walking, cycling, and public transport; and prioritising sustainable travel on the highway network. Planning permission will only be refused on transport grounds if there is an unacceptable impact on highway safety or severe cumulative effects on the road network.
- 7.14.6 Policy ID5 of the NEDLP states that development proposals that would lead to the loss of social infrastructure facilities will only be permitted if it can be demonstrated that the facility is no longer needed, the service can be provided elsewhere in an equally accessible location, or a viability assessment shows the current use is not economically viable and all reasonable efforts have been made to let or sell the facility for its current use over a 12-month period.
- 7.14.7 Policy ID8 of the NEDLP states that NEDDC will protect all existing and proposed Greenways, collaborate with Derbyshire County Council to enhance the network, and require developments to maintain or improve access for walkers, cyclists, and horse riders. Loss or deterioration of PRowS will only be allowed if equivalent, high-quality alternatives are provided without harming environmental or heritage assets.
- 7.14.8 The NPPF seeks to promote healthy and safe communities and states that planning decisions should guard against the unnecessary loss of valued facilities and services, particularly where this would reduce the community's ability to meet its day-to-day needs. At Paragraph 5.13.9, NPS EN-1 requires that the Secretary of State (in respect of DCO applications) should have regard to the potential socioeconomic impacts of new energy infrastructure.
- 7.14.9 This section provides an overview of Chapter 13 Socioeconomics and Human Health of the EAR, summarising the baseline conditions and the environmental appraisal of the potential Socioeconomics and Human Health impacts associated with the construction and operation of the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.

Baseline

- 7.14.10 In the assessment of socioeconomic receptors, the EAR finds that there are no community facilities within the Scheme boundary, the closest being a playing field off Heathcote Drive, situated approximately 490m west of the boundary.

- 7.14.11 There are no business, recreation, or tourism assets exist within the Scheme boundary, however two receptors are located within 500m:
- Southwood Chase, a visitor accommodation approximately 80m west of the Site;
and
- Manor House, another visitor accommodation about 480m south west of the Site.
- 7.14.12 There are three PRoWs within the Scheme boundary, PRoW NE5/25/1 (footpath), PRoW NE5/16/1 (footpath) and PRoW NE5/17/2 (footpath). There are an additional 10 footpaths and one bridleway located within 500m of the Scheme boundary.
- 7.14.13 In analysing human health, the EAR has used data from the Department of Health and Social Care (2025) for its assessment. The data shows that most health indicators in North East Derbyshire are similar to the England average, such as life expectancy, adult obesity rates, and winter mortality. However, the area has significantly worse outcomes for dementia diagnosis rates (aged 65+), alcohol-related hospital admissions (under 18), and the proportion of children in low-income families. Conversely, North East Derbyshire performs better than the national average in Year 6 obesity rates, under-75 cardiovascular mortality, and diabetes diagnosis rates.

Construction and operation impacts

- 7.14.14 The following is a summary of the construction and operational impacts assessed in the EAR:

Socioeconomics

- 7.14.15 During construction, the Scheme is expected to have a temporary negligible beneficial impact on the local economy and employment, as most spending will go to specialist contractors likely based outside the area.
- 7.14.16 Once operational, the remotely operated substation will have no effect on local economy or employment.

Community facilities

- 7.14.17 There are no community facilities within the Scheme boundary.
- 7.14.18 The only community land (i.e., a playing field located off Heathcote Drive) located within the study area is approximately 490m west of the Scheme boundary. As this receptor is situated at a considerable distance from the Scheme boundary, no disruption to access is anticipated. Therefore, no impact on community facilities is anticipated during construction or operation

Business, recreation and tourism assets

- 7.14.19 Two visitor accommodation businesses are located within 500m of the Scheme, but no access disruption or direct impact on these businesses is expected during construction or operation due to the small-scale substation. Any indirect perceived impacts on the businesses' environment are outside the scope of the assessment and should be discussed separately with the owners.

- 7.14.20 Two permanent PRoW diversions will be provided for the PRoWs that fall within the Scheme boundary, and one additional PRoW requires temporary diversion:

Temporary closure of footpath NE5/25/1 is likely during construction for safety, but alternative routes will maintain connectivity, resulting in a temporary low adverse impact. Once operational, a permanent diversion of this footpath will be provided, ensuring adequate access and leading to a permanent low adverse impact.

Temporary closure and diversion of footpath NE5/16/1 will be required during construction, with adequate access maintained, resulting in a temporary low adverse impact. Once operational, the footpath will be permanently diverted, also ensuring adequate access and leading to a permanent low adverse impact.

During construction, a short section of NE5/17/2 will be temporarily closed for drainage works, with a diversion in place, resulting in a temporary low adverse impact. Once operational, access will be fully reinstated, and no impact is anticipated.

- 7.14.21 There are an additional 10 footpaths and one bridleway located within 500m of the Scheme boundary. As these PRoWs are situated at a distance from the Scheme boundary, no disruption to access is anticipated. Therefore, no impact on recreational routes located beyond the Scheme boundary is anticipated during construction or operation.

Employment and income

- 7.14.22 During construction, limited employment opportunities may provide minor economic benefits and support improved mental health and social contact, resulting in a temporary negligible beneficial impact on human health.

Physical activity

- 7.14.23 During construction, temporary and/or permanent access disruption and diversions are expected to some PRoWs. The diversions may increase journey length and may discourage physical activities. Provided that relevant construction information will be provided to the public, especially PRoW users, to ensure transparency and facilitate a clear understanding of the proposed works, public expectations on views of a small section of PRoW network are expected to be effectively managed. It has been assessed that a temporary negligible adverse residual impact is anticipated on human health associated with physical activity.
- 7.14.24 The Scheme is anticipated to result in permanent diversions for NE5/25/1 (footpath) and NE5/16/1 (footpath). The proposed diversions would be largely within the current alignment. Hence, changes in journey length are not anticipated to be significant, assessed as permanent low adverse. Access to NE5/17/2 (footpath) will be reinstated during operation, so no disruption to access is anticipated. Therefore, no impact on NE5/17/2 (footpath) is anticipated during operation.

Air quality

- 7.14.25 With mitigation measures in place, air quality changes will remain within statutory standards, resulting in a temporary negligible adverse impact on human health.

Water quality and flood risk

- 7.14.26 It has been assessed that during construction, there is a low to negligible impact from potential water pollution and flood risk following the implementation of mitigation measures. Given that mitigation will be in place to reduce pollution and risk of flooding, the potential change due to the Scheme will be within the statutory standards, resulting in a temporary negligible adverse impact on human health associated with water quality and flood risk. No operational impact has been identified.

Land quality

- 7.14.27 It has been determined that there may be potential exposure to contaminated dust during construction. It has been assessed that the potential impact will be reduced to negligible (not significant) following the adoption of an appropriate CEMP and Construction Phase (Health and Safety) Plan. Given that mitigation will be in place to reduce exposure to contaminated land, the potential change due to the Scheme will be within the statutory standards, resulting in a temporary negligible adverse impact on human health associated with exposure to contamination. During operation, a moderate impact from potential exposure to contaminated ground and ground gas would be reduced to neutral (not significant) through further investigation and protective measures, resulting in a permanent negligible adverse impact on human health from contamination.

Noise

- 7.14.28 Noise from construction works and construction traffic may temporarily affect mental wellbeing, but with mitigation measures in place, noise levels will remain within statutory standards, resulting in only a negligible adverse impact on human health.
- 7.14.29 Once operational, noise from the Site will be minimised by acoustic enclosures, keeping impacts negligible and below background levels, leading to a permanent negligible impact on human health.

Transport mode, access and connections

- 7.14.30 It has been assessed that there will be a negligible impact from the increase in road traffic. Given that mitigation (i.e., CTMP) will be in place to manage construction traffic, there will be a temporary negligible adverse impact on human health associated with access.

Radiation and mental health

- 7.14.31 The substation may raise perceived EMF-related mental health concerns, but as it will comply with all guidelines and be located away from major settlements, only a permanent negligible adverse impact on human health is anticipated.
- 7.14.32 The control measures outlined in Table 13.1 and Table 13.2 of the EAR will be implemented during the construction and operational phase respectively, with National Grid ensuring their inclusion in the CEMP and monitoring their effectiveness to reduce or avoid potential impacts.

Summary

- 7.14.33 As outlined in the EAR, all other socioeconomic impacts, with appropriate mitigation measures in place, are expected to result in a temporary negligible adverse impact under a worst-case scenario.

Conclusion

- 7.14.34 The Development Plan sets out to ensure sustainable, inclusive, and environmentally responsible development in North East Derbyshire. It promotes economic growth and workforce development, protects community facilities and access, and requires high standards for environmental protection and sustainable travel. The policies also safeguard public health and local amenity by managing pollution, land quality, and the impact of development on valued landscapes, heritage, ecology, and technical infrastructure. Overall, they establish a balanced framework that supports growth while maintaining quality of life, social equity, and environmental integrity for local communities.
- 7.14.35 National policy (NPPF and NPS EN-1) emphasises the importance of retaining valued community facilities, promoting healthy and safe communities, and considering socioeconomic impacts in major energy infrastructure decisions.
- 7.14.36 As outlined, with the implementation of appropriate mitigation measures, all socioeconomic impacts associated with the Scheme are anticipated to be of temporary negligible adverse significance, even under a worst-case scenario during construction.
- 7.14.37 Once operational, the Scheme is not expected to have a direct impact on the local economy or employment. However, there may be perceived indirect effects on nearby visitor accommodation businesses due to changes in the surrounding environment. The permanent diversion of two and temporary diversion of one PRow will result in a permanently low adverse impact, though adequate accessibility measures will be maintained. In relation to EMFs, the substation will be designed and operated in full compliance with relevant guidelines and health and safety standards, resulting in a negligible risk to human health.
- 7.14.38 The Scheme has taken into account factors such as ground stability, contamination, flooding, and other environmental considerations to ensure that with appropriate mitigation measures in place, the Scheme, while not offering substantial benefits to the broader environment and economy, does not significantly impede these aspects either. Overall, the proposal can be regarded as net beneficial to both the local and wider economy and environment, particularly considering the development's necessity as outlined in Section 8.
- 7.14.39 Accordingly, the Scheme is assessed as being fully compliant with the requirements of the Development Plan, the NPPF and NPS EN-1.

7.15 Electric and Magnetic Fields

- 7.15.1 EMFs arise from the generation, transmission, distribution and use of electricity and can have adverse effects on human health, including impacts on the nervous system. Direct effects on human health are primarily a result of the induction of currents around power lines and electric cables, particularly where the public may be exposed for a considerable time. Indirect effects can occur as a result of the build-up of

electric charges on the surface of the body producing a microshock. For electricity substations, the EMFs close to sites tend to be dictated by the overhead lines and cables entering the installation, not the equipment within the Site.

- 7.15.2 The International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines set 'reference levels' of electric field strength (for electric fields) and magnetic flux density (for magnetic fields). The reference levels are such that compliance with them will ensure that 'basic restrictions', in terms of the induced current density in affected tissues of the body, are not reached or exceeded. Paragraph 2.11.10 of NPS EN-5 does not repeat the ICNIRP guidelines but requires the Secretary of State to be satisfied that proposals are in accordance with them.
- 7.15.3 National Grid has a very clear policy on EMFs, as set out in its Public Position Statement (National Grid, 2025), which states '*.... In all our operations, as a minimum, we comply with legal requirements, including relevant EMF regulations. We also aim to follow industry guidelines or best practice in the countries and different jurisdictions in which we operate*'. An assessment of the EMF effects of the Scheme has been completed and is submitted with the planning application.
- 7.15.4 The EMF assessment concludes that the proposed substation will be fully compliant with the government's policy on EMFs, with all fields produced being below the relevant exposure limits. On this basis, there will be no significant EMF effects resulting from the Scheme. The overhead lines will be the predominant source of EMFs arising from the Scheme. The EMF assessment confirms that EMFs from these overhead lines will also comply with the relevant exposure limits.

Conclusion

- 7.15.5 There will be no significant EMF effects associated with the Scheme and EMFs will be below exposure limits. On this basis, the Scheme is in accordance with NPS EN-5. EMFs arising from the overhead line works associated with the Scheme will also comply with the relevant exposure limits.

8. Planning Balance and Conclusion

8.1 Introduction

- 8.1.1 Section 70(2) of TCPA 1990 and Section 38(6) of the Planning and Compulsory Purchase Act 2004 establish that the planning application for the Scheme must be determined in accordance with the Development Plan, unless material considerations indicate otherwise.
- 8.1.2 This section of the PDAS presents the overall planning balance. Drawing on the planning assessment presented in Section 7, and in accordance with the legislative requirements above, national planning policy reiterates the essential need for the Scheme, before summarising the benefits and adverse impacts and concluding on the overall planning balance.

Need of the Scheme

- 8.1.3 The Chesterfield Substation forms part of National Grid's wider transmission reinforcement strategy identified through the Electricity System Operator's Holistic Network Design (HND) and subsequent Centralised Strategic Network Plan (CSNP), which together set out nationally critical reinforcements required to connect new offshore generation and strengthen the onshore 400kV network. The proposed substation provides a vital node in this system, supporting the transfer of renewable generation and system resilience across northern England.
- 8.1.4 Consequently, substantial weight should be afforded to the national need and strategic importance of the development, consistent with the approach in NPS EN-1 and EN-5, irrespective of the consenting route. Rising electricity demand is expected as power generation for residences, business operations and transport undergoes transformation. The UK government has committed to reach net zero emissions by 2050. This means achieving a balance between the greenhouse gases put into the atmosphere and those taken out. Decarbonising the energy system is vital to achieve net zero; the fossil fuels that once powered the economy would be replaced with sources of low-carbon electricity.
- 8.1.5 There is an increased growth forecast in offshore wind capacity in Scotland and the North East of England, as well as increasing power flows to and from European power grids. This would put pressure on the existing network, such that reinforcement of the transmission network has been identified as necessary to secure the operation of the transmission system and ensure reliable, economic and long-term supply.
- 8.1.6 To achieve this, National Grid needs to upgrade the high voltage power network in England to connect these new sources of offshore energy to the energy network. The Great Grid Upgrade plans are part of the biggest overhaul of the energy network in a generation, and would see significant investment and improvement in the nation's energy infrastructure as the UK continues its transition towards net zero and more sources of low carbon power are developed.
- 8.1.7 The Great Grid Upgrade would connect clean energy produced here in the UK, increasing the self-sufficiency of energy supplies.

- 8.1.8 The Great Grid Upgrade comprises 17 major infrastructure projects that would both scale up the grid and update existing networks. It would enable National Grid to carry more clean, secure energy from where it is generated.
- 8.1.9 The proposal for a new 400kV substation at Chesterfield (the Scheme) falls within the scope of the Project, the purpose of which is to reinforce the electricity network by uprating the existing 275kV transmission lines to operate at 400kV.
- 8.1.10 The Clean Power Report 2030 (NESO) explicitly identifies the Chesterfield to High Marnham (and Brinsworth to Chesterfield) project as one of four schemes which, if not delivered by 2030, would have a significant impact on the ability of the country to deliver clean power. Consequently, substantial weight should be afforded to the national need and strategic importance of the development, consistent with the approach in EN-1 and EN-5, irrespective of the consenting route.
- 8.1.11 The related but independent project, the Brinsworth to Chesterfield project, will reinforce the electricity network between Brinsworth and Chesterfield by uprating the existing 275kV transmission lines to operate at 400kV. This project will include the construction of the Long Lane New 400kV substation, next to the M1 together with works to connect the Brinsworth to Chesterfield project to the new Chesterfield 400kV substation being delivered as part of the Project.

Benefits of the Scheme

- 8.1.12 The Scheme will:
- reinforce the electricity network by uprating the existing 275kV transmission lines to operate at 400kV to transport clean energy from the North of England to homes and businesses in the Midlands and beyond and play an important role in building a more secure and resilient future energy system;
 - ensure that National Grid meets its statutory duties to develop and maintain an efficient, co-ordinated and economical system of electricity transmission and to facilitate competition in the supply and generation of electricity;
 - ensure that adverse impacts on the environment and local communities are minimised, and secure enhancements. In accordance with national and local planning policies and associated guidance, the Scheme includes a range of enhancement measures that would generate positive ecological effects and deliver a net gain in biodiversity.

Adverse Impacts of the Scheme

- 8.1.13 Potential environmental impacts of the Scheme have been comprehensively assessed in the suite of environmental assessments submitted with the planning application. Wherever practicable, likely adverse effects have been avoided or minimised through measures embedded into the design of the Scheme and, taking into account the findings of the assessments, consultation with stakeholders and national and local policy requirements, additional mitigation.
- 8.1.14 The assessments, which are summarised in this PDAS demonstrate that the Scheme will not result in any significant adverse environmental effects. The Scheme has the potential to result in localised moderate adverse effects on landscape character during the construction phase but these effects will be temporary and will reduce once proposed mitigation planting has matured. Once proposed mitigation planting

has matured, there will be a residual minor adverse impact to landscape. In terms of visual amenity for residential receptors, there a minor to moderate adverse impact following the proposed mitigation planting maturing. This latter impact relates to Wrays Hill Farm and Laurel Farm (both located close to the western Site boundary), and Hall Flash Farm (located close to the south eastern Site boundary). Recreational receptors will have negligible impact following the maturity of proposed mitigation planting.

- 8.1.15 With mitigation, all other adverse effects associated with the Scheme, including in respect of the historic environment, traffic and transport, air quality, noise and vibration, land quality and use, minerals, water quality, flood risk, climate change and EMFs, will be slight adverse, minor or negligible and are not considered to be unacceptable.

Cumulative Impacts

- 8.1.16 The EAR reports the results of the appraisal of the intra-project and inter-project cumulative impacts associated with the construction and operation of the Scheme.

- 8.1.17 There are two types of cumulative impacts, both of which are considered within the EAR:

intra-project cumulative impacts: the combination of individual impacts from the Scheme on a particular receptor; and

inter-project cumulative impacts: the combination of impacts from several developments, in this case, and the Scheme together with other reasonably foreseeable developments, which individually might have negligible or slight impacts, but when considered together could create a moderate or major cumulative impact.

Intra-project

- 8.1.18 As identified in Table 14.1 of the EAR, the following receptors have been identified as having the potential for intra-project cumulative impacts:

Construction

Southwood/Southwood Chase (visitor centre)

PRoW NE5/25/1;

PRoW NE5/16/1; and

PRoW NE5/17/2.

- 8.1.19 These intra-project related impacts were listed as having an impact on Landscape and Visual (moderate or above impacts) and Socioeconomics and Human Health (minor or negligible impacts). For the PRoWs above, Traffic and Transport (minor or negligible impacts) was also listed.

Operation

PRoW NE5/25/1 (Year 1 and Year 15); and

PRoW NE/16/1 (Year 1 and Year 15).

- 8.1.20 These intra-project related impacts were listed at Year 1 as having an impact on Landscape and Visual (moderate or above impacts), Traffic and Transport (minor or negligible impacts) and Socioeconomics and Human Health (minor or negligible impacts). At Year 15, all these listed impacts were assessed as minor or negligible impacts.
- 8.1.21 The proposed details of the intra-project cumulative impacts as well as their relative mitigation measures are outlined in Table 14.2 of the EAR. Following the implementation of mitigation measures, it has been assessed that no additional mitigation for intra-project cumulative impacts is required.
- 8.1.22 No intra-project cumulative impacts are anticipated during construction or operation.

Inter-project

- 8.1.23 As set out in Table 14.3 of the EAR, a short list of committed developments has also been assessed for inter-project related impacts (see for number reference). In addition to the inter-project committed developments, there is an additional Great Grid Upgrade project to consider, the Chesterfield to High Marnham project, which includes the construction of a new 400kV substation located off Fledborough Road, High Marnham. Due to the distances between the Scheme and the proposals above, the intervening topography and the nature of the Scheme, no inter-project cumulative impacts are anticipated.

Construction

- 8.1.24 As listed in Table 14.4 of the EAR, the following inter-project cumulative impacts are anticipated during construction:
- Landscape and Visual (committed developments 7, 9 and 16);
 - Cultural Heritage and Archaeology (committed developments 9, 11 and 16);
 - Air Quality (committed development 16); and
 - Traffic and Transport (committed developments 7, 9 and 16).

Operation

- 8.1.25 As listed in Table 14.4 of the EAR, the following inter-project cumulative impacts are anticipated during operation:
- Landscape and Visual (committed developments 7, 9 and 16).
- 8.1.26 As outlined in Tables 15.1 and 15.2 of the EAR, appropriate mitigation measures have been identified for both the construction and operational phases of the Scheme. During construction, activities will be managed in accordance with a CEMP and associated management plans, including a CTMP. For the operational phase, a range of control and monitoring measures will be implemented, including embedded design features such as landscape and biodiversity planting. Furthermore, existing screening vegetation will be retained and protected to support both environmental and visual mitigation objectives.

The Overall Planning Balance

- 8.1.27 This PDAS has demonstrated that the Scheme is in accordance with local and national policy in the form of the NPPF, NPS EN-1, and NPS EN-5.
- 8.1.28 As identified in national policy and the government's energy strategy, there is an urgent and critical need to bring forward low carbon infrastructure to meet targets for decarbonisation and net zero. The Scheme will contribute to the delivery of these policy aims, by improving the existing electricity transmission network.
- 8.1.29 The Scheme would not result in any permanent significant adverse environmental effects. Where there are residual impacts mitigation measures have sought to reduce these as far as practicable and to an acceptable level.
- 8.1.30 Overall, the need for, and benefits of, the Scheme clearly outweigh the adverse impacts of the Scheme. The planning balance is firmly in favour of the Scheme and in accordance with the presumption in favour of sustainable development advanced in the NPPF, it is respectfully submitted that planning permission be granted.

References

- Ref 1 British Geological Survey (BGS) (2025). BGS Geology Viewer. [online] Available at: <https://geologyviewer.bgs.ac.uk/> [Accessed 05/05/2025].
- Ref 2 British Standards Institution (1989). BS 4428:1989 Code of Practice for General Landscape Operations. British Standards Institution (2010). BS 3998:2010 Tree work – Recommendations.
- Ref 3 British Standards Institution (2010). BS 3998:2010 Tree Work – Recommendations.
- Ref 4 British Standards Institution (2012). BS 5837:2012 Trees in relation to design, demolition and construction. Recommendations.
- Ref 5 British Standards Institution (2013). BS 42020:2013 Biodiversity Code of Practice for Planning and Development.
- Ref 6 British Standards Institution (2014). BS 8545:2014 Trees: from nursery to independence in the landscape.
- Ref 7 Building Research Establishment (BRE) (2015). Radon: Guidance on protective measures for new buildings (BRE Report BR 211). 2015 edition.
- Ref 8 Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Winchester: Chartered Institute of Ecology and Environmental Management. [online] Available at: <https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/> [Accessed 05/10/2025].
- Ref 9 Climate Change Act 2008. [online] Available at: <https://www.legislation.gov.uk/ukpga/2008/27/contents> [Accessed 05/10/2025].
- Ref 10 Climate Change Committee (2023). Progress in reducing emissions – 2023 Report to Parliament.
- Ref 11 Committee on Climate Change (2019). Net Zero – The UK’s contribution to stopping global warming.
- Ref 12 Countryside and Rights of Way Act 2000. [online] Available at: <https://www.legislation.gov.uk/ukpga/2000/37/contents> [Accessed 05/10/2025].
- Ref 13 Crashmap (2025). Crashmap. UK Road Safety Map. [online] Available at: <https://www.crashmap.co.uk/> [Accessed 21/03/2025].
- Ref 14 Department for Business and Trade (2025). The UK’s Modern Industrial Strategy.
- Ref 15 Department for Business, Energy and Industrial Strategy (BEIS) (2020). Energy White Paper: Powering our Net Zero Future.
- Ref 16 Department for Energy Security and Net Zero (DESNZ) (2023). Mission Zero – Independent Review of Net Zero, Rt Hon Chris Skidmore MP (‘the Skidmore Review’).

- Ref 17 Department for Energy Security and Net Zero (DESNZ) (2025a). Draft Overarching National Policy Statement for Energy (EN-1).
- Ref 18 Department for Energy Security and Net Zero (DESNZ) (2025b). Draft National Policy Statement for Electricity Networks Infrastructure (EN-5).
- Ref 19 Department for Energy Security and Net Zero (DESNZ) (2025c). Clean Power 2030 Action Plan: A new era of clean electricity.
- Ref 20 Department for Energy Security and Net Zero (DESNZ) and Department for Business, Energy and Industrial Strategy (BEIS) (2019). Consents and Planning Applications for National Energy Infrastructure Projects.
- Ref 21 Department for Energy Security and Net Zero (DESNZ) and Department for Business, Energy and Industrial Strategy (BEIS) (2020). Ten Point Plan for a Green Industrial Revolution.
- Ref 22 Department for Environment, Food and Rural Affairs (Defra) (2010). Noise Policy Statement for England (NPSE).
- Ref 23 Department for Environment, Food and Rural Affairs (Defra) (2023). Environmental Improvement Plan 2023 – First Revision of the 25 Year Environment Plan.
- Ref 24 Department for Environment, Food and Rural Affairs (Defra) (2024a). The Statutory Biodiversity Metric: User Guide. [online] Available at: <https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides> [Accessed 01/12/2025]
- Ref 25 Department for Environment, Food and Rural Affairs (Defra) (2024b). Multi-Agency Geographic Information for the Countryside (MAGIC) [online]. Available at: <https://magic.defra.gov.uk/MagicMap.html> [Accessed 06/10/2025].
- Ref 26 Department of Health and Social Care (2025). Local Authority Health Profiles. Available at: <https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/qid/1938132701/pat/6/par/E12000004/ati/301/are/E07000038/yr/3/cid/4/tbm/1> [Accessed 18/03/2025].
- Ref 27 Derby City Council and Derbyshire County Council (2000). Derby and Derbyshire Minerals Local Plan (amended 2002).
- Ref 28 Derby City Council and Derbyshire County Council (2005). Derby and Derbyshire Waste Local Plan.
- Ref 29 Derbyshire County Council (2013a). The Landscape Character of Derbyshire.
- Ref 30 Derbyshire County Council (2013b). Technical Support Document 1 – Areas of Multiple Environmental Sensitivity 2013.
- Ref 31 Electricity Act 1989. [online] Available at: <https://www.legislation.gov.uk/ukpga/1989/29/contents> [Accessed 05/10/2025].
- Ref 32 Energy Act 2023. [online] Available at: <https://www.legislation.gov.uk/ukpga/2023/52/contents> [Accessed 05/10/2025].
- Ref 33 Environment Act 2021. [online] Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents> [Accessed 05/10/2025].

- Ref 34 Environment Agency (2023). Catchment Data Explorer. [online] Available at: <https://environment.data.gov.uk/catchment-planning/#:~:text=Explore%20and%20download%20information%20about%20the%20water%20environment%20in%20England> [Accessed 24/03/2025].
- Ref 35 Environment Agency (2024). Check your long term flood risk. [online] Available at: <https://check-long-term-flood-risk.service.gov.uk/postcode> [Accessed 05/05/2025].
- Ref 36 Groundsure (2024). Geo Insight Report with Ordnance Survey Maps. Groundsure reference: GSIP-2024-14636-17578 dated: 01/03/2024.
- Ref 37 HM Government (2018). A Green Future: Our 25 Year Plan to Improve the Environment.
- Ref 38 HM Government (2021). Net Zero Strategy: Build Back Greener.
- Ref 39 HM Government (2022). British Energy Security Strategy.
- Ref 40 HM Government (2023a). Powering Up Britain.
- Ref 41 HM Government (2023b). Powering Up Britain: Energy Security Plan.
- Ref 42 HM Treasury (2020). National Infrastructure Strategy: Fairer, Faster, Greener.
- Ref 43 HM Treasury (2022). The Growth Plan 2022.
- Ref 44 International Commission on Non-Ionizing Radiation Protection (ICNIRP) (1998). guidelines.
- Ref 45 Institute of Air Quality Management (IAQM) (2017). Land-use Planning & Development Control: Planning for Air Quality. v1.2. [online] Available at: <https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [Accessed 05/10/2025].
- Ref 46 Institute of Air Quality Management (IAQM) (2024). Guidance on the assessment of dust from demolition and construction V2.2. [online] Available at: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf> [Accessed 05/10/2025].
- Ref 47 Institute of Environmental Management and Assessment (IEMA) (2023). IEMA Guidelines: Environmental Assessment of Road Traffic. [online] Available at: <https://www.iema.net/media/5mrmquib/iema-report-environmental-assessment-of-traffic-and-movement-rev07-july-2023.pdf> [Accessed 21/03/2025].
- Ref 48 Ministry of Housing, Communities and Local Government (MHCLG) (2019a). Planning Practice Guidance – Air Quality. [online] Available at: <https://www.gov.uk/guidance/air-quality--3> [Accessed 05/10/2025].
- Ref 49 Ministry of Housing, Communities and Local Government (MHCLG) (2019b). Planning Practice Guidance – Climate Change. [online] Available at: <https://www.gov.uk/guidance/climate-change> [Accessed 05/10/2025].
- Ref 50 Ministry of Housing, Communities and Local Government (MHCLG) (2019c). Planning Practice Guidance – Noise. [online] Available at: <https://www.gov.uk/guidance/noise--2> [Accessed 05/10/2025].

- Ref 51 Ministry of Housing, Communities and Local Government (MHCLG) (2023). Planning Practice Guidance – Renewable and Low Carbon Energy. [online] Available at: <https://www.gov.uk/guidance/renewable-and-low-carbon-energy> [Accessed 05/10/2025].
- Ref 52 Ministry of Housing, Communities and Local Government (MHCLG) (2024a). National Planning Policy Framework (NPPF).
- Ref 53 Ministry of Housing, Communities and Local Government (MHCLG) (2024b). Planning Practice Guidance – Biodiversity Net Gain. [online] Available at: <https://www.gov.uk/guidance/biodiversity-net-gain> [Accessed 05/10/2025].
- Ref 54 Ministry of Housing, Communities and Local Government (MHCLG) (2025). Planning Practice Guidance – Flood Risk and Coastal Change. [online] Available at: <https://www.gov.uk/guidance/flood-risk-and-coastal-change> [Accessed 05/10/2025].
- Ref 55 National Energy System Operator (NESO) (2024). Clean Power 2030: Advice on achieving clean power for Great Britain by 2030.
- Ref 56 National Grid (2014a). Technical Specification TS 2.10.10 – GIS and Other Substation Buildings Design.
- Ref 57 National Grid (2025b). Electric and Magnet Fields: Corporate Public Position Statement. [online] Available at: <https://www.nationalgrid.com/document/337286/download> [Accessed 15/12/2025]
- Ref 58 National Grid Company plc (2009). NGC Substations and the Environment: Guidelines on Siting and Design ('Horlock Rules').
- Ref 59 National Grid ESO (2024a). Beyond 2030: A National Blueprint for a Decarbonised Electricity System in Great Britain.
- Ref 60 National Grid ESO (2024b). Future Energy Scenario: ESO Pathways to Net Zero.
- Ref 61 National Highways (2024). Design Manual for Roads and Bridges, LA 105 Air quality. [online] Available at: <https://www.standardsforhighways.co.uk/search/af7f4cda-08f7-4f16-a89f-e30da703f3f4> [Accessed 05/10/2025].
- Ref 62 National Infrastructure Commission (2020). Net Zero: Opportunities for the Power Sector.
- Ref 63 Natural England (2014). NCA Profile: 38. Nottinghamshire, Derbyshire and Yorkshire Coalfield.
- Ref 64 Natural Environment and Rural Communities Act 2006. [online] Available at: <https://www.legislation.gov.uk/ukpga/2006/16/contents> [Accessed 05/10/2025].
- Ref 65 North East Derbyshire District Council (NEDDC) (2007a). Access For All Supplementary Planning Document.
- Ref 66 North East Derbyshire District Council (NEDDC) (2007b). Developer Contributions Supplementary Planning Document.
- Ref 67 North East Derbyshire District Council (NEDDC) (2011). Sustainable Buildings Supplementary Planning Document.

- Ref 68 North East Derbyshire District Council (NEDDC) (2021). North East Derbyshire Local Plan 2014 – 2034.
- Ref 69 Planning Act 2008. [online] Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> [Accessed 05/10/2025].
- Ref 70 Planning and Compulsory Purchase Act 2004. [online] Available at: <https://www.legislation.gov.uk/ukpga/2004/5/contents> [Accessed 05/10/2025].
- Ref 71 Prime Minister’s Office (n.d.). Make Britain a Clean Energy Superpower. [online] Available at: <https://www.gov.uk/missions/clean-energy> [Accessed 05/10/2025].
- Ref 72 The Climate Change Act 2008 (2050 Target Amendment) Order 2019. [online] Available at: <https://www.legislation.gov.uk/uksi/2019/1056/contents/made> [Accessed 05/10/2025].
- Ref 73 The Coal Authority (2023a). Consultants Coal Mining Report, Ref. 51003373983002.
- Ref 74 The Coal Authority (2023b). Consultants Coal Mining Report (North), Ref. 51003394907001.
- Ref 75 The Conservation of Habitats and Species Regulations 2010. [online] Available at: <https://www.legislation.gov.uk/uksi/2010/490/contents> [Accessed 05/10/2025].
- Ref 76 The Overhead Lines (Exemption) (England and Wales) Regulations 2009. [online] Available at: <https://www.legislation.gov.uk/uksi/2009/640/contents/made> [Accessed 05/10/2025].
- Ref 77 The Town and Country Planning (Development Management Procedure) (England) Order 2015. [online] Available at: <https://www.legislation.gov.uk/uksi/2015/595/contents> [Accessed 05/10/2025].
- Ref 78 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. [online] Available at: <https://www.legislation.gov.uk/uksi/2017/571/contents> [Accessed 05/10/2025].
- Ref 79 The Town and Country Planning (General Permitted Development) (England) Order 2015. [online] Available at: <https://www.legislation.gov.uk/uksi/2015/596/contents> [Accessed 05/10/2025].
- Ref 80 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. [online] Available at: <https://www.legislation.gov.uk/uksi/2017/407/contents> [Accessed 05/10/2025].
- Ref 81 Town and Country Planning Act 1990. [online] Available at: <https://www.legislation.gov.uk/ukpga/1990/8/contents> [Accessed 05/10/2025].
- Ref 82 UK Health Security Agency (2024). UK interactive radon map. [online] Available at: <https://www.ukradon.org/information/ukmaps> [Accessed 06/10/2025].
- Ref 83 Wildlife and Countryside Act 1981. [online] Available at: <https://www.legislation.gov.uk/ukpga/1981/69/contents> [Accessed 05/10/2025].
- Ref 84 Zetica (2024). Unexploded Ordnance (UXO) risk maps. [online] Available at: <https://zeticauxo.com/guidance/risk-maps/> [Accessed 04/2024].

Appendix A. Independent Design Panel Review, Design:Midlands Report

Appendix A

Independent Design Panel Review, Design:Midlands Report



Design Midlands | Pera Business Park | Melton Mowbray | Leicestershire | LE13 OPB

07 October 2025

Dear Stuart and Team,

Design Midlands Design Review – Friday 26th September 2025
Chesterfield Substation, Calow (Our Ref: DMNEDDC17)

We write following the design review of Chesterfield substation, Calow. We would like to take this opportunity to thank you for utilising the Design Midlands Design Review Service.

The Panel members who undertook the design review were Fiona Heron - Panel Chair (landscape architect), Martin Stockley (engineer) and Andy Thomas (architect). Design Reviews undertaken by Design Midlands adhere to a set of key shared principles (see at end of this letter).

Site Context

The site is irregular in shape. It is bound to the north by Calow Lane and open countryside; to the east by Hall Flash Lane which is a Public Right of Way (PRoW), in part by Calow brook which runs parallel to the PRoW and Hall Flash Lane Farm and associated fields. To the southeast and south by open countryside. To the southwest by a field which has been granted planning permission for a solar farm which is currently under construction, the continuation of Calow Brook and the A617 which connects to Chesterfield to the northwest and the M1 motorway to the southeast. To the west by open countryside and two houses, Southwood Close to the southwest and a house to the northwest corner accessed from Calow Lane.

The site itself is in two parts. To the north is the existing Chesterfield substation covering an area of approximately 14.5 hectares. The site comprises a number of individual single storey brick buildings, three pylons and associated infrastructure. Access is from Calow Lane. The south site was historically

Design Midlands | South Annex | Pera Business Park | Nottingham Road | Melton Mowbray | Leicestershire | LE13 OPB

Company Registration No: 04456338 | Registered Charity : 1143920

used for open cast mining and is now open landscape made up of two fields, key features of the site includes two PROWs, an east - west PROW between the existing substation and the open landscape and a PROW which connects with Hall Flash Lane positioned to the southern edge of the site – the path is poorly defined; a woodland block which is subject to a Tree Preservation Order (TPO); an east - west hedgerow which delineates the two fields, a distinct and pronounced topography providing expansive views from the site of the wider countryside. The south and southwest of the site is identified as a Priority Habitat.

Proposed Scheme

The scheme forms part of National Grid's 'Great Grid Upgrade' which is intended to both scale up the grid and update existing networks.

An increase in growth forecast in offshore wind capacity in Scotland and the North East of England of England, as well as increasing power flows to and from European power grids will put pressure on the existing network, such that reinforcement of the network in the Midlands Region has been identified as necessary to secure the operation of the transmission system and ensure reliable, economic and long term supply.

The proposal is to retain the existing power station which was originally planned to be decommissioned and develop the site to the south as a new substation. The substation comprises three pylons positioned to the south of the site, a gas insulated building which will circa 14 metres in height, gantrys which will be 12 metres in height and powerlines.

The landscape proposals are detailed comprising three attenuation / Sustainable urban Drainage Systems (SuDS) ponds with the largest to the south, removal of part of the existing TPO woodland and the planting of new trees, new hedgerows to sections of the existing PROWS, new native shrub planting etc.

Access into the site which remains as existing.

The Panel's Comments

The Panel make the following comments and recommendations for your consideration:

Vision

The site will play an important role as part of National Grid's 'Great Grid Upgrade'. The opportunity for

Chesterfield Substation to set a high benchmark / exemplar which fulfils the requirements of the substation; the environmental and sustainability targets and be utilised as best practise to inform the

approach for the other substations was strongly encouraged. Key to achieving this is the provision of a robust vision which speaks of the role of the project. The Panel suggested that further work should be undertaken by the Design Team in establishing and communicating a clearer and more compelling 'vision' for the development. This should also include a better understanding of what the project is about, why it is important ie. national infrastructure, how the proposals have been informed by the context ie. views, landscape character, PRoWS etc. and what the scheme will contribute to the locality ie. improve the PRoWS etc.

Site Analysis

The rationale for the development site connecting to the existing substation is sensible. The Panel recognised the challenges of the site which include the topography, views, trees, PRoWs etc.

While the work undertaken in developing the proposals for the substation was appreciated, attention was drawn to a gap in the information, with the proposals coming ahead of the site analysis. The site analysis is essential to demonstrate a comprehensive understanding of the site context and how the site context has informed the proposals.

The Team was strongly recommended to produce a site analysis which should include (although not exclusively) mapping views to and from the site both long and short; information on the landscape character from hedgerow / field boundary patterns, trees, topography, blue infrastructure; buildings within the landscape etc. Once completed, the above should be presented on a set of plans providing layers of information. A broader and in-depth understanding of the site context will, in turn, lead to the creation of a more distinctive and responsive development. The site analysis should then be utilised to inform the proposals from the approach to the PRoWS, the form, orientation and materiality of the building, the approach to tree planting, hedgerows, water, etc.

This information will also be key in forming the forthcoming planning application.

Views

The site at present is open landscape with a pronounced topography, affording short, long and broad views and vistas to and from the surrounding context. Elements to this development are on a prominent ridge point with open and expansive views out to the distant countryside, Chesterfield and the horizon.

As stated above, designing a scheme which responds to the site context is key. While it was understood a Landscape and Visual Impact Assessment has been undertaken, The LVIA provides an assessment of what can and cannot be seen from specific viewpoints, rather than how the scheme has been designed to respond to the views. As stated above a comprehensive site analysis is needed, including an assessment of views to and from the site. This should include identifying and mapping views to and from both short and long for example from the neighbouring buildings, PROWS, from the wider landscape specifically to the east where the longest views into the site will be afforded; categorising the views - which views are the most important (the short views were considered to be less of an issue than the long views); how the scheme has been designed to respond to the views and demonstrate the views – what you see, what you want to see and how you are mitigating views.

The Building

The proposals for the substation include a long, linear building, positioned on a north – south axis at the brink of the hill. The Panel commented on the substantial scale of the building which will be larger than the existing modern farm buildings within the local context and the prominence of the building which will be visible on long views into the site in particular from the east.

From the information provided on the building, there is gap in understanding what has informed the building from whether it has been designed to be hidden or celebrated?; Why is it this height? Orientation? Form? Scale? Position? Etc. What options were explored for the building? For example, could the building be orientated on an east to west axis which would result in the gable facing east rather than the long elevation of the building. How does it respond to views both short and long? What the building contains / kit of parts?

The Panel recommended the Team take a step back and further consider the proposals for the building. This should include an assessment on whether a building is needed at all. If a building is needed, utilising the site analysis to inform the proposals from the strategic to the detail which will assist in a more contextual and sensitive response. The current design of the building is an engineered rather than an architectural solution, given the prominence of the building, engaging an architect to design the building

was recommended. The building does not need to look like a shed. Reference was made to the design of car parks in Sheffield City Centre which all have the same function and are of different design. An architect would be able to design a bespoke and contextual response, one that could set a benchmark for the project / other substations.

The Panel reiterated previous comments on the need to demonstrate the design process undertaken for the building, from the parameters which have informed the design, the brief, site context etc.; the ideas explored; ideas disregarded and why; ideas pursued and why. This information is important in understanding the rationale for the proposals, how ideas have been tested and why the proposed option is the best option and will be key to the future planning application.

The drawings provided of the building of the elevations only. Additional drawings / images will need to be provided to illustrate the building in both the immediate and wider context for example perspective views and sections to show how the building sits within the landscape.

Pylons, Services and Easements and Pylons

Pylons are a feature within the immediate and broader landscape. The scheme proposes three new pylons to the south of the development which will be positioned to the higher points of the site. Following on comments on the visibility of the scheme, the Panel considered there to be an opportunity to explore approaches to these and a new exemplar design for the pylons rather than the standard approach. The new design could be then be utilised for other substations.

The Team were recommended to show the easement lines for the powerlines to assist in understanding the proposals.

Landscape Strategy

The site comprises a number of features including a distinct topography, long and expansive views to the wider landscape, an established hedgerow, a woodland etc.

The Panel noted that the landscape proposals have been produced after the proposals for the substation. This has resulted in a disconnect between the landscape, buildings and infrastructure. The landscape is an important and essential feature of the site. Consideration on how the landscape is designed and developed in conjunction with the building / architecture, ensuring that the landscape is integral to, the

overall design for example how the substation sits within both the immediate and wider landscape setting.

The Team were recommended to undertake a collaborative approach to ensure a robust relationship between the built and natural form.

The Panel commented on the attractive landscape infrastructure of the site context suggesting that, whilst some landscape features have been identified as important, the scheme needs to go further in responding to its context. The current approach for the landscape focuses on planting and a broader strategic to the landscape approach should inform the design. The landscape proposals are detailed and have come ahead of the site analysis, this has resulted in a disconnect between the proposals and the landscape character for example curved hedgerows to sections of the PRoW which do not follow existing boundaries are the patterns of hedgerows in the context. The Team were recommended for the landscape character of the site to come to the fore as a means of strengthening the scheme. This should start with an assessment of the landscape character of the site context for example where are the key views, what are the field / hedgerow patterns in the locality, what is the character/s of the PRoWS, what is positive about the site, what is the nature of current views, where are the best views, what makes the site special etc. Once this information has been collated a strategic document should be produced with a set of broad design principles / parameters to inform the landscape proposals for example views, screening, Biodiversity Net Gain (BNG), water, hedges etc.

An important feature of the site is the existing woodland which is proposed to be removed for the substation. The provision of a 'Tree Strategy' to provide a site wide and strategic approach to new tree planting as part of the overall landscape strategy was recommended. This should include tree planting which reinforces and references the existing pattern of trees within the locality, trees which frame a view, trees to screen a view, trees which support navigation etc.

Improving and enhancing the BNG of the site in an important component of the landscape proposals and in meeting the environmental targets for the substation. Attention was drawn to the overall landscape strategy and specific areas of the site in supporting BNG. Encouragement was given to maximise opportunities for BNG as part of the landscape for example the south of the site will no longer be a field and how will BNG inform the character of this space to one which is drawn from nature.

Water Management

The proposals will result in changing the existing field to one which includes buildings and hard landscape, which will impact on the site drainage. Three attenuation ponds are proposed as part of the development to manage drainage. The approach and design of the SuDS ponds is engineered with the Panel emphasising the need for the water / drainage strategy to form part of the overall landscape / green and blue infrastructure.

The Design Team was encouraged to explore opportunities for an imaginative, more sensitive, site responsive natural and site-wide approach to attenuation, from the creation of attenuation ponds which are integrated, support biodiversity while also providing a water management role. Suggestions include connecting the ponds with each other and to Calow Brook to provide a well connected network of blue infrastructure; utilising the landscape character analysis to inform the shape of the ponds – what is the character of water within the locality; consider the wider function of the SuDS for example could the pond to the south form part of a recreation route with the PRoWs and be somewhere to sit and enjoy the view – the Panel highlighted the need for the pond to have shallow sides and mustn't be fenced off and inaccessible.

Crucially, an integrated landscape approach to the blue and green infrastructure is required to ensure the ponds are functional, attractive and positively contribute to the landscape.

The Public Right of Ways (PRoWS)

The site comprises PRoWS to the west, south and central of the site. The Panel noted the different character of the PRoWS. The Panel felt that there were opportunities to explore how the different characters could respond to site conditions, context and need, creating a different experience for the users.

From the information provided, the Panel questioned the approach to the PRoWS which includes new hedgerows to sections of the routes which are not in keeping with the fields patterns within the landscape context, the desirability / function of the PRoWS and the relationship of the PRoWS with the substation. The PRoWS provide an opportunity to give back to the community and raise awareness of the substation. The Team were recommended to create a route which people will want to walk, drawn from the site context / landscape character. This should include clarifying the function of the routes from a dog walking / leisure route for locals. For those interested in the substation, the PRoWS provide a unique opportunity to experience the substation. The provision of a circular route with information on the

substation ie. interpretation boards was suggested telling the story of the substation / approach to energy. Creating opportunities to experience the long views afforded from the site ie. where would you want people to pause / sit and experience the views; build on the different characters of the PRoWs how does the approach to the east – west PRoW differ from the PRoW to the south including ensuring the east – west route feels safe which following the development will be positioned between the existing and new substation and change the character of the PRoW. The provision of a small car park (with EV charges) potentially for those outside the area wanting to walk the route.

The Build Programme

It was understood construction will take place for a period of up to 18months which will include large wagons / substantial kit. The impact of delivery vehicles on the existing community could be problematic. The Panel recommended consideration be given at this stage to the construction process. This should include breaking down the activities associated with the construction; consideration of the delivery routes for example is there a route which will be less disruptive and being public / communicating the building process for example the substation is a unique development and require significant infrastructure, is there an opportunity to engage schools / community to show them what you are doing.

SUMMARY

The Panel would like to thank the Team for bringing the proposals for Chesterfield substation to design review at the design development stage. Kerry Wright from NEDDC was also thanked for engaging and participating with process.

Chesterfield substation is a unique development and the role of the substation as part of national infrastructure project is of significant importance. The site is within an open landscape including long views into and from the site, an established landscape context including hedgerows, trees, a brook etc. The rationale to develop the site adjacent to the existing power station was considered sensible. However, the approach undertaken is engineered focused with concerns expressed on how the substation will sit within the immediate and broader landscape. The Panel considered there to be an opportunity to create a substation, which not only meets the targets for the substation, is drawn from place and sets a benchmark / learning for future substations.

The Design Team were recommended to build on the work undertaken and address the issues raised which are summarised below:

- Provision of a robust 'Vision' for the substation - what the project is about, why it is important and how can it set an exemplar for future substations
- Undertake a comprehensive site analysis to demonstrate a comprehensive understanding of the site context (immediate and broad) in particular views to and from the site
- Utilise the site analysis to inform the proposals ie. how has the substation been designed to respond to views, landscape, topography etc.
- Further consider the proposals for the building – is it needed, if yes, what is the flex, does it need to be of this scale, height, form etc.
- Engage an architect to design the building – an architectural rather than engineered approach
- Explore an exemplar design for the pylons – do they need to look the same as the existing?
- Provision of a Landscape Strategy for the substation including a set of design parameters / principles to ensure a contextual and sensitive response
- Enhance and improve the existing PROWS ie. a route people want to walk
- Provision of SuDS which are multifunctional (more than drainage) and integrated within the landscape
- Explore opportunities to tell the story of the substation ie. engaging schools, interpretation boards etc.
- Provision of a comprehensive planning application which demonstrates the design process for the substation.

We trust that the feedback provided will prove to be of benefit to you and provide an opportunity for further discussions with the determining authority. We would be happy to provide further design advice on the project and we will ensure that the composition of the Panel remains the same throughout any ongoing review.

Yours sincerely,



Design:Midlands Design Review Service

Design Midlands Design Review adheres to Design Network's principles for design review as follows:

INDEPENDENT Operates free from vested interest. Design Review is conducted by people who are separate from the scheme promoter and decision-maker, ensuring impartiality and avoidance of conflicts of interest.

EXPERT Conducted by leading practitioners and thought leaders. Design Review Panels are comprised of members who are recognised regionally, nationally and internationally for their expertise, innovation and best practice.

COLLABORATIVE Promotes shared aspirations for good design. Design Review enables a constructive dialogue, and is pragmatic, and solution focused, working with both the planning authority and applicant teams for public benefit.

MULTIDISCIPLINARY Draws on the combined perspectives of built and natural environment experts. Design Review Panels include expertise in urban design, architecture, sustainability and the climate emergency, planning, landscape architecture, ecology, engineering, development economics, social inclusion, active travel and heritage.

LOCAL Rooted in essential local knowledge and understanding. Design Review Panels bring an in-depth understanding of local context and planning policy, and offer a site visit to fully appreciate context.

REPRESENTATIVE & INCLUSIVE Reflective of the communities the Panels serve. Design Review Panels are comprised of the best established and emerging practitioners, recruited through an open and transparent process, to ensure diversity of lived experience.

ALLIED & TIMELY Embedded early in planning processes. Informed by the local policy context, Design Review Panel feedback supports efficient design development and informed decision-making.

CONSISTENT & ACCOUNTABLE Ensures consistent delivery standards and stakeholder management. High-quality Design Review Reports provide a clear and concise set of recommendations and actions for improvement.

REGULARLY EVALUATED Seeks constant feedback to inform improvement. Processes and panellists are reviewed and refreshed annually to build consistent best practice across England

Appendix B.

Planning Policy:

NEDLP

Appendix B

Planning Policy: NEDLP

Policy	Requirement
SS1: Sustainable Development	<p>This policy sets out how sustainable growth will be delivered in North East Derbyshire.</p> <p>Development proposals will need to contribute through:</p> <ul style="list-style-type: none"> Meeting development needs within defined settlements or other allocated areas having regard to the defined settlement hierarchy and the need to enhance their role as a focus for new services and facilities; Promoting the efficient use of land and the re-use of previously developed land (including the remediation of contaminated land) buildings and existing infrastructure in sustainable locations; Locating development where there is access to a broad range of jobs, services and facilities which are accessible by foot, cycle or public transport with reduced reliance on the private car; Supporting the local economy by contributing towards business expansion and growth, attracting and supporting a skilled labour force, and improving skills and access for local people to job opportunities including targeted recruitment and training, and the use of Local Labour Agreements; Reducing the need for energy in new development and ensuring that it can use energy efficiently through the life time of the development; Promoting the social and economic wellbeing of North East Derbyshire's communities and contributing to reducing social disadvantages and inequalities; Creating well designed places that are accessible, durable, adaptable and enhancing local distinctiveness; Protecting and enhancing the character, quality and settings of towns and villages and heritage assets; Protecting and/or enhancing the character, quality and diversity of the District's green infrastructure and local landscapes, the wider countryside and ecological and biodiversity assets; Protecting the productive potential of the District's best quality agricultural land, and avoiding sterilisation of mineral resources; Supporting the provision of essential public services and infrastructure; Playing a positive role in adapting to and mitigating the effects of climate change, including through the use of sustainable drainage systems, to contribute to the health and wellbeing of communities and the environment through the location, design and operation of development; and Taking account of any coal-mining related land stability and/or other public safety risks, and where necessary, incorporating suitable mitigation measures to address the risk.

Policy	Requirement
SS2: Spatial Strategy and the Distribution of Development	<p>This policy states that the Local Plan will promote prosperous and sustainable communities by delivering new development, whilst protecting the high quality environment that makes North East Derbyshire an attractive place to live and work.</p> <p>The policy states that for land which lies outside a Settlement Development Limit and is not allocated for development, will be treated as ‘countryside’ where development will only be permitted in accordance with Policies SS1 (Sustainable Development) and SS9 (Development in the Countryside).</p>
SS9: Development in the Countryside	<p>This policy states that development proposals in countryside locations outside the Settlement Development Limits will be approved where it can be demonstrated to fall within one or more of the following categories:</p> <ul style="list-style-type: none"> It involves a replacement building for the same use and is not significantly larger than the building it replaces; It involves the re-use of buildings and accords with policy SDC1; It is necessary for the efficient or viable operation of agriculture, horticulture, forestry and other appropriate land based businesses, including the diversification of activities on an existing farm unit; It involves small scale employment uses related to local farming, forestry, recreation, or tourism; It involves new visitor accommodation, or extensions to existing visitor accommodation in accordance with Policies WC5 & WC6; It involves the change of use, re-use, limited infilling or redevelopment of vacant, derelict or previously developed land which would not have a greater impact on the character of the countryside than the existing development; It involves the use for a Traveller Site in accordance with Policy LC9; It involves the provision, expansion, or improvement of social infrastructure and accords with Policy ID4, or relates to a development which has a demonstrable community and/or social benefit; or It is in accordance with the policies of an adopted Neighbourhood Plan. <p>The policy further states that in all cases, where development is considered acceptable, it will be required to respect the form, scale and character of the landscape, through careful siting, scale, design and use of materials. Further, where development falls within the Green Belt the provisions of Policy SS10: North East Derbyshire Green Belt apply.</p>
SDC1: Re-use and Conversion of Buildings in the Green Belt and Countryside	<p>This policy states that for proposals that intend to re-use or convert buildings in the Green Belt and Countryside will be permitted provided that:</p> <ul style="list-style-type: none"> they are of permanent and substantial construction; they are structurally sound, and capable of re-use without major alterations, adaptations or re-construction; their form, bulk and design is, or can be made to be, in keeping with their surroundings; conversion or adaptation will not be detrimental to the character of the building itself or its setting;

Policy	Requirement
	<p>they preserve the openness and character of the Green Belt and Countryside;</p> <p>the new use would not result in replacement farm buildings or inappropriate outside storage of any materials, machinery and / or vehicles that would cause harm to the Green Belt and Countryside; and</p> <p>provision is made for nesting boxes and roosts for protected species such as barn owls and bats, where appropriate.</p>
SDC2: Trees, Woodland and Hedgerow	<p>Proposals for development should provide for the protection and integration of existing trees, woodland and hedgerows for their wildlife, landscape, and/or amenity value.</p> <p>Development that would result in the unacceptable loss of, or damage to, or threaten the continued well-being of protected trees, hedgerows, orchards, veteran trees or woodland (including those not protected but considered worthy of protection), will not be permitted.</p> <p>Where trees, woodland or hedgerows will be lost to development and this is considered to be acceptable, suitable replacement planting on-site where it is practicable to do so, or off-site if not, will be required.</p> <p>New planting which uses species and varieties native to the area, of local provenance wherever possible, and that maximise the benefits to the local landscape, wildlife and air quality will be preferred.</p>
SDC3: Landscape Character	<p>This policy requires proposals for new development to not cause significant harm to the character, quality, distinctiveness or sensitivity of the landscape, or to important features or views, or other perceptual qualities such as tranquillity.</p> <p>The policy continues to state that development proposals should be informed by, and be sympathetic to, the distinctive landscape areas identified in the Derbyshire Landscape Character Assessment and the Areas of Multiple Environmental Sensitivity, or any successor document(s), and contribute, where appropriate, to the conservation and enhancement, or restoration and re-creation of the local landscape taking into account its wider landscape character type.</p> <p>Planning permission will not be granted for development outside the Peak District National Park which would damage or significantly affect the National Park purposes or its valued characteristics.</p>
SDC4: Biodiversity and Geodiversity	<p>This policy states that the Council will protect and enhance the District's natural environment and seek to increase the quantity and quality of biodiversity and geodiversity by:</p> <p>Protecting designated national and local sites of nature conservation importance and geodiversity value including SSSI's, LNR's, LWS's, and RIGS's as shown on the Policies Map. Development proposals affecting designated sites will not be permitted unless it can be demonstrated that significant harm can be avoided, mitigated, or as a last resort, compensated for by the development. Any proposed development that would be likely to adversely affect designated SSSI's will not be permitted.</p>

Policy	Requirement
	<p>Promoting the qualitative enhancement of all sites of biodiversity and geodiversity value (including designated SSSI's, LNR's, LWS's and RIGS's, and other sites with protected and priority species) by supporting measures that improve wildlife habitat connectivity and create new wildlife habitats. Such measures could include maintaining trees, native vegetation and improving green infrastructure for the benefit of wildlife.</p> <p>Not permitting development which would adversely affect the integrity of designated sites of international importance for nature conservation (SPA's and SAC's) located outside of the Plan area; except for imperative reasons of overriding public interest, and only where adequate compensatory measures are provided.</p>
SDC6: Development affecting Listed Buildings	<p>This policy states that proposals for alterations to or changes of use of a listed building will be supported where they preserve the significance of the heritage asset and its setting including impacts on the character, architectural merit or historic interest of the building.</p> <p>Proposals should use materials, layout, architectural features, scale and design that respond to and do not detract from the listed building.</p> <p>Proposals which allow for viable uses that are compatible with the conservation of the fabric of the building and its setting will generally be supported.</p>
SDC7: Scheduled Monuments and Archaeology	<p>This policy states that proposals for development that affect heritage assets with archaeological interest will be permitted provided that it can be demonstrated that the development will not be harmful to the archaeological interest of the heritage assets or their settings, having regard to their significance.</p> <p>Where development proposals are likely to affect non-designated heritage assets of archaeological interest, the developer should submit sufficient information to allow the significance of the asset and the potential impact of the proposals thereon to be understood. In some cases this will require archaeological desk based assessment and/or field evaluation of the site which should be submitted as part of the development proposal and undertaken by a suitably qualified archaeologist.</p> <p>Preservation in situ of archaeological sites or remains is the preferred option. However, where assessment shows preservation in situ is not justified, provision should be made for excavation and recording before demolition, disturbance or removal takes place.</p>
SDC8: Registered Parks and Gardens	<p>This policy states that proposals for development that affect Renishaw Hall Registered Park and Garden including its setting will be granted provided that they would conserve or enhance the historic layout, character, designed features and principal components which contribute to its significance.</p> <p>Proposals which seek to restore or reinstate its historic landscape features to original designs, using appropriate evidence, or better reveal its setting will be encouraged.</p>

Policy	Requirement
SDC9: Non-designated Local Heritage Assets	<p>This policy requires proposals for development that affect a non-designated local heritage asset to positively sustain or enhance the significance of the asset, its features, character and setting.</p> <p>Proposals involving the loss of, or harm to, a local heritage asset will be subject to a balanced assessment taking account of the significance of the asset and the scale of the harm or loss.</p>
SDC10: Decentralised, Renewable and Low Carbon Energy Generation	<p>This policy states that proposals for the generation of renewable energy including biomass power generation, combined heat and power, and other micro generation systems will be permitted where either individually or cumulatively with other renewable energy development, there would be no significant adverse effects on:</p> <ul style="list-style-type: none"> The visual amenity and character of the area including landscape and visual impacts; The amenity of local residents, in terms of noise, dust, odour, reflected light, traffic or visual intrusion; The ecology of the area, in particular in relation to protected species and to any sites of biodiversity value, ancient woodland, and veteran trees; The historic environment, including the effect on the significance of heritage assets and their setting and important views associated with valued landscapes and townscapes; and Airport radar and telecommunications systems. <p>In determining planning applications for renewable energy generation, the policy states that significant weight will be given to the achievement of wider environmental and economic benefits.</p> <p>Proposals should include details of associated developments including access roads and ancillary buildings; and transmission lines which should be located below ground wherever possible in order to reduce the impact on the open countryside. Planning applications will also need to include a satisfactory restoration scheme which will be implemented following decommissioning.</p> <p>For major new developments, the policy states that it will be expected to connect to or be designed to connect in the future to district or community heating networks where appropriate. Where no district heating scheme exists or is proposed in the proximity of major development, the potential for developing a new scheme on site should be explored and pursued where feasible.</p> <p>Developments along water courses will be expected to investigate the feasibility of using small scale hydro power taking into account flood risk.</p>
SDC11: Flood Risk and Drainage	<p>This policy requires all development proposals to consider the effect of the proposed development on flood risk, both on-site and off-site, commensurate with the scale and impact of the development. This should be demonstrated through Flood Risk Assessment (FRA), where appropriate. Development will not be permitted unless:</p> <ul style="list-style-type: none"> If within the functional floodplain (Flood Zone 3b), it is water compatible or essential infrastructure;

Policy	Requirement
	<p>In Flood Zones 2 and 3a, it passes the Sequential Test, and if necessary the Exceptions Test, as required by national policy;</p> <p>It can be demonstrated through an FRA that the development, including access, will be safe, without increasing flood risk elsewhere and where possible will reduce flood risk overall;</p> <p>There is no net increase in surface water runoff for the lifetime of the development on all new development. Surface water runoff should be managed at source wherever possible, avoiding disposal to combined sewers;</p> <p>Part of the development site is set aside for surface water management, and uses measures to contribute to flood risk management in the wider area; and</p> <p>The development incorporates a Sustainable Drainage System (SuDS) to manage surface water drainage, in accordance with national SuDS standards, unless it is proven that SuDS are not appropriate in a specific location. Where SuDS are provided, arrangements must be put in place for their whole life management and maintenance.</p> <p>The policy further states that development will only be permitted where adequate foul water treatment and drainage infrastructure currently exists, or can be made available to serve the development unless the developer can demonstrate acceptable alternative private solutions.</p> <p>The Council will seek opportunities to remove problems from the drainage network and increase the capacity of the floodplain, wherever this can be achieved safely, in connection with new development.</p> <p>Where improvement works are required to ensure that the drainage infrastructure can cope with the capacity required to support proposed new development, developer contributions may be required in accordance with Policy ID1 (Infrastructure Delivery and Developer Contributions).</p>
SDC12: High Quality Design and Place-Making	<p>This policy states that all new development should be of a high quality design and make a positive contribution to the quality of the local environment.</p> <p>Proposals for development will only be permitted provided that they:</p> <ul style="list-style-type: none"> Respond positively to local character and context to preserve and, where possible, enhance the quality and local identity of existing communities and their surroundings; Provide an integrated network of public open space and green and blue infrastructure which connects with existing green/blue infrastructure wherever possible; Create good design which is well-related to its site and surroundings in terms of its layout, form, height, massing, scale, plot size, elevational treatment, materials, streetscape, and rooflines which effectively integrate buildings into their local setting; Include boundary treatments and landscaping which are well designed and create strong physical features which provide visual and functional separation from the site's surroundings. Where appropriate, effective landscape buffers will be required which create appropriate transition between urban and rural environments;

Policy	Requirement
	<p>Protect the amenity of existing occupiers and create a good quality of amenity for future occupants of land or buildings including in relation to privacy, overlooking, overshadowing and/or any overbearing impacts;</p> <p>Create well-connected places that are easy to move around and which give priority first to pedestrian and cycle movements; and second, wherever possible, facilitate access to public transport;</p> <p>Provide streets and spaces within a well-considered public realm which are legible and shaped by recognisable landmark features, and which are overlooked, active, and promote inclusive access;</p> <p>Make efficient use of land by optimising housing densities, particularly in and around town centres and other locations where there is good access to frequent public transport services, whilst reflecting the particular characteristics of the site and its surrounding area;</p> <p>Maintain or enhance important existing site features of landscape, ecological, heritage or amenity value as integral elements of the design;</p> <p>Include measures to promote environmental sustainability, including those which address energy and water efficiency where practicable and viable to do so;</p> <p>Make provision for private amenity space, storage and recycling facilities, and vehicle and cycle parking;</p> <p>Incorporate measures to minimise opportunities for crime and anti-social behaviour; and</p> <p>Create good design which can be accessed by, and is inclusive for all users.</p>
SDC13: Environmental Quality	<p>The policy requires all development proposals to be assessed in relation to their impact on air, light, noise, ground and water pollution. The policy highlights that planning permission will be refused for any proposal where pollution would pose an unacceptable risk to public health, quality of life or the environment.</p> <p>The policy states that development proposals will be expected to contribute positively to the water environment and its ecology, and will only be permitted where they do not adversely affect surface or ground water quality in line with the requirements of the Water Framework Directive.</p> <p>For those planning applications for development with the potential to pose a risk of pollution, the policy recommends that they should be accompanied by an assessment of the likely impact of the development on environmental quality. Assessments of the risk of air, light, noise, ground or water pollution should relate to all stages of development.</p>
SDC14: Land potentially affected by Contamination or Instability	<p>This policy will not permit development proposals unless it can be demonstrated that any land potentially affected by contamination or instability will be addressed by appropriate mitigation measures to ensure that the site is suitable for the proposed use, and does not result in unacceptable risks which would adversely impact upon human health, and the built and natural environment.</p>

Policy	Requirement
	<p>Further, development proposals should also demonstrate that they will not cause the site, or the surrounding environment, to become contaminated and/or unstable.</p> <p>Where necessary, the developer will be required to carry out investigations and undertake any necessary risk management measures to ensure that any contamination or unstable land issues are addressed prior to the commencement of the development.</p>
SDC15: Development near Hazardous Uses	<p>The policy states that development proposals will be assessed in accordance with the Health and Safety Executive (HSE) guidance where they fall within a consultation zone for one or more hazardous installations. Where the HSE advises against the development proposed then permission will be refused.</p>
ID1: Infrastructure Delivery and Developer Contributions	<p>This policy sets out the Councils expectations for Developer Contributions, with proposals for development only being permitted provided they can be made acceptable through:</p> <ul style="list-style-type: none"> The provision of necessary physical, social and green infrastructure; and Suitable measures to mitigate the impacts of development. <p>Where new development will necessitate the provision of new or improved infrastructure, and / or when suitable mitigation is required development will be required to make direct provision of such infrastructure on-site, or make a financial contribution to its funding through the use of Planning Obligations (Section 106 of the Town and Country Planning Act 1990).</p> <p>Where justified, development will be required to provide or contribute towards delivering the infrastructure requirements to support the growth in the Local Plan as set out in the Infrastructure Study and Delivery Plan, or any future updates.</p>
ID3: Sustainable Travel	<p>This policy states that the Council will seek to maximise walking, cycling, and the use of public transport through the location and design of new development, with the aim of reducing congestion, and improving air quality and health.</p> <p>The policy requires major development to promote sustainable travel through necessary interventions as identified through appropriate transport statements or assessments including the following:</p> <ul style="list-style-type: none"> Site specific and area wide travel demand measures; Improvements to existing pedestrian, cycle and public transport services and facilities, and provision of new walking and cycling routes. New routes should provide direct links to new or existing footpaths, cycling networks, and local facilities; and Optimisation of the existing highway network to prioritise walking, cycling, public transport and other forms of sustainable travel. <p>Highway capacity enhancements should deal with residual car demand where the initiatives required as listed above are insufficient to avoid significant additional car journeys.</p>

Policy	Requirement
	<p>In all cases, planning permission will only be refused on transport grounds if there would be an unacceptable impact on highway safety, or where the residual cumulative impacts on the road network would be severe.</p>
ID7: Green Infrastructure	<p>The policy states that development proposals should conserve and where appropriate improve and extend the Green Infrastructure Network running through and beyond North East Derbyshire.</p> <p>Development proposals that would result in the loss or isolation of existing green infrastructure will not be permitted unless:</p> <ul style="list-style-type: none"> The affected site or feature does not have a significant recreational, ecological, landscape or townscape value; or The affected site can be demonstrated to be surplus to local requirements, or A compensatory amount of green infrastructure of an equivalent or better quality can be provided in the local area <p>To ensure the quality of new or improved Green Infrastructure, development proposals shall, where appropriate:</p> <ul style="list-style-type: none"> Incorporate Green Infrastructure as an integral part of designs at an early stage in the planning process in line with Policy SDC12; Enhance connectivity between green spaces and improve public access to green infrastructure in line with Policy SDC12; Contribute to the character and creation of high quality and locally distinctive places and having regard to the landscape, townscape, ecological character of the locality and the setting of heritage assets; Protect trees, woodland and hedgerows in line with Policy SDC2; Incorporate native species and habitats in line with Policy SDC4; and Capitalise on any opportunities provided by rivers, streams, ditches, drains and canals in order to improve their ecological status.
ID8: Greenways and Public Rights of Way	<p>The policy states that the Council will seek to protect all existing and proposed Greenways throughout the district as identified on the Policies Map.</p> <p>The Council will liaise with Derbyshire County Council to further develop the existing network through promoting proposed Greenways.</p> <p>Development proposals will be expected to maintain or improve the permeability of the built environment and access to the countryside for walkers, cyclists and horse riders. Proposals that would result in the loss of, or deterioration in the quality of existing Public Rights of Way (PROWs) will not be permitted unless equivalent alternative provision is made. Where diversions are required, new routes should be direct, convenient and attractive, and should not have an unacceptable adverse impact on environmental or heritage assets.</p>

Appendix C. Planning Policy: Derby and Derbyshire Minerals Local Plan

Appendix C

Planning Policy: Derby and Derbyshire Minerals Local Plan

Policy	Requirement
MP17 – Safeguarding Resources	<p>The policy states that the Mineral Planning Authority will resist proposals for any development which would sterilise or prejudice the future working of important economically workable mineral deposits except where:</p> <ul style="list-style-type: none">there is an overriding need for the development andwhere prior extraction of the mineral cannot reasonably be undertaken, or is unlikely to be practicable or environmentally acceptable. <p>Where the development of land for non-mineral purposes is considered essential and proven mineral deposits would be permanently sterilised, planning permission for prior extraction will be granted provided this does not prejudice the timing and viability of the proposed development and does not lead to unacceptable environmental effects.</p>

Appendix D.

Planning Policy: SPDs

Appendix D

Planning Policy: SPDs

D.1 Access For All Supplementary Planning Document (SPD)

- D.1.1 The Access for All SPD (NEDDC, 2007a) highlights the most important principles in designing inclusive buildings and open spaces and provides a checklist for good access design.
- D.1.2 The SPD also provides advice on the preparation of Design and Access Statements that are required to accompany most planning applications. These Statements should show how the principles of inclusive design have been integrated into the proposed development, how the development will integrate into the existing urban form or surroundings and how inclusion will be maintained and managed. The level of detail expected from Design and Access Statements is detailed in Appendix A.
- D.1.3 The document reminds that building design and construction is governed by the Building Regulations. Part M of the regulations sets minimum legal standards for access and use of buildings for all users. The document states that it is more cost effective to make the environment accessible to all at the start rather than to make adjustments later as the requirements of Part M can affect the size and the design of the building and needs to be taken into account at the early design stage. Doing so will also result in a more attractive design. This is why consideration should be given to creating an accessible environment at the very earliest design stage.

D.2 Developer Contributions Supplementary Planning Guidance (SPD)

- D.2.1 The Developer Contributions SPD (NEDDC, 2007b) was adopted in October 2007. It sets out NEDDC's approach to securing developer contributions in relation to development within the remit of Section 106 of the Town and Country Planning Act 1990 (as amended).
- D.2.2 The SPD provides advice for all those involved in the preparation, submission and negotiation of planning applications where developer contributions may be required. It seeks to clarify the Council's approach for using planning obligations to seek developer contributions in policy and operational terms and helps explain how requirements will be prioritised. The SPD will help to achieve national, regional, sub-regional and local objectives for sustainable development.

D.3 Sustainable Buildings Supplementary Planning Guidance (SPD)

- D.3.1 The Sustainable Buildings SPD (NEDDC, 2011) was adopted in November 2011. The SPD complements existing policies and is aimed at achieving low carbon and sustainable developments in North East Derbyshire District.
- D.3.2 The SPD has been developed in accordance with local, regional and national planning policy and is a material consideration to be given weight in considering development proposals.

- D.3.3 The SPD states that for applicants seeking planning permission, they will be expected to take it into account in preparing development schemes. Applicants seeking major development are expected to demonstrate how they have addressed these matters in a sustainability statement and energy audit.

Appendix E. Proposed Draft Planning Conditions

Appendix E

Proposed Draft Planning Conditions

- E.1.1 Condition 1: Commencement of Development. The development hereby permitted shall be begun before the expiration of three years from the date of this permission.
- E.1.2 Condition 2: Approved Drawings. The development shall be carried out in accordance with the approved plans listed below:

Plan/Document	Reference
Application Form and Ownership Certificates	
Site Location Plan	PDD-203717-LAY-201
Overall Layout	PDD-203717-LAY-233
Block Plan	PDD-203717-LAY-240
Chesterfield 400kV Substation – Block Plan	PDD-203717-LAY-235
Chesterfield 400kV Substation – Existing Site Layout Plan	PDD-203717-LAY-241
Chesterfield 400kV Substation – Proposed Site Layout – Substation Works	PDD-203717-LAY-234
Chesterfield Overall Elevations Sheet 1	PDD-203717-ELE-221
Chesterfield Overall Elevations Sheet 2	PDD-203717-ELE-222
Chesterfield Building Elevations Sheet 1	PDD-203717-ELE-223
Chesterfield Building Elevations Sheet 2	PDD-203717-ELE-224
Chesterfield Building Layout	PDD-203717-LAY-243
Proposed Site Layout	PDD-203717-LAY-242
External Lighting Layout	PDD-203717-LAY-231
Drainage Layout	PDD-203717-LAY-232
Cut and Fill Plan	PDD-203717-LAY-221
Chesterfield Landscape Mitigation Plan	30184504-ARC-XX-LAN-DWG-00003.
Typical Fence Details	PDD-203717-LAY-246

- E.1.3 Condition 3: Construction Environmental Management Plan. Prior to the commencement of development, a full Construction Environmental Management Plan (CEMP) must be submitted to, and approved in writing by, the local planning authority. The CEMP shall include:
- a) details of measures to minimise noise, dirt, dust (and other air borne particles) to include a Dust Management Plan, and vibration during construction;
 - b) details of measures to prevent pollution, including to watercourses;
 - c) details of measures relating to the handling of contaminated land;
 - d) details of measures to manage construction impacts on heritage and landscape;
 - e) a waste management plan;
 - f) proposed working hours, including any night-time working hours; and
 - g) details relating to site access.
- E.1.4 The CEMP shall be completed in accordance with BS 42020:2013 Biodiversity Code of Practice for Planning and Development, and include:
- a) details of what biodiversity features could be impacted and what development activities could be potentially damaging;
 - b) a rolling timetable of when and where specific measures to avoid/reduce impacts are to be carried out, including any seasonal or legal implications (e.g. the bird nesting season) and who is responsible;
 - c) details of method statements for specific biodiversity issues (e.g. for specific destructive activities such as vegetation clearance, hedgerow removal, tree felling, soil stripping and building demolition);
 - d) details of all practical measures (e.g. fencing, protective barriers and warning signs) and sensitive working practices to avoid impacts;
 - e) details of inspections to ensure wildlife does not become trapped in excavations or machinery;
 - f) details of other responsible persons and lines of communication on-site in relation to the implementation of the CEMP;
 - g) details of contingency measures in the event of an accident or other potentially damaging incident (e.g. pollution incidents, how to deal with previously unrecorded protected species found during construction and restoration, unexpected bad weather and repair of damaged features, etc.);
 - h) details of procedures to avoid pollution incidents (e.g. from fuel spills and site runoff based on an understanding of the wildlife interest at risk);
 - i) regular review of the implementation of the CEMP throughout the construction/restoration phase to monitor effectiveness of mitigation measures and compliance with legal, planning and/or contractual requirements;
 - j) details of biosecurity protocols/method statements to prevent spread of non-native species; and

- k) temporary management of existing wildlife features during construction/implementation.
- l) The construction of the development shall be carried out in accordance with the approved CEMP.

E.1.5 Condition 4: Construction Traffic Management Plan: Prior to the commencement of development, a full Construction Traffic Management Plan (CTMP) must be submitted to, and approved in writing by, the local planning authority. The CTMP shall include details of:

- a) the routes and vehicle entrance routes to be used by contractors' vehicles moving to and from the Site (and the appropriate signage thereof);
- b) HGV delivery times;
- c) construction vehicle specification requirements, including number of anticipated vehicle movements;
- d) measures to manage debris and damage to the highway network including the submission of a road condition survey;
- e) construction staff travel.

E.1.6 Condition 5: Arboricultural Method Statement. No development shall commence until an updated Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) for the Site have been submitted to and approved in writing by the local planning authority. The AMS shall be updated to include:

- a) Methods of any construction related activities within root protection areas (RPAs) (as defined in BS 5837:2012) of the retained trees.
- b) Where relevant, a full specification for the construction of any roads and footways including details of the no-dig specification and extent of the areas to be constructed using a no-dig specification. Details shall include relevant sections through them.
- c) A specification for protective fencing to safeguard retained trees during clearance and construction phases.
- d) Methodology and specification for any facilitation pruning, including root pruning in accordance with BS 3998:2010.
- e) Schedule of arboricultural monitoring and supervision (which includes visits by the arboricultural consultant during installation of protective measures and structures within the RPAs of retained trees). The development shall be implemented in accordance with the approved details.

E.1.7 Condition 6: Soil Management Plan. Prior to the commencement of development, a Soil Management Plan shall be submitted to, and approved in writing by, the local planning authority. Thereafter, the development shall be implemented in accordance with the approved plan.

E.1.8 Condition 7: Surface Water Drainage. Prior to the commencement of development on the substations site, a surface water drainage scheme, based on the Surface Water Drainage Strategy (Reference PDD-203717-REP-317), must be submitted to, and approved in writing by, the local planning authority. The Scheme shall also include:

- a) existing and proposed discharge rates and volumes;

- b) ground investigations including infiltration in accordance with BRE365. Subject to infiltration being inviable, the applicant shall demonstrate that an alternative means of surface water disposal is practicable subject to the drainage hierarchy as outlined in Paragraph 056 of the Planning Practice Guidance;
- c) full construction details of all Sustainable Drainage Systems (SuDS) and drainage components;
- d) detailed drainage layout with pipe numbers, gradients, and pipe sizes complete, together with storage volumes of all SuDS components;
- e) calculations to demonstrate that the proposed drainage system can contain up to the 1 in 30 year storm event without flooding. Any on-site flooding between the 1 in 30 year and the 1 in 100 year plus climate change storm event should be safely contained on-site;
- f) details of proposed overland flood flow routes in the event of system exceedance or failure, with demonstration that such flows can be appropriately managed on-site without increasing flood risk to occupants, or to adjacent or downstream sites. The Scheme shall be implemented in accordance with the approved details before the development is completed.

E.1.9 Condition 8: Maintenance of Surface Water Drainage. Prior to the first use of the development, a whole-life maintenance plan for the surface water drainage for the Site shall be submitted to, and approved in writing by, the local planning authority. The plan shall set out how and when to maintain the full drainage system during and following construction, with details of who is to be responsible for carrying out the maintenance. The plan shall subsequently be implemented in accordance with the approved details.

E.1.10 Condition 9: Lighting. Prior to the first use of the development hereby approved, a Lighting Design Strategy for Biodiversity shall be submitted to, and approved in writing by, the local planning authority. The strategy shall:

- a) identify those areas/features on-site that are particularly sensitive for bats and other nocturnal wildlife and that are likely to cause disturbance in or around their breeding sites and resting places or along important routes used to access key areas of their territory, for example, for foraging;
- b) show how and where external lighting will be installed (through the provision of appropriate lighting contour plans and technical specifications) so that it can be clearly demonstrated that areas to be lit will not disturb or prevent the above species using their territory or having access to their breeding sites and resting places;
- c) include details of maximum luminance and lights to be erected, location, height, type and direction of light sources and intensity of illumination;
- d) include details of the lights to be switched off and/or dimmed at night including times. All external lighting shall be installed in accordance with the specifications and locations set out in the approved strategy, and these shall be maintained thereafter in accordance with the strategy. No external lighting other than that approved shall be installed.

E.1.11 Condition 10: Landscaping. Prior to the first use of the development, details of soft landscaping works and an implementation and management programme shall be

submitted to and approved in writing by the local planning authority. The details shall include:

planting plans, including details of schedules of plants, noting species, planting sizes and proposed numbers/densities; and

written specifications (including soil depths, cultivation and other operations associated with plant and grass establishment).

All soft landscaping shall be carried out in accordance with the approved details, implementation programme and BS 4428:1989 Code of Practice for General Landscape Operations and implemented prior to first use of the development, and therefore retained and maintained in accordance with the approved management programme.

- E.1.12 Condition 11: Landscape Maintenance. Any planting which within a period of five years from planting fails to become established, becomes seriously damaged or diseased, dies or for any reason is removed shall be replaced in the next planting season by a tree or shrub of a species, size and maturity to be approved in writing by the local planning authority.
- E.1.13 Condition 12: Contamination. In the event that contamination that was not previously identified is found at any time during the construction of the approved development, it must be reported in writing immediately to the local planning authority. An investigation and risk assessment must be undertaken, and where remediation is necessary, a remediation scheme must be prepared, which is subject to the approval in writing of the local planning authority. Following completion of measures identified in the approved remediation scheme, a verification report must be prepared, which is subject to the approval in writing of the local planning authority.

Appendix F. Abbreviations

Appendix F

Abbreviations

Abbreviation	Full Reference
AADT	Annual Average Daily Traffic
AIS	Air Insulated Switchgear
AMS	Arboricultural Method Statement
AQMA	Air Quality Management Area
AOD	Above Ordnance Datum
BEIS	Department for Business, Energy and Industrial Strategy
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
CBC	Chesterfield Borough Council
CCTV	Closed-circuit television
CEMP	Construction Environmental Management Plan
CNP	Critical national priority
COP	Conference of Parties
CSE	Cable Sealing End
CTMP	Construction Traffic Management Plan
CVT	Capacitor Voltage Transformer
DCLG	Department for Communities and Local Government
Defra	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
DNO	Distribution Network Operator
EAR	Environmental Appraisal Report
EIA	Environmental Impact Assessment
EIA Regulations	Town and Country Planning (Environmental Impact Assessment) Regulations 2017
EMF	Electric and Magnetic Field
ESO	Electricity System Operator
FRA	Flood Risk Assessment
GIB	Gas Insulated Busbar

Abbreviation	Full Reference
GIP	Green Infrastructure Plan
GIS	Gas Insulated Switchgear
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
HPI	Habitats of Principal Importance
IAQM	Institute of Air Quality Management
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IEMA	Institute of Environmental Management and Assessment
km	kilometre
kV	kilovolt
LB	Listed building
LCT	Landscape Character Type
LDV	Light Duty Vehicle
LGV	Light Goods Vehicle
LNR	Local Nature Reserve
LOAEL	Lowest Observed Adverse Effect Level
LPA	Local planning authority
LWS	Local Wildlife Site
MAGIC	Multi-Agency Geographic Information for the Countryside
MHCLG	Ministry of Housing, Communities and Local Government
NCA	National Character Area
NEDDC	North East Derbyshire District Council
NEDLP	North East Derbyshire Local Plan
NESO	National Energy System Operator
NETS SQSS	National Electricity Transmission System Security and Quality of Supply Standard
NO2	Nitrogen dioxide
NOAEL	No Observed Adverse Effect Level
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance

Abbreviation	Full Reference
NPS	National Policy Statement
NPS EN-1	Overarching National Policy Statement for Energy (EN-1)
NPS EN-5	National Policy Statement for Electricity Networks Infrastructure (EN-5)
NPSE	Noise Policy Statement for England
NSIP	Nationally Significant Infrastructure Project
OCEMP	Outline Construction Environmental Management Plan
OCTMP	Outline Construction Traffic Management Plan
Ofgem	Office of Gas and Electricity Markets
OSWMP	Outline Site Waste Management Plan
PDAS	Planning, Design and Access Statement
PRoW	Public Right of Way
pLWS	potential Local Wildlife Site
RIGS	Regionally Important Geological Site
RNAG	Reasons for Not Achieving Good
RPA	Root Protection Area
SAC	Special Area of Conservation
SGT	Super grid transformer
SOAEL	Significant Observed Adverse Effect Level
SPA	Special Protection Area
SPD	Supplementary Planning Document
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
SWMP	Site Waste Management Plan
TCPA 1990	Town and Country Planning Act 1990
TPO	Tree Preservation Order
TPP	Tree Protection Plan
UAEL	Unacceptable Adverse Effect Level
UNFCCC	United Nations Framework Convention on Climate Change

Appendix G.

Glossary

Appendix G

Glossary

Term	Description
Abnormal Indivisible Loads	A large load which cannot ‘without undue expense or risk of damage’ be divided into two or more smaller loads for the purposes of being transported by road, and which exceeds limits set out in terms of weight (>44 tonnes), length (>18.65m), and width (>2.9m).
Additional mitigation measures	Comprises measures over and above embedded and standard mitigation measures to reduce environmental effects. This would include, but not be limited to, mitigation required for protected species.
Alignment	The proposed overhead line route.
Ancient woodland	Land that has been continually wooded since at least 1600 in England. Regarded as ‘irreplaceable habitat’ in national planning policy and guidance. Ancient woodland greater than 2ha is recorded on the Natural England Ancient Woodland Inventory.
Angle/tension pylon	Pylon where a horizontal insulator string attaches the conductors. Tension or ‘angle’ pylons are used at points where the overhead line alignment changes direction.
Archaeological remains	The material remains of human activity from the earliest periods of human evolution to the present. These may be buried traces of human activities, sites visible above ground, or moveable artefacts.
Archaeological Mitigation Strategy and Outline Written Scheme of Investigation	Sets out the scope, guiding principles and methods for the planning and implementation of additional archaeological mitigation works associated with the construction of the Scheme.
Bellmouth	A flared vehicular access point connecting a construction site to the public highway, designed to accommodate turning movements by large vehicles.
Best practicable means	A term used under the Control of Pollution Act 1974 and Environmental Protection Act 1990 to refer to measures which are reasonably practicable, having regard to local conditions and circumstances, to the current state of technical knowledge and to financial implications, concerning the mitigation of noise and other potential nuisance.
Biodiversity	The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.
Biodiversity Net Gain	An approach for developments to ensure habitats for wildlife are left in a measurably better state than they were before the development.

Term	Description
Biosecurity	Measures aimed at preventing the spread of harmful organisms (e.g. viruses and bacteria) to crops and livestock in order to reduce the risk of transmission of infectious diseases.
Busbar	The common connection point of two or more transmission circuits.
Circuit	A set of wires along which current flows and returns. It is necessary to have a complete circuit for current to flow. The National Grid standard for overhead lines operating at 400kV is for pylons to carry two circuits, each consisting of three phases, i.e. a double circuit configuration.
Cable	An insulated conductor designed for underground installation.
Cable Sealing End	Structures used to transfer transmission circuits between underground cables and overhead lines.
Cable Sealing End compound	Electrical infrastructure used as the transition point between overhead lines and underground cables. A compound on the ground acts as the principal transition point.
Cable Sealing End platform	Electrical infrastructure used as the transition point between overhead lines and underground cables. A platform on the pylon acts as the principal transition point.
Catenary wire	A catenary wire is a tensioned wire rope suspended between two anchor points.
Code of Construction Practice	A code of construction practice sets out the standards and procedures to which a developer (and its contractors) must adhere in order to manage the potential effects of construction works.
Commitments	Measures that a developer commits to delivering as part of a project, with the purpose of limiting, mitigating or compensating potential effects of the Scheme.
Conductor	The overhead wire that carries electricity from one place to another, for example the line between two pylons.
Conservation Area	An area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance as defined in s69(1)(a) in the Planning (Listed Building and Conservation Areas) Act 1990.
Construction Traffic Management Plan	Plan detailing the procedures, requirements and standards necessary for managing the traffic effects during construction of the Scheme so that safe, adequate and convenient facilities for local movements by all transport modes are maintained throughout the construction process.
Contaminated Land	Land where a substance or contaminant in or under the land has the potential to cause significant harm or the significant possibility of significant harm to human health, property or protected species, or significant pollution or the significant possibility of significant pollution to controlled waters.

Term	Description
Corona discharge	An electrical discharge caused by the ionisation of fluid such as air surrounding a conductor carrying a high voltage. It represents a local region where the air (or other fluid) has undergone electrical breakdown and become conductive. A corona occurs at locations where the strength of the electric field (potential gradient) around a conductor exceeds the dielectric strength of the air.
County Wildlife Site	Non-designated areas of land important for their wildlife and nature conservation value.
Culvert	A channel or pipe that carries water below the level of the ground.
Dewatering	The removal of groundwater (e.g. by pumping) to keep a below-ground works area dry.
Distribution Network Operator	Companies that own and operate the power lines and infrastructure that connect the National Grid network to individual properties.
Easement	A legal right in perpetuity granting National Grid the right to install, use, maintain, replace, renew and remove its equipment.
Electric and Magnetic Fields	All equipment that generates, distributes or uses electricity produces Electric and Magnetic Fields (EMF), and EMFs also occur naturally. Electric fields are created by differences in voltage: the higher the voltage, the stronger the resultant field. Magnetic fields are created when electric current flows: the greater the current, the stronger the magnetic field.
Embedded design measures	Mitigation measures are those that are intrinsic to and built into the design of the Scheme.
Environmental Areas	Locations identified for environmental embedded measures, mitigation and/or Biodiversity Net Gain/environmental enhancement.
Environmental Appraisal Report (EAR)	<p>The Environmental Appraisal Report has been prepared by Arcadis Consulting (UK) Ltd on behalf of the applicant, National Grid, which is proposing to develop a new 400kV GIS substation ('the Scheme') on land south of Calow Lane ('the Site').</p> <p>The EAR is to provide NEDDC with a summary of the environmental information contained in the environmental reports submitted with the planning application for the Scheme.</p>
Environmental topic	A subject area covered within the EIA, for example landscape and visual or biodiversity.
Flood Risk Assessment	A Flood Risk Assessment is an assessment of the risk of flooding, particularly in relation to residential, commercial and industrial land use. In England and Wales, the Environment Agency requires a Flood Risk Assessment to be submitted alongside planning applications in areas that are known to be at risk of flooding.
Full line tension gantries	Types of gantries which allow conductors to connect into a substation or compound directly from a pylon, without requiring a bulky terminal pylon. This allows a larger span between the final pylon and the gantry.

Term	Description
Gantry	An overhead bridge-like structure supporting electrical equipment. A transition point from overhead line equipment to equipment in a compound.
Greenhouse gases	The term ‘greenhouse gases’ refers to a number of chemicals in the earth’s atmosphere such as carbon dioxide (CO ₂), methane (CH ₄), and nitrous oxide (N ₂ O).
Groundwater	Water that is in the ground. This is usually referring to water in the saturated zone below the water table.
Haul road	A route used by construction traffic within the Order Limits to access a working area from a site access point.
Heavy Goods Vehicles	Goods vehicles weighing more than 3,500kg.
High voltage	275,000 volts and over. National Grid’s transmission lines generally operate at 275,000 and 400,000 volts. Lower voltage lines, such as 132,000 volts and 33,000 volts, are generally owned by local distribution companies.
High voltage alternating current	The transmission and distribution of electrical energy using alternating current (AC) at high voltage levels.
Insulator	Used to attach the conductors to the pylons, preventing electrical discharge to the steelwork.
Kilovolt	1,000 volts
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Lattice pylon	Pylon type widely used on the national electricity transmission networks. Both standard lattice pylons (approximately 50m in height) and low height lattice pylons (approximately 40m in height) are proposed on the Scheme.
Light Goods Vehicles	Goods vehicle weighing 3,500kg or less.
Listed building	A measure of a building’s special architectural and historic interest. There are three categories of listed buildings, Grades I, II* and II, depending on the level of interest.
Local Nature Reserve	Sites dedicated by the local planning authority under Section 21 of the National Parks and Access to the Countryside Act 1949 for nature conservation which have wildlife or geological features that are of special interest locally.
Local planning authority	The public authority whose duty it is to carry out specific planning functions for a particular area.
Lux	Measurement of the amount of light produced.

Term	Description
Main Works Contractor(s)	Contractor(s) appointed by National Grid to construct the Scheme
Mitigation	The action of reducing the severity and magnitude of change (impact). Measures to avoid, reduce, remedy or compensate for significant adverse effects.
National Electricity Transmission System Security and Quality of Supply Standard	The NETS SQSS sets out a coordinated set of criteria and methodologies that the Transmission Licensees shall use in the planning and operation of the National Electricity Transmission System.
Overhead line	Conductor (wire) carrying electric current, strung from pylon to pylon.
Overhead line craftperson	Person who constructs the overhead line infrastructure.
Overhead line refurbishment	Repair and renewal of conductors, pylon painting, earthwire, fittings and insulators and, where necessary, remedial works to the pylon and foundations.
Permanent access	Access required to infrastructure during the operational phase of the Scheme, for operational and maintenance purposes.
Piling	Engineering process of installing elongated structural elements, known as piles, into the subsoil. This technique is employed to transfer structural loads to deeper, more competent strata, thereby providing stable foundations for construction projects. Essentially, it addresses situations where surface soils lack sufficient bearing capacity to support intended structures.
Public Right of Way (PRoW)	A footpath, bridleway or byway accessible to all members of the public.
Pulling site	A site where the winching equipment that is used to pull through the new conductors is located.
Pylon	Structures that support the overhead line (conductors).
Site access points	A location connecting a construction site to the public highway.
Standard mitigation measures	Management activities and techniques, which would be implemented throughout construction of the Scheme to limit effects through adherence to good site practices.
Statutory Undertakers	Persons with regulatory powers and duties, such as gas, electricity, water and transport providers or transmitters.
Subsoil	Weathered soil layer extending between the natural topsoil and the unweathered basal layer (geological parent material, either solid or drift) below.
Substation	Substations are used to control the flow of power through the electricity system. They are also used to change (or transform) the voltage from a

Term	Description
	higher to lower voltage to allow it to be transmitted to local homes and businesses.
Suspension pylon	Pylon where conductors are suspended by a vertical insulator string. Suspension pylons support the conductors on straight stretches of overhead line.
Temporary overhead line diversions and pylons	Temporary diversions of existing overhead line may be required to ensure electricity flows are maintained at all times during construction of the Scheme to limit the disruption to the electricity network. These typically comprise a short section of overhead line with temporary structures or pylons which electricity flows are diverted along.
Tensioning site	A site from which the new conductor is fed out during construction. This also includes a tensioning winch to keep the conductor off the ground.
Terminal pylon	Pylons erected at the end of the overhead line to terminate the line at substations or where overhead lines are connected to underground cables. Because of the uneven load on one side of the pylons, much deeper and heavier foundations are required on the unloaded side.
Transmission line	A National Grid overhead line and underground cable which transmits electricity between National Grid's substations. Power is transmitted at high voltages (275kV or above) between power stations where it is generated and the local electricity supply networks of the regional Distribution Network Operators where it is transformed to lower voltages (132kV or below) for supply via distribution lines to local communities.
Trenchless crossing	A crossing installation method that has limited above-ground disturbance and which is used to avoid a sensitive feature such as an environmental feature.
Triple Araucaria conductors	Triple Araucaria conductor design is the least electrically stressed conductor system that National Grid uses. It is the best design for reducing the effects of line crackle (corona discharge).
Topsoil	Material which developed originally at the top of the soil profile and is characteristically darker in colour and has a higher organic matter content than subsoil material.
Temporary construction compounds	Temporary compounds installed during the construction phase of the Scheme. Each compound may contain storage areas including laydown areas, soils storage and areas for equipment and fuel, drainage, generators, car parking and offices and welfare areas (Portakabins).
Underground cable	An insulated conductor carrying electric current designed for underground installation. Underground cables link together two CSE compounds.
Visibility splay	Areas of tree/vegetation removal, typically where access points are, to enable a driver to see down the road and know when the road is clear.
Voltage	The electrical potential difference between two points.

Term	Description
Water Framework Directive	The Water Framework Directive (2000/60/EC) commits European Union member states to achieve good qualitative and quantitative status of all water bodies. It is transposed into law in England and Wales via The Water Environment (Water Framework Directive) (England and Wales) 2017 Regulations, which were retained via the European Union (Withdrawal) Act 2018.

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