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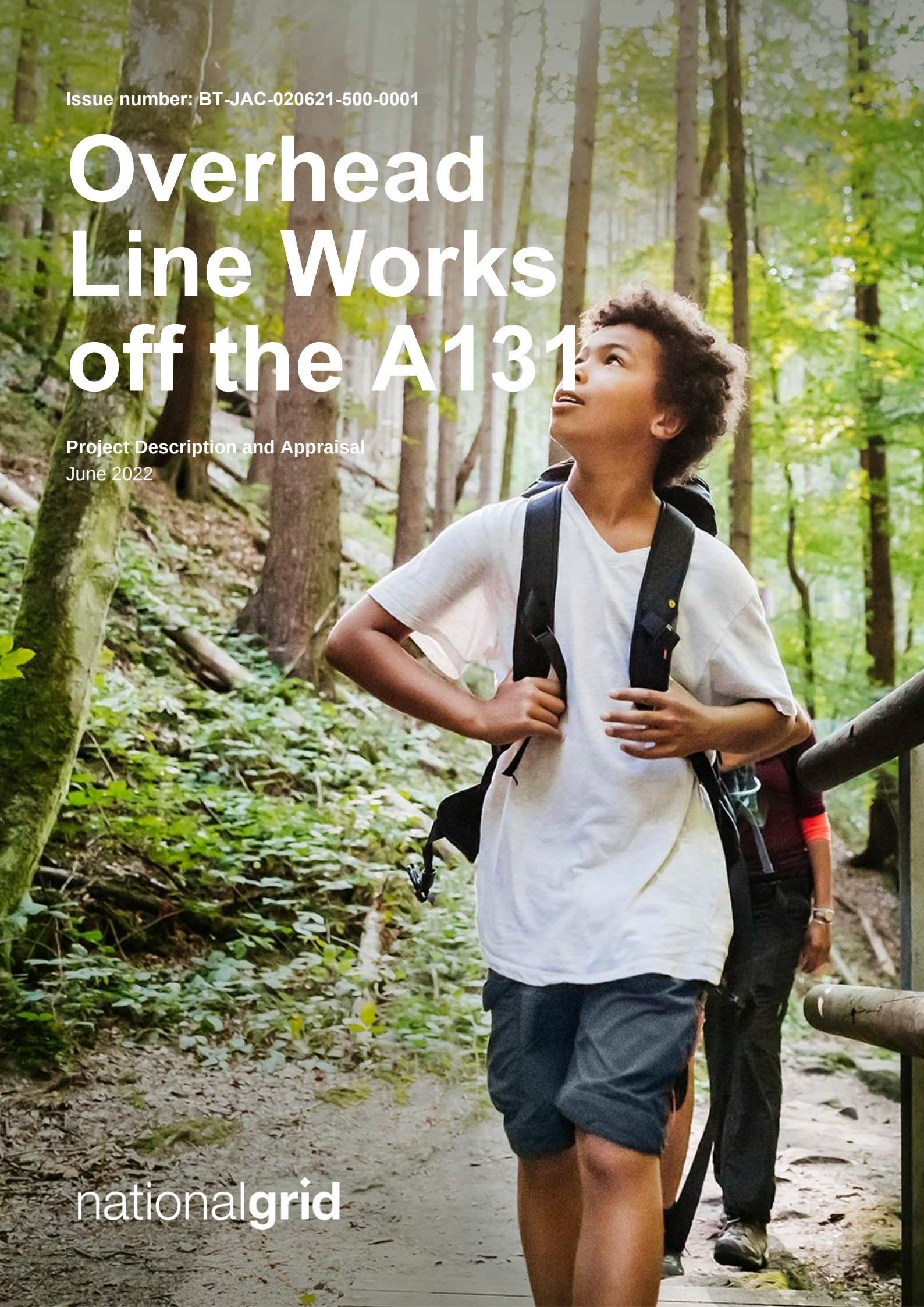
Overhead Line Works off the A131

Project Description and Appraisal

June 2022



nationalgrid

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1. Introduction

1.1 Context and Overview

1.1.1. National Grid Electricity Transmission plc ('National Grid') is making an application via Section 37 of the Electricity Act 1989 to the Department for Business, Energy and Industrial Strategy (BEIS) in respect of overhead line works relating to a proposed Grid Supply Point (GSP) substation, off the A131, near Wickham St Paul.

1.1.2. As explained in Sections 1.2 and 2 of this report, the overhead line works are required to facilitate the construction and operation of a proposed GSP substation in connection with the proposed reinforcement of the 400kV transmission network between Bramford Substation in Suffolk and Twinstead Tee in Essex. The proposed GSP substation will allow the removal of approximately 25km of existing 132kV overhead line, which is proposed as part of the wider Bramford to Twinstead reinforcement project (hereby referred to as the 'wider reinforcement project'), a Nationally Significant Infrastructure Project (NSIP) being progressed separately via the Development Consent Order (DCO) regime. A separate Town and Country Planning Act (TCPA) application was submitted to Braintree District Council in April 2022 for the proposed GSP substation (planning portal reference: 22/01147/FUL).

1.1.3. The overhead line works fall within the administrative boundary of Braintree District Council, within the parishes of Bulmer and Twinstead and are located west of the A131, approximately 1km east of Wickham St Paul. The location of the overhead line works is shown in Figure 1.

1.1.4. The layout of the overhead line works is shown on Figure 2 and consists of:

- A temporary diversion of approximately 700m of the northern circuit of the existing 400kV overhead line for up to a year. This would include a temporary pylon covering two spans with a height of between approximately 44m and 48m above ground level.
- Air insulating conductors, hereby referred to as 'downleads,' forming part of a new 132kV cable sealing end platform pylon. The stretches of conductor that require Section 37 consent are themselves less than 15m in length and form part of a single pylon.

1.1.5. The existing 400kV overhead line proposed to be diverted is owned and operated by National Grid. The existing 132kV overhead line is operated by the Distribution Network Operator (DNO) (UK Power Networks; UKPN).

1.2 Bramford to Twinstead Wider Reinforcement Project

1.2.1. National Grid owns, builds and maintains the electricity transmission network in England and Wales. Under the Electricity Act 1989, National Grid holds a transmission licence, through which it is required to develop and maintain an efficient, coordinated and economical electricity transmission system. National Grid is also required to consider ways to preserve amenity under Schedule 9 of the Electricity Act 1989.

1.2.2. National Grid intends to submit an application for a development consent order (DCO) for the wider reinforcement project, necessary to continue to meet power supply and demand by the end of the decade.

1.2.3. The wider reinforcement project would be approximately 29km long, comprising approximately 19km of overhead line and approximately 10km of underground cable. It includes removal of 25km of existing 132kV overhead line between Burstall Bridge and Twinstead Tee, which means that alternative arrangements must be put in place to secure the supply of the local electricity distribution network. This would be achieved by the proposed GSP substation, which would transform the voltage from 400kV to 132kV, to connect the high voltage line to the local distribution network.

1.2.4. National Grid is also proposing accompanying works that will facilitate the use of the proposed GSP substation. The accompanying works largely comprise electric line works of various types which would be consented where necessary through different regimes to the proposed GSP substation itself. They would either be consented pursuant to Section 37 of the Electricity Act 1989 or under permitted development rights (including where Section 37 exemptions apply).

1.2.5. The overhead line works that are the subject of this report form part of the accompanying works and require consent via Section 37 of the Electricity Act 1989. They would facilitate the construction and operation of the proposed GSP substation, enabling the wider reinforcement project to be implemented.

1.3 Consenting Approach

1.3.1. The overall consenting approach for the overhead line works, proposed GSP substation and other accompanying works required to facilitate the proposed GSP substation and wider reinforcement project is set out in Table 1.1. The overhead line works pursuant to this application for Section 37 Consent are numbered 9 and 10 in Table 1.1 and shown in Figure 2.

1.3.2. It is likely that the overhead line works and proposed GSP substation will also be included within the application for Development Consent as 'associated development'. Accordingly, a 'twin track' planning strategy is being progressed. This is an accepted approach to the early delivery of enabling works in advance of DCOs.

Table 1.1: Overall Consenting Approach

Ref:	Description of Works	Proposed Consenting Route
1.	A new 400/132 kilovolt (kV) Grid Supply Point (GSP) substation including two supergrid transformers (SGTs), associated buildings, equipment, and switchgear, a single circuit cable sealing end compound, a new permanent vehicular access to the public highway, associated landscaping (including boundary fencing, an area for Biodiversity Net Gain, and landscape mounding) and drainage	Planning permission (pursuant to TCPA 1990) & S278 agreement for bellmouth (pursuant to Highways Act 1980).
2.	Connection into the overhead line works from the existing 400kV pylon in the southeast of the site boundary via downleads and reconfigured cross arms on the pylon.	Permitted development via General Permitted Development Order (GPDO) (Schedule 2, Part 15, Class B(a)).

		Electricity Act consent not required (National Grid land) (Electricity Act, S.37(2)(b)).
3.	Removal of the existing 400kV pylon (Pylon 4YL81) to the southwest of the overhead line works and erection of a replacement 400kV pylon (Pylon 4YL81a) approximately 63m west of the existing pylon. The existing pylon is 50.04m above ground level while the replacement tower would be approximately 55.00m above ground level.	Permitted development via GPDO (Schedule 2, Part 15, Class B(a)) Electricity Act consent not required (National Grid land) (Electricity Act, S.37(2)(b)).
4.	Downleads installed on the replacement 400kV pylon to the new 400kV single circuit sealing end enclosure.	Permitted development via GPDO (Schedule 2, Part 15, Class B(a)). Electricity Act consent not required (National Grid land) (Electricity Act, S.37(2)(b))
5.	A new 400kV underground cable connecting the overhead line works to the 400kV single circuit sealing end enclosure.	Permitted development via GPDO (Schedule 2, Part 15, Class B(a)).
6.	Two new 132kV underground cables connecting the overhead line works with a new cable sealing end (CSE) platform pylon on the existing 132kV overhead line east of Wickham St Paul.	Permitted development via GPDO (Schedule 2, Part 15, Class B(a)).
7.	Removal of an existing 132kV pylon (PCB98) and erection of a new 132kV CSE platform pylon (PCB98A), approx. 29.3m in height, in the same location.	Permitted development via GPDO (Schedule 2, Part 15, Class B(a)) in combination with Electricity Act (S.37(2)(c)) relying upon an exemption set out in the Overhead Line Exemption Regs (3(1)(e)).
8.	132kV cable running from below ground electric line to the tower mounted cable sealing end unit. Cable attached to the base part of PCB98A for its entire length.	Permitted development via GPDO (Schedule 2, Part 15, Class B(a)) in combination with Electricity Act (S.37(2)(c)) relying upon an exemption set out in the OHL Exemption Regs (3(1)(a)).
9.	Air insulated electricity conductor downleads running from the tower mounted cable sealing end unit to the horizontal electricity conductors.	Section 37 Consent.
10.	Temporary diversion of the existing 400kV overhead line to facilitate installation of the new replacement pylon. The temporary diversion may be in place for approximately 1 year and be approximately 700m long. It would include a temporary pylon with a height of between approximately 44m and 48m above ground level.	Section 37 Consent will be required due to length of time in situ.
11.	Temporary diversion of the existing 132kV overhead line for approximately 650m (for approximately three months), including a temporary pylon to facilitate installation of the new 132kV CSE platform pylon.	Permitted development via GPDO (Schedule 2, Part 15, Class B(a)) in combination with Electricity Act (S.37(2)(c)) relying upon an exemption set out in the Overhead Line Exemption Regs (3(1)(c)).
12.	Other associated temporary enabling construction phase works including temporary access tracks, temporary compounds, and diversion of fibre optic wire.	Permitted development via GPDO (Schedule 2, Part 4, Class A, Schedule 2, Part 9, Class E and/or Schedule 2, Part 2, Class B)

1.4 Report structure and Supporting documentation

1.4.1. The remaining sections of the report comprise the following:

- Section 2 – Need for the Overhead Line Works: explains that the overhead line works are required to facilitate the construction and operation of the proposed GSP substation in connection with the wider reinforcement project.
- Section 3 - Description of the Overhead Line Works: sets out a description of the temporary diversion of the existing 400kV overhead line and the downleads on the 132kV cable sealing end platform pylon. This includes a description of their construction and operation;
- Section 4 - Consultation: explains the consultation undertaken to date;
- Section 5 - Environmental Appraisal: presents a summary of the assessment;
- Section 6 - Planning Appraisal: considers relevant planning policy and how the overhead line works accord; and
- Section 7 - Conclusion: explains that no significant adverse effects are anticipated to arise from the proposed overhead line works to weigh against granting consent under Section 37 of the Electricity Act 1989.

1.4.2. Reference is made to the following supporting Figures and Appendices:

- Figure 1: Location plan;
- Figure 2: Layout of the overhead line works;
- Figure 3: Constraints Plan;
- Appendix 1: Construction and Environmental Management Plan (CEMP);
- Appendix 2: Landscape and Visual Appraisal (LVA);
- Appendix 3: Biodiversity Baseline;
- Appendix 4: Historic Environment Baseline;
- Appendix 5: Flood Risk Assessment; and
- Appendix 6: Consultation.

2. Need for the Overhead Line Works

2.1 Moving towards net-zero

2.1.1. Tackling climate change is the biggest challenge facing our generation. The UK Government's Energy White Paper (BEIS 2020[1]) sets a world-leading target to tackle climate change, committing to cleaning up the UK energy system and reaching net-zero carbon emissions by 2050. The transition to clean energy is critical to help the UK achieve this goal.

2.1.2. National Grid is investing heavily into 'reconfiguring' the electricity network in the East of England, in order to facilitate this energy transition. This includes various upgrades to existing parts of the network, such as installing power control devices at substations, increasing the voltages of certain lines, and re-wiring others with larger conductors that carry more power.

2.1.3. Some parts of the network require upgrades and reinforcement to continue to provide a safe and secure network. This includes the wider reinforcement project between Suffolk and Essex. There will also need to be new projects to increase capacity on the network beyond what upgrades to existing infrastructure can provide.

2.1.4. The level of generation and interconnection capacity expected to connect in East Anglia is significant and is largely driven by new nuclear, offshore wind and interconnection capacity as the UK drives towards net-zero. The limited number of physical routes for electrical power to flow in and out of the region limits the amount of additional generation that can be incorporated to the electricity transmission system without further reinforcement.

2.1.5. The wider reinforcement project, therefore, has been identified as 'critical' in all future energy scenarios in the 2020, 2021 and 2022 editions of the Network Options Assessment report and concludes that the reinforcement needs to be in place by Autumn 2028. Hence, this reinforcement must now be taken forward to help make the transition to a cleaner greener energy future as we strive towards net-zero by 2050.

2.1.6. The overhead line works pursuant to this application for Section 37 Consent are required to facilitate the construction and operation of the proposed GSP substation in connection with the reinforcement of the 400kV transmission network between Bramford Substation and Twinstead Tee ('the wider reinforcement project').

2.2 Construction Sequencing

2.2.1. To construct the wider reinforcement project in the future, three key stages must happen in sequential order:

- Firstly, the proposed GSP substation, overhead line works and other accompanying works in Table 1.1 must be constructed and operational. This is a technical necessity, required to replace distribution network capacity.

[1] Secretary of State for Business, Energy and Industrial Strategy, The Energy White Paper Powering our Net Zero Future, December 2020

- Only once the proposed GSP substation, overhead line works, and other accompanying works are operational can the 25km stretch of existing 132kV line between Burstall Bridge and Twinstead Tee be removed.
- Once the existing 132kV line between Burstall Bridge and Twinstead Tee is removed, the wider reinforcement project can be constructed.

2.2.2. The wider reinforcement project is required to be operational by 2028, to support the Government objectives for up to 50GW of offshore wind energy by 2030, tackling climate change and cleaning up the UK energy system, and reaching net-zero carbon emissions by 2050.

2.2.3. Therefore, it is important that the overhead line works and proposed GSP substation are delivered as early as feasible. The programme anticipates delivery of the overhead line works and proposed GSP substation by mid-2024, which would allow the commencement of the wider reinforcement project (subject to development consent from the Secretary of State) no earlier than late 2024.

3. Description of the Overhead Line Works

3.1 Introduction

3.1.1. Figure 1 shows the location of the overhead line works. The temporary 400kV overhead line diversion is proposed between Butler's Wood and Waldegrave Wood, off the A131, approximately 5km south of Sudbury and 1km northeast of Wickham St Paul. The downleads on the 132kV cable sealing end platform pylon are located approximately 200m south of Old Road, approximately 500m west of the A131 and 1km east of Wickham St Paul.

3.1.2. Figure 2 shows the design of the overhead line works that are subject to Section 37 consent and which are considered in this report. Figure 2 also shows the layout of the accompanying works and proposed GSP substation outlined in Table 1.1 and their various consenting routes. The overhead line works subject to Section 37 consent and the subject of this report consist of a temporary 400kV overhead line diversion and downleads on a 132kV cable sealing end platform pylon. A description of their construction, operation and decommissioning is set out below. Reference numbers (e.g. Ref: 1-12) are used according to Table 1.1 and Figure 2.

3.1.3. There is not anticipated to be any tree removal required as part of the overhead line works but there may be some pruning of overhanging branches along the existing access tracks to avoid damage to trees during construction.

3.2 Construction

Temporary 400kV Overhead Line Diversion

3.2.1. A temporary 400kV overhead line diversion is required on the northern circuit of the existing 400kV overhead line (Ref: 10) to enable the removal and replacement of existing 400kV pylon 4YL81 (Ref: 3). This will allow downleads to be connected into a proposed single circuit cable sealing enclosure (Ref: 1) that will facilitate connection into the 132kV network.

3.2.2. The temporary 400kV overhead line diversion would require the building of foundations for a temporary pylon to the north of the existing overhead line. This would involve excavation of the topsoil and digging the trench for the foundation. Subject to further ground investigations, piling may be required for the foundation of the temporary pylon. The pylon would be erected by a crane, which would be situated on a platform of stone to protect the underlying soil following removal of topsoil. It is currently expected that topsoil and subsoil would be temporarily stored separately within the working area and no soil would be removed offsite.

3.2.3. A pulling site would be established at one end with the conductors running out from a tensioning site at the other end, to keep the wires off the ground. The pulling site and tensioner site consist of a pulling/tensioning machine. This would usually be positioned on an aluminium trackway to support the machinery and to provide a safe working zone. When the conductor is fully 'run out', it would be fastened at its finished tension and height above ground by linesmen working from platforms on the pylons and suspended from the conductors. Additional fittings, such as spacers (to prevent the conductors from touching

each other) and dampers (to prevent oscillations in the overhead line), would be fitted to the conductors.

3.2.4. The temporary 400kV overhead line would be accessed via a new access road off the A131 (Ref: 1), proposed as part of the GSP substation. This would be the new permanent access road installed as part of the construction of the GSP substation, which would be surfaced and designed to highways standards. There would also be a temporary access extending north from Old Road (Ref: 12) located via an existing farm type access track which is currently used when necessary to inspect and maintain the existing 400kV overhead line. This temporary track would either have the topsoil excavated and covered in crushed stone or have trackway matting (aluminium or plastic) applied to protect the soil during construction.

3.2.5. It is expected that the works to erect the temporary pylon and temporarily divert the existing 400kV line would take approximately two to four weeks. This would occur after the main civil works for the proposed GSP substation (Ref: 1). The exact timescales would be dependent on the outage required to facilitate the diversion, which will take into account wider network considerations. The duration of the temporary diversion would be dictated by when outages can be taken and is likely to be in place for up to a year. While it would be unmanned during operation, its operation would coincide with the construction of the proposed GSP substation (Ref: 1).

3.2.6. The temporary diversion would be for the northern circuit only. It would be approximately 700m long and include a temporary pylon with an approximate height of between 44m and 48m above ground level. The existing 400kV pylons are approximately 50m above ground level.

Downleads on the 132kV Cable Sealing End Platform Pylon

3.2.7. Prior to the downleads being installed, the existing 132kV overhead line would be temporarily diverted (Ref: 11) to allow the 132kV cable sealing end platform pylon to be erected at the same location as the existing 132kV pylon PCB98 (Ref: 7). Two new 132kV underground cables would connect the proposed GSP substation (Ref: 1) with the 132kV cable sealing end platform pylon (Ref: 6). The 132kV underground cables would run from below ground to the pylon mounted cable sealing end unit and would be attached to the base part of the 132kV cable sealing end platform pylon for their entire length (Ref: 8) As detailed in Table 1.1, these accompanying works would take place pursuant to permitted development rights**.** The downleads would connect the horizontal 132kV overhead line conductors to the cable sealing end units (Ref: 9). They would be installed by linesman utilising scaffolding installed to protect the cable sealing ends from the weather whilst the 132kV underground cables are terminated on to the cable sealing end unit.

3.2.8. The 132kV cable sealing end platform pylon would be accessed via one of two temporary access tracks adjoining Old Road to the north. These temporary accesses would use existing farm type accesses currently used when necessary to inspect and maintain the existing 132kV overhead line. The temporary access would either have the topsoil stripped and covered in crushed stone or have trackway matting (aluminium or plastic) applied to protect the soil during construction.

3.2.9. As explained in Section 5.1 of this report, given the very minor nature of the downleads on the 132kV cable sealing end platform pylon, their construction would have very limited potential cause impacts and they are therefore not considered in the environmental appraisal presented in Section 5. The potential for impacts resulting from the temporary

access tracks shown on Figure 2 are considered in Section 5.4 (Biodiversity), Section 5.7 (Agriculture and Soils) Section 5.8 (Traffic and Transport).

Materials

3.2.10. The overhead line works would require the use of new materials during construction including steel, concrete for the temporary pylon foundations, insulator sets and aluminium conductors (wire). The nature of the overhead line works means that it is difficult to use secondary sources, as this can affect the operating and design life. However, National Grid has existing processes in place to source material from sustainable sources and to use recycled materials where these do not compromise the required design standards and operational life.

3.2.11. It is currently expected that no soil would need to be removed from the area of works.

3.3 Operation

Temporary 400kV Overhead Line Diversion

3.3.1. As explained in Section 3.2, the temporary 400kV overhead line is a short term requirement, coinciding with the construction of the proposed GSP substation (Ref: 1). Its duration would be dictated by when outages can be taken and is likely to be in place for up to a year. Therefore, there would be no long-term operational phase to the overhead line, and as explained in Section 5.1, operational effects are not considered in the environmental appraisal presented in Sections 5.2-5.12 of this report.

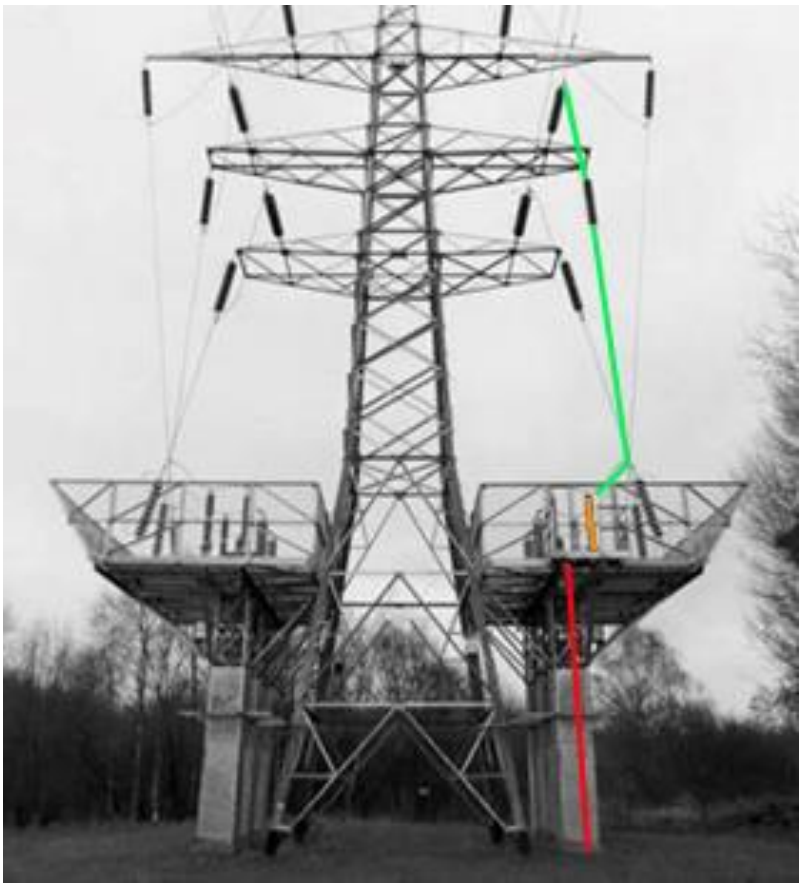
Downleads on the 132kV Cable Sealing End Platform Pylon

3.3.2. The downleads would form part of a new 132kV cable sealing end platform pylon (Ref: 7). The 132kV cable sealing end platform pylon, which is itself permitted development and exempt from Section 37 consent, would replace an existing 132kV pylon. The stretches of conductor that may require Section 37 consent are less than 15m in length.

3.3.3. Photograph 1 shows an example of downleads on a 132kV cable sealing platform pylon. The specification of the 132kV cable sealing end platform pylon and configuration of the downleads would be confirmed at detailed design by National Grid's appointed contractor. The red line indicates the 132kV cable which turns up out of the ground. This is connected to a platform mounted cable sealing end indicated in amber and this is in turn connected to air insulated downleads in green which are likely to be less than 15m long.

3.3.4. During operation, the downleads would be subject to routine maintenance checks as part of wider 132kV network inspections.

Photograph 1: Example of a 132kV Cable Sealing Platform Pylon and Downleads



3.3.5. Given the nature of the downleads and as they would be on a 132kV cable sealing end platform pylon proposed to replace an existing 132kV at the same location, the downleads on the 132kV cable sealing end platform pylon will have no effects on the receptors identified in the environmental appraisal (Section 5) during operation.

3.3.6. The overhead line works would be designed, constructed and operated in accordance with applicable health and safety legislation, complying with design safety standards including the National Electricity Transmission System Security and Quality Supply Standard (NETS SQSS), which sets out the criteria and methodology for planning and operating the National Electricity Transmission System. Furthermore, the overhead line works will comply with the Electricity Safety, Quality and Continuity Regulations 2002. All electricity companies are bound by these rules, standards and technical specifications. They are required to uphold them by their operator's licence.

3.4 Decommissioning

Temporary 400kV Overhead Line Diversion

3.4.1. Decommissioning of the temporary 400kV overhead line diversion is likely to be less than one year after its construction and would take between two and four weeks. The exact timing would depend on the agreed outage required to undertake the works.

3.4.2. The foundations of the temporary pylon would be removed to below ground level. The temporary access would also be removed. The area would be reinstated with a species-rich grassland mix as part of the planting plan for the proposed GSP substation.

Downleads on the 132kV Cable Sealing End Platform Pylon

3.4.3. There are no plans to decommission the 132kV overhead line or underground cables that the downleads on the 132kV cable sealing end platform pylon connects, as this will form an integral part of the electricity network.

3.4.4. If decommissioning were to be required, it is likely that this would be beyond 2064 to tie in with the 40 year design life of the proposed GSP substation. Decommissioning of the proposed GSP substation and accompanying works would require discussions with the DNO to agree alternative requirements for providing power to local communities and businesses.

3.4.5. At the time that decommissioning would take place, the regulatory framework, good industry practices and the future baseline could have altered. National Grid would consider and implement an appropriate decommissioning strategy taking account of good industry practice, its obligations to landowners under the relevant agreements and all relevant statutory requirements. The decommissioning works would follow National Grid processes at the time for assessing and reducing any environmental impacts and risks.

3.4.6. Decommissioning would be likely to involve removal using similar working methods to those outlined during construction. It is anticipated that any temporary access tracks and working areas required for decommissioning would be removed and the site reinstated to its former use. Decommissioning would follow the waste hierarchy such that materials would be reused where possible before recycling and disposal were considered.

3.5 Tolerance

3.5.1. A tolerance is typically applied to allow for lateral deviation from the layout of the overhead line works as shown on Figure 2. This is to allow for encountering unknown obstacles such as ground conditions that prevent construction and so a small deviation may be required. This application includes a tolerance of 10m each side of the centre line for the temporary 400kV overhead line diversion. In practice, this is unlikely to be used and there is no intention to deviate from the line shown. This is largely due to the proposed GSP substation and the existing 400kV pylons at each extent of the temporary diversion constraining deviation. The temporary pylon is expected to be between 44m and 48m above ground level and so precautionary approach is adopted for the landscape and visual appraisal presented in Section 5.2 of this report where a height of 48m is assumed.

3.5.2. With respect to the downleads on the 132kV cable sealing end platform pylon, the replacement pylon would be at the same location as the existing 132kV pylon PCB98 and would be approximately 29.3m above ground level. This necessitates the location of the downleads. The configuration of the 132kV cable sealing end platform pylon and downleads will depend on the detailed design by the main works contractor but given the very minor nature of the works, this would not affect the environmental and planning appraisals presented in Section 5 and Section 6 of this report respectively.

3.5.3. The temporary accesses also follow existing access tracks currently used for inspection and maintenance of the existing 400kV and 132kV overhead lines, limiting the likelihood of deviation.

4. Consultation and Landowner Agreements

4.1 Introduction

4.1.1. This application is made pursuant to Section 37 of the Electricity Act 1989 to BEIS. Before submitting this application, consultation has been undertaken with the host Local Planning Authorities, statutory bodies and informal discussions were held with BEIS. Consultation was also undertaken for the wider reinforcement project which the overhead line works also currently form part of.

4.2 Local Planning Authorities and Statutory Bodies

4.2.1. As part of the application process for Section 37 consent, National Grid consulted with the host Local Planning Authorities, Braintree District Council and Essex County Council. These consultations and responses received to date are contained in this application to BEIS in Appendix 6, to help inform the screening and decision-making process. This is known as the 'Form B' process.

4.2.2. National Grid has also consulted with the relevant statutory bodies; Natural England, Historic England and the Environment Agency.

4.2.3. A summary of the consultation undertaken is contained in the table below:

Consultation Body	Type of Consultation	Summary of Consultation
Braintree District Council Consulted on 14 April 2022	*Form B Part 2* *Form B Part 3* *Form B Appendix A*	A response has not yet been received from Braintree District Council; however, they have been actively engaging with National Grid on the overhead line works. The consultation sent to Braintree District Council can be viewed in Appendix 6 and the consultation is public on Braintree District Council's website. Details as to how these details can be viewed is also contained at Appendix 6.
Essex County Council Consulted on 14 April 2022	*Form B Part 2*	A response was received on 3 May 2022. The response to Form B Part 2, confirmed that Essex County Council, the host district planning authority, had no objection to the overhead line works and did not request that a public inquiry be held pursuant to those works.
Historic England Consulted on 18 March 2022	*Standard Consultation and Screening*	A response was received on 20 May 2022. The Consultee firstly identified their roles and responsibilities and provided heritage advice. The Consultee's comments focused on aspects of the works which fall outside the consenting regime for the Section 37 Consent such as the proposed GSP substation (Ref: 1), underground cables (Ref: 6), and single circuit cable sealing end compound (Ref: 1). Nevertheless, the Consultee considers that the mitigation proposed in respect to Butlers Hall Farmhouse, may be acceptable. Potential impacts on the setting of Butler's Hall Farm are considered in Section 5.4 of this report. The Consultee also considers that the visual impact of the downleads and the cable sealing end platforms need to be carefully considered as Nether House Farm is a Grade II listed building that would have its setting affected by a larger form of pylon. Potential impacts on the setting of Nether House

		Farm that result from the temporary accesses are considered in Section 5.4. Section 5.1 explains that given the very minor nature of the downleads on the 132kV cable sealing end platform pylon described in Section 3, their construction and operation would have very limited potential cause impacts and they are therefore not considered in the environmental appraisal presented in Section 5. Finally, in respect to below ground archeology, the Consultee considers that proper consideration should be given to an archaeological strategy. Section 5.4 of the report explains the outcomes of a scope of geophysical survey and archaeological trial trenching in accordance with an agreed Written Scheme of Investigation.
Natural England Consulted on 18 March 2022	*Standard Consultation and Screening*	A response was received on 5 April 2022. The Consultee considered that no likely significant effects on statutory designated nature conservation sites or landscapes were expected, and an Environmental Impact Assessment (EIA) is, therefore, not required. The Consultee considered that while an EIA is not required, advised that sufficient information on the potential impacts of the proposal on designated sites/areas, including protected species survey and a Landscape and Visual Impact Assessment report is submitted for a DCO or any other consenting route. The Consultee provided advice in respect to protected species, ancient woodland and veteran trees, local wildlife sites and priority habitats and species, Biodiversity Net Gain and best and most versatile agricultural land and soils. Potential impacts on landscape and visual receptors, biodiversity and soils are considered in Sections 5.2, 5.3 and 5.7 of this report respectively.
Environment Agency Consulted on 18 March 2022	*Standard Consultation and Screening*	A response was received on 13 May 2022. The Consultee noted that there were very few constraints within their remit at the location of the overhead line works. They provided standard advice in respect to foul drainage, dewatering, flood risk and hydrogeology. The Consultee did not comment on whether they considered the proposed overhead line works to constitute EIA development. Potential impacts on the water environment and hydrogeology are considered in Sections 5.5 and 5.6 of this report respectively.

4.2.4. As stated in Section 1, a separate TCPA application has been submitted to Braintree District Council for the proposed GSP substation (22/01147/FUL) and this was also subject to a Screening Decision from Braintree District Council pursuant to the Town and Country Planning (EIA) Regulations 2017 (as amended). This Screening Decision also considered the overhead line works in combination with the proposed GSP substation to give a comprehensive understanding of the potential for likely significant cumulative effects resulting from the proposals as a whole. It was concluded by Braintree District Council that there would be no likely significant effects for the proposed GSP substation either alone or in combination with the overhead line works and that a statutory EIA was not required.

4.3 Landowner Agreements

4.3.1. In accordance with Paragraph 6(1) (b) of Schedule 8 of the Electricity Act 1989, the Applicant is required to identify to the Secretary of State, whether the necessary wayleaves for the overhead line works have been agreed with the landowner.

4.3.2. In respect to the temporary 400kV overhead line diversion, National Grid will have control of the land by virtue of a proposed lease that forms part of a wider acquisition to construct and operate the proposed GSP substation. The rights are to be included in agreements which are currently being negotiated with the parties' respective solicitors.

4.3.3. In respect to the downleads on the 132kV cable sealing end platform pylon this is covered by a Deed of Grant with the DNO (UKPN) which originates from the 1960s, and National Grid has permanent rights to renew this. As the 132kV cable sealing end platform pylon is proposed to be in the same location as the existing 132kV pylon PCB98, it is considered that National Grid has the enduring land rights. Nevertheless, to ensure the overhead line works proposed are covered by a legal agreement with the DNO, the rights for the downleads are to be included in the option agreement which is currently being negotiated with the parties' respective solicitors.

4.3.4. Under existing land agreements, National Grid have the general right to erect, maintain, use, repair, renew, inspect and remove the apparatus associated with the existing 400kV and 132kV lines. There are a number of existing accesses and trackways off Old Road for this purpose which are also used as field accesses by the landowners. It is proposed to use these existing access points for the construction and maintenance of the overhead line works. Nevertheless, to ensure the overhead line works proposed are covered by a legal agreement with the DNO, the rights of access are also to be included in the option agreement which is currently being negotiated with the parties' respective solicitors.

5. Environmental Appraisal

5.1 Introduction

General Approach

5.1.1. This section summarises the general approach to the environmental appraisal of potential impacts resulting from the overhead line works, and methods to avoid or reduce them.

5.1.2. In accordance with good practice and to consider pre-application advice for the overhead line works from BEIS and from Braintree District Council for the proposed GSP substation that is considered relevant to the overhead line works, the following topics are considered within Sections 5.2-5.12 of this environmental appraisal:

- Landscape and Visual;
- Biodiversity;
- Historic Environment;
- Water Environment;
- Geology and Hydrogeology;
- Agriculture and Soils;
- Traffic and Transport;
- Air Quality;
- Noise and Vibration;
- Other Issues (socio-economics, health and electromagnetic fields, major accidents and climate); and
- Cumulative Effects.

5.1.3. The environmental appraisal firstly describes the baseline. This is the reference level of the environmental conditions without implementation of the overhead line works and accompanying works, against which the potential impacts are assessed. Desk-based studies have been undertaken to inform the baseline using available data held in the public domain which is referenced throughout. Site surveys have also been undertaken to inform the appraisal. These are described in Sections 5.2 – 5.12 of this report.

5.1.4. Where sensitive receptors are identified, the potential impact to the baseline is then assessed. The acceptability of the overhead line works and their potential impacts are considered against local and national planning policy in Section 6 (Planning and Policy) of this report.

5.1.5. As explained in Section 3, the temporary 400kV overhead line diversion would occur within the construction phase for the proposed GSP substation and would be in place for up to a year. Given the short term nature of the diversion and that fact it is a construction activity, only the potential for construction impacts are reported. However, short term

operational and decommissioning impacts associated with the temporary 400kV overhead line diversion have been considered as part of the construction impacts.

5.1.6. The very minor nature of the downleads on the 132kV cable sealing end platform pylon described in Section 3 means that there is very limited potential for them to result in impacts and they are therefore not considered further in the environmental appraisal. The potential for impacts resulting from the temporary access tracks shown on Figure 2 are considered where appropriate e.g. Section 5.3 (Biodiversity), Section 5.7 (Agriculture and Soils) and Section 5.8 (Traffic and Transport).

5.1.7. The appraisal takes into account the tolerances described in Section 3.5 of this report where appropriate. For example, the LVA (Section 5.2) adopts a precautionary approach and assumes a temporary pylon height of up to 48m. It is considered that the 10m tolerance for the temporary 400kV overhead line diversion would not materially affect the environmental appraisal given the neighbouring arable habitat and the lack of sensitive receptors within 10m. Furthermore, it is recognised that there may be minor refinements as part of the detailed design developed by National Grid's appointed contractor. Nevertheless, the environmental appraisal is precautionary to incorporate potential minor amendments to the design that could occur.

5.1.8. The appraisal also takes into account a number of environmental commitments, good practice measures and construction methodologies to avoid or reduce potential impacts. These are set out in the CEMP (Appendix 1) and Code of Construction Practice (CoCP; Annex 1 of the CEMP) which are explained below.

Construction Environment Management Plan

5.1.9. National Grid has prepared a CEMP (Appendix 1) for the proposed GSP substation and the accompanying works. This sets out the measures to help avoid or reduce potential effects on the environment during construction and, while not all measures are relevant for the overhead line works, most are. As such, and as the works will be undertaken by the same contractor to be appointed by National Grid for the proposed GSP substation, the CEMP is included in Appendix 1 of this report. Measures are referred to within Sections 5.2-5.12 of this environmental appraisal.

5.1.10. The CEMP has also been submitted with the planning application for the proposed GSP substation.

Code of Construction Practice and Good Practices Measures

5.1.11. The CEMP includes environmental commitments and good practice measures which have been identified as part of the wider reinforcement project. Some of these good practice measures and commitments are relevant for the overhead line works and would be implemented during construction. These measures are referenced within Annex 1 (CoCP) of Appendix 1(CEMP).

5.1.12. Each good practice measure has been assigned a reference number, for example GG01. The commitment numbering has been kept consistent with the CoCP for the wider reinforcement project, and the numbering is therefore not consecutive in all cases, as commitments not relevant to the overhead line works and proposed GSP substation have been excluded from this focused appraisal. This is for ease of cross-reference to other documents.

5.1.13. The measures are either imposed through legislative requirements or represent standard sector good practices. As such, the assessment of likely effects presented in Sections 5.2 – 5.12 takes cognisance of the good practice measures within the CoCP.

5.2 Landscape and Visual

Baseline

5.2.1. Informed by the type and scale of the overhead line works, the study area is defined by a 2km radius from the overhead line works. The extent of the study area has been informed by professional judgement gained from similar scale projects which suggest that at distances greater than 2km, notable effects on landscape character and visual amenity are unlikely to occur.

Landscape

5.2.2. The study area comprises gently undulating landform at around 80m to 85m AOD (as illustrated in Figure A2.2). Medium to small scale, irregular arable fields are enclosed by hedgerows and interspersed with small to medium sized blocks of woodland and linear belts of trees along roads and watercourses. These together with the undulating landform, frequently frame and filter views. The A131 runs in a broadly north-south orientation through the centre of the study area. Numerous local roads traverse the area, often sunken and bordered by hedgerows which restrict views.

5.2.3. A network of local Public Rights of Way (PRoW) connects properties and settlements. The Painters Trail promoted cycle route is located approximately 1.3km to the northeast of the overhead line works. There are no other long distance trails within the study area.

5.2.4. There are a number of small settlements including Wickham St Paul, Bulmer and Twinstead. Isolated properties and small hamlets are scattered across the study area. The existing 400kV and 132kV overhead lines traverse the study area in a broadly east-west orientation. The overall character is of a well settled rural landscape.

5.2.5. There are no landscape designations within the study area.

5.2.6. The Stour Valley Project Area lies approximately 1.1km to the east of the overhead line works. While not a designated landscape in itself, the Stour Valley Project Area has been described as having similar picturesque landscape qualities to Dedham Vale Area of Outstanding Natural Beauty (AONB), which lies approximately 7.7km to the east of the overhead line works (Land Use Consultants, 2018). As a consequence of the limited intervisibility between the site and the Stour Valley Project Area, combined with distance, it is considered that there would be no effects on the Stour Valley Project Area which is not considered further within the appraisal.

5.2.7. Appendix 2 (LVA) describes the landscape character of the study area using published national, county and district scale Landscape Character Types (LCT) and/or Landscape Character Areas (LCA) and, given the age of the landscape character assessments, a detailed landscape analysis established through desk study and field work.

5.2.8. The overhead line works fall within arable farmland between two large blocks of ancient woodland (Butler's Wood and Waldegrave Wood) and to the south west of the woods. Extensive belts of new vegetation, including shelterbelts, hedgerows and scattered trees, have been planted on the farmland to the west. Although the published landscape character area descriptions state that that tranquility is a key characteristic of the wider

LCAs, the landscape in the vicinity of the overhead line works is heavily influenced by the proximity to the A131, in addition to the existing 132kV and 400kV overhead lines.

Visual

5.2.9. Site visits have been undertaken to verify the receptors that would be likely to experience views of the overhead line works. Using site surveys and professional judgement, visual receptors have been identified as set out within Table 5.2 below.

Table 5.2: Visual Receptors

Receptor	Description and Value
Local PRoW network	There are no National Trails or long distance footpaths in the study area. There are however a number of PRoW in the area, some of which have views towards the proposed overhead line works, particularly from PRoW in close vicinity to the west. Views towards the proposed overhead line works from PRoWs to the north and south are generally restricted by woodland, although there are some views possible from PRoWs to the south
Cycle Routes	There are no regional or National Cycle Networks in the study area. The Painters Trail promoted cycle route, which uses a mixture of quite roads and well surfaced tracks, is located approximately 1.3km to the northeast.
Local community - settlements	Small parts of the local community within northern extents of the hamlet of Twinstead Green lie approximately 300m southeast. The nearest villages to the location of the proposed overhead line works, within the landscape and visual study area, are Wickham St Paul (to the west) and Twinstead (to the east), both approximately 1km away. Slightly further away to the north and northeast are the hamlets of Bulmer Tye and Great Henny and the small village of Little Henny (approximately 1.5 to 2km away). Views toward the proposed overhead line works from these locations are generally limited by intervening hedgerows and mature trees and also the existing large woodland blocks immediately to the north and south. The settlements of Gestingthorpe and Audley End are located to the north west outside the study area (approximately 2.9km).
Local community – scattered properties	Isolated and small groups of properties are scattered across the study area. The nearest are the few individual farmsteads and other groups of houses approximately 210m away to the west of the temporary access, located on Old Road.

5.2.10. A total of 13 viewpoints have been selected for the LVA of the overhead line works through desk study, site work and consultation with stakeholders as part of the planning application for the proposed GSP substation. The viewpoints are representative of different types of receptors at a range of distances and viewing angles. These are presented in Table 3.5 of Appendix 2 (LVA).

Measures to Avoid or Reduce Impacts

5.2.11. Good practice measures that would avoid or reduce Landscape and Visual Environment impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP).

5.2.12. These include the following commitments:

- GG07: Land used temporarily will be reinstated where practicable (bearing in mind any restrictions on planting and land use) to its pre-construction condition and use.
- LV03: A five-year aftercare period will be established for all reinstatement and proposed planting.

Potential Impacts

5.2.13. The following potential impacts have been identified taking into account the measures identified in paragraphs 5.2.11 to 5.2.12.

Construction

Landscape

5.2.14. With respect to potential impacts on landscape character during construction, the construction operations would temporarily introduce increased levels of activity and vertical infrastructure within the landscape. Construction would require machinery and possibly cranes; these would be different to those typically notable in the landscape as part of regular farming practice.

5.2.15. Construction operations are considered to be short term, temporary effects and activity would be focused on a small part of the landscape. As such, the overhead line works are not expected to result in any notable effects on landscape designations or landscape character during construction.

Visual

5.2.16. People living and moving within and around local communities whose views are most likely to be affected during construction are those located close to the overhead line works. Due to the positioning of the temporary pylon between Butler's Wood and Waldegrave Wood, views of the construction would be partially screened or filtered to some extent from the majority of the local community.

5.2.17. There are some views towards the temporary pylon from the individual farmsteads and other small groups of scattered houses, but intervening vegetation is expected to limit these. Views from Wickham St Paul and Twinstead Green would likely be limited and filtered by intervening hedgerows and mature trees. Views from Twinstead, Great Henny and Little Henny, Gestingthorpe and Audley End would be more distant and likely filtered again by intervening vegetation. It is unlikely that there would be views of the construction from Bulmer Tye. The temporary access tracks are unlikely to be visible from the local community.

5.2.18. The local community travelling along the A131 may have glimpsed views of the temporary pylon from a very short section of the road immediately adjacent. Views from the local community travelling along other roads in the area would be generally limited and intermittent as minor roads and lanes are characteristically sunken and hedge-lined and the two adjacent woods screen many views.

5.2.19. People engaged in outdoor recreation who are likely to have views of the overhead line works include people using PRoWs in the area, particularly to the west in closer proximity to the temporary pylon. It is also considered likely that also there would be visual effects on recreational receptors within close proximity due to the presence of construction traffic, equipment and storage of materials and construction activities, these would be short term and temporary in nature.

5.2.20. Construction operations are considered to be temporary effects and activity would be focused on one part of the landscape to enable construction. Given the short term, temporary nature of the construction works together with the presence of intervening vegetation is the overhead line works are not expected to result in notable visual effects.

5.3 Biodiversity

Baseline

5.3.1. The full baseline for biodiversity is reported in Appendix 3 (Biodiversity Baseline), which detail the results of the desk study and field survey. The baseline data as relevant to the overhead line works is presented below.

Statutory and Non-Statutory Designated Sites

5.3.2. There are no Special Areas of Conservation (SAC) within 30km of the overhead line works for which bats are a qualifying feature (bats are the only qualifying feature that requires a 30km search area). There are no SACs, Special Protection Areas (SPA) or Ramsar sites within 2km of the overhead line works or have any hydrological connection with the overhead line works. There are no National Nature Reserves, Sites of Special Scientific Interest (SSSI) or Local Nature Reserves within 2km of the overhead line works.

5.3.3. Butler's Wood and Waldegrave Wood, immediately adjacent to the temporary 400kV overhead line are both Local Wildlife Sites (LoWS) designated for their ancient woodland habitat.

5.3.4. Additional LoWS are located within approximately 2km of the overhead line works (Appendix 3: Biodiversity Baseline) but there are no effect pathways between these and the overhead line works.

Habitats

5.3.5. Butler's Wood, Waldegrave Wood, Parsonage Wood and Almshouse Wood are all listed on the Ancient Woodland Inventory (AWI) and located within 2km of the overhead line works. Within 2km there are additional area of deciduous woodland which have the potential to be Habitats of Principal Importance (HPI) and small areas of Traditional Orchard HPI.

5.3.6. The area surrounding the overhead line works comprises arable land, bordered by the Butler's Wood LoWS and ancient woodland to the north and the Waldegrave Wood LoWS and ancient woodland to the south. Further arable land lies to the west and to the east of the A131. Grass dominated dry ditches run adjacent to the woodland boundaries and run in a north-south direction crossing perpendicular to the temporary 400kV overhead line diversion. Priority habitat hedgerows run parallel to the west of the A131 running north to south between Butler's and Waldegrave Wood, either side of Old Road and running adjacent the temporary accesses connecting north from Old Road to the west of the temporary 400kV overhead line diversion and south to the 132kV CSE platform. These hedgerows are not considered important for biodiversity reasons according to the under the Hedgerow Regulations 1997. Their importance with respect to the historic environment is considered in Section 5.4.

Species

5.3.7. No protected or notable species were identified in the desk study associated to the overhead line works. The desk study has identified the presence of great crested newt

(GCN) (*Triturus cristatus*), badger (*Meles meles*) and breeding birds within approximately 1km of the overhead line works.

5.3.8. Floral species of interest are restricted to woodland habitats, where bluebell (*Hyacynthoides non-scripta*) and wood sorrel (*Oxalis acetosella*) have been recorded.

5.3.9. A programme of protected species survey was undertaken in 2021 and 2022 with results reported in Appendix 3 (Biodiversity Baseline). Habitat suitable to support reptiles and roosting bats is associated with the adjacent woodland habitat and edges. Nearby hedgerows and adjacent woodland habitat have potential to support dormice. In summary, no protected species or notable species were identified associated with the overhead line works during the surveys. Protected species are present in the wider environment, some in close proximity to the proposed overhead line works.

5.3.10. Results from field surveys within their respective survey areas comprised:

- eDNA GCN surveys: confirmed presence of GCN within 250m of the overhead line works.
- Bat roost surveys: trees with the potential to support roosting bats were identified within 50m of the overhead line works. Bat surveys identified a bat roost within Waldegrave Wood supporting a minimum of two Natter's bat (*Myotis nattereri*) within 140m of the overhead line works. Numerous bat species were recorded within 50m foraging and commuting in the woodland habitats, including barbastelle bat (*Barbastella barbastellus*), one of the UK rarer species.
- Badger survey: badger setts were identified approximately 80m from the overhead line works. These were either disused or were outlier setts with entrances and tunnel directions heading into the woodland away from the works.

5.3.11. Previous dormouse surveys undertaken by Suffolk Wildlife Trust in 2012 of Butler's Wood, Waldegrave Wood and the hedgerow that connects the two areas of woodland adjacent to the A131 did not record any dormouse presence. The nearest positive survey result was located 2km east at Loshes Meadow. However, desk study suggests an expansion in dormouse presence in the area and a precautionary approach is therefore being taken and dormice are assumed to be present within the hedgerow adjacent to the A131 and woodland adjacent to the overhead line works.

5.3.12. The hedgerows running adjacent the temporary accesses connecting north from Old Road to the west of the temporary 400kV overhead line diversion and south to the 132kV CSE platform do not provide connectivity between woodland areas. However similarly a precautionary approach is being taken and dormice are assumed to be present within the hedgerow.

Invasive Non-Native Species

5.3.13. No Invasive Non-Native Species (INNS) were identified during the site survey. Variegated yellow archangel (*Lamiastrum galeobdolon* subsp. *argentatum*) was recorded in Waldegrave Wood during field surveys in 2021.

Measures to Avoid or Reduce Impacts

5.3.14. Good practice measures that would avoid or reduce Biodiversity impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP). This includes training on environmental issues (GG05), details on construction lighting to reduce luminosity and

intrusion into adjacent habitats (GG20), measures to reduce the risk of entrapment (B03) and measures to control the spread of invasive weeds (B04).

5.3.15. CoCP measures to be implemented during construction include dust suppression, and vehicle emissions. These would reduce potential impacts on the adjacent woodlands. CoCP measures relating to dewatering controls are also listed in Annex 1 (CoCP) of Appendix 1 (CEMP) to reduce any potential hydrological impact from construction activities.

5.3.16. Section 5 of Appendix 1 (CEMP) also explains that a preconstruction walkover survey would be undertaken to check for any change in protected species presence (e.g. badger setts) or newly established invasive non-native plant species and the measures to be taken if their presence were found.

5.3.17. A GCN District Level Licencing Impact Assessment and Conservation Payment Certificate was submitted to Braintree District Council for the proposed GSP substation. This is also submitted to BEIS as it includes the overhead line works. The final licence payment would be submitted to Natural England should the proposed GSP substation and overhead line works be consented. As such, impacts on GCN are not considered further in this appraisal.

5.3.18. While there would be no vegetation loss associated with the overhead line works and the temporary accesses would be reinstated, National Grid has a policy commitment to drive a net gain in environmental value (including biodiversity) in their construction projects and strive for more than 10% where possible (National Grid, 2022). A such, the Biodiversity Net Gain (BNG) proposals for the proposed GSP substation include BNG for the overhead line works and accompanying works described in Table 1.1.

Potential Impacts

5.3.19. The following potential impacts have been identified taking into account the measures identified in paragraphs 5.3.14 – 5.3.18.

Construction

Statutory and Non-Statutory Designated Sites

5.3.20. No potential impacts on statutory designated sites are anticipated.

5.3.21. Butler's Wood LoWS and Waldegrave Wood LoWS are designated for their ancient woodland habitats. No tree felling is required within Butler's Wood or Waldegrave Wood due to the overhead line works. The distance between the overhead line works at its nearest point and woodland habitat is over 15m and therefore avoids the potential risk of tree root damage. Furthermore, the presence of dry ditches in excess of 1m depth on the boundaries of the woodlands will constrain root growth to within the woodland.

5.3.22. CoCP measures to be implemented during construction would also reduce potential impacts on the adjacent woodlands during construction.

Habitats

5.3.23. Habitats intersected by the overhead line works are predominantly under arable land use with grassland margins. There would be temporary loss of this habitat only with reinstatement after removal of the temporary pylon.

5.3.24. The overhead line works do not require any hedgerow or tree removal and are not anticipated to have any effect on priority habitat hedgerows.

5.3.25. Short term indirect effects to general habitats, such as pollution and air quality impacts during construction would be managed through the good practice measures set out within the CoCP.

5.3.26. Temporary access tracks will be reinstated with the original topsoil following construction.

Species

5.3.27. The overhead line works do not require any hedgerow or tree removal and therefore are not anticipated to have any effect on hazel dormouse or nesting birds.

5.3.28. No other protected or notable species have been identified as associated with the overhead line works.

5.3.29. Piling activities that may be required for the temporary pylon have potential to generate in excess of 65dB and may generate short term disturbance to species during construction, specifically breeding birds and bat roosts located in adjacent woodland. However, noise levels within the woodland would be lower and unlikely to cause notable disturbance for nesting birds or the bat roost which is approximately 140m from the piling works.

5.3.30. Badger surveys and incidental sightings confirmed presence of badger in the adjacent woodland areas. The disused and outlier badger setts recorded on the boundary of Butler's Wood adjacent to the overhead line works would not be directly impacted by the works. Furthermore, the sett tunnel direction is away from the arable field edge and into the woodland while the dry ditch on the woodland edge would create a barrier effect. In addition, any artificial light used would adopt a sensitive lighting scheme (CoCP measure GG20), which would further reduce the risk of potential disturbance to nocturnal wildlife.

Invasive Non-Native Species

5.3.31. While INNS were recorded within the woodlands, no INNS were recorded at any other location during the field survey. A pre-construction ecological walk over survey would be undertaken to check whether conditions have changed. In the unlikely event INNS are identified during the preconstruction walkover then a method statement would be developed to detail management and/or treatment to reduce risks that the species are spread during the works.

5.4 Historic Environment

Baseline

5.4.1. The primary study area for physical and setting impacts has been defined as 250m from the overhead line works and has been used for data collection of all heritage assets (designated and non-designated).

5.4.2. To coincide with the landscape and visual assessment, a secondary study area for designated cultural heritage assets where the setting could be affected has been defined as 2km from the overhead line works.

5.4.3. The 2km study area is primarily restricted to designated cultural heritage assets as they are typically of a higher sensitivity than non-designated heritage assets and changes within their setting would be more likely to result in a greater impact.

5.4.4. However, the 2km study area also includes non-designated protected lanes. These are historic lanes within Essex that have been identified for protection within local planning policy. The 2km study area has been used for protected lanes as both physical and setting impacts have the potential to be present beyond the extent of the 250m study area.

5.4.5. All heritage assets within the baseline are presented in Appendix 4 (Historic Environment Baseline) and designated heritage assets and non-designated protected lanes are presented in Figure 3.

Archaeological Remains

5.4.6. Designated archaeological remains within the 2km study area comprise one scheduled monument, the 'Roman villa 480m southeast of Hill Farm' (NHLE 1011806) situated almost 2km to the northwest of the overhead line works.

5.4.7. Within the Historic Environment Record (HER), five non-designated archaeological features are situated within the 250m study area comprising:

- the cropmarks of former field boundaries ('Bulmer' (MEX1031722)). Some of the former field boundaries have been mapped during aerial investigation and mapping undertaken for the overhead line works. The eastern edge of this non-designated archaeological remain also marks the parish boundary between Bulmer and Twinstead, though the field system had already been altered by the time of the 1st Edition Ordnance Survey map (6-inch, sheet 12, published 1880). The edge which has been retained equates to a small section of the north western boundary of Waldegrave Wood and a dry ditch which extends through vicinity of the overhead line works between Waldegrave Wood and Butler's Wood;
- a second area of cropmarks of former field boundaries ('Cropmarks, Wickham St Paul' (MEX1031720). These are mainly depicted on the 1st Edition Ordnance Survey map and are also likely to date to the post-medieval period; and
- three findspots recorded through the Portable Antiquities Scheme dating to the Late Iron Age, Roman to early medieval, and post-medieval periods. Portable Antiquities Scheme findspots are sensitive information and are not located with high accuracy.

5.4.8. No archaeological anomalies were identified during archaeological Geophysical Survey undertaken within the area of the overhead line works.

5.4.9. Archaeological trial trenching was undertaken as part of the wider assessment on the proposed GSP substation in February and March 2022. This included the overhead line works areas. No dateable artefacts were recovered, and the evaluation confirmed that there was no widespread evidence of archaeological activity within the vicinity of the overhead line works.

5.4.10. The nature of the archaeological remains and the very low density of features indicates that there is a low potential for complex archaeological remains to be present within the vicinity of the overhead line works. If found, further archaeological remains are likely to be similar in character to those recorded during trial trench evaluation; i.e. comprising agricultural boundary ditches with some isolated earlier deposits, predominantly situated near to the single circuit CSE compound.

Built Heritage

5.4.11. There are no Conservation Areas within 2km of the overhead line works.

5.4.12. There are 59 listed buildings within 2km of the overhead line works, comprising four Grade II* listed buildings and 55 Grade II listed buildings. Of these, the nearest to the overhead line works comprise:

- four Grade II listed buildings associated with Gentry's Farm (Gentry's Cottage (NHLE 1337894), Cart Lodge at Gentry's Farmhouse (NHLE 1337883), Gentry's Farmhouse (NHLE 1169822), and Barn, 20 Metres south west of Gentry's Farmhouse (NHLE 1123269)). This group of buildings comprise two timber framed houses and two barns which date between the 15th to 18th centuries. They are situated linearly along Gentry's Farm Road protected lane within the wider agricultural landscape;
- Butler's Hall Farmhouse (Grade II*; NHLE 1169693) – a timber framed house with elements that date from the 15th-17th centuries. The house is set within a small plot of land with surrounding vegetation and neighbouring agricultural outbuildings, within the wider agricultural landscape; and
- Nether House Farmhouse (Grade II; NHLE 1123031) – a timber framed house which dates to the 17th century or earlier. The house is set in an agricultural landscape on the outskirts of Wickham St Paul and near to the Old Road protected lane.

5.4.13. The majority of the designated historic buildings within the baseline represent the rural nature of the area and include farmhouses, barns and other outbuildings, cottages, and churches.

5.4.14. No non-designated historic buildings, as identified within the HER or during heritage walkover survey, are situated within the 250m study area.

Historic Landscapes

5.4.15. There are no designated historic landscapes (Registered Parks and Gardens) within 2km of the overhead line works.

5.4.16. There are four protected lanes within 2km, comprising Lorkins Lane, Gentry's Farm Road, Tymperley Farm Road, and Old Road. The nearest protected lane is Old Road, which is at the entrance of the temporary access tracks. Walkover survey has identified that Old Road is characterised by roadside hedgerows and ditches, dotted with the occasional mature trees.

5.4.17. The non-designated historic landscape types (HLT) within the 250m study area predominantly comprises fields of post-1950s 'Boundary Loss' due to mechanisation and changes in agricultural practices. The surviving edges of this type are the element which holds the most historic importance but overall, this HLT may reflect several periods of field systems and is a common type within the region. One of the land parcels of 'Boundary Loss' HLT also equates to the site recorded in the HER as containing cropmarks of former field boundaries ('Bulmer' (MEX1031722)). This land parcel is bounded to the east by a ditch noted during heritage walkover surveys that demarks the parish boundary between Bulmer and Twinstead as well as the extent of the former woodland in this area.

5.4.18. There are also two parcels of 'Ancient Woodland' HLT in the vicinity of the overhead line works, one land parcel of 'Irregular Enclosure' which is pre-18th century, one land parcel of 'Piecemeal Enclosure by Agreement' which is 18th century or later, and one land parcel of 'Built-up Urban Development'. The 'Ancient Woodland' type is more rare, 'Piecemeal

Enclosure by Agreement' is considered occasional, and 'Irregular Enclosure' is common regionally. The 'Built-up Urban Development' HLT is associated with Nether House Farm but is a common type regionally.

Measures to Avoid or Reduce Impacts

5.4.19. Good practice measures that would avoid or reduce Historic Environment impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP).

5.4.20. A large number of the general good practice measures outlined within the CoCP (indicated by a 'GG' reference) would also avoid or reduce impacts on the setting of heritage assets during construction. These include the following commitments:

- work is undertaken with an awareness of environmental issues and in line with all relevant legislation, consents, and permits (GG01, GG05, GG06, GG07); and
- proper controls are established for activities which may produce a noticeable nuisance such as dust, noise, vibration, lighting, and vehicle movements (GG10, GG11, GG12, GG24, NV01).

5.4.21. A walkover survey of the area of overhead line works has been undertaken which has informed the assessment of impacts.

5.4.22. A programme of archaeological evaluation has been conducted comprising archaeological geophysical survey and trial trenching.

Potential Impacts

5.4.23. The following potential impacts have been identified taking into account the measures identified in paragraphs 5.4.19 – 5.4.22.

Construction

5.4.24. The potential impacts during construction can be divided into physical impacts and impacts on heritage assets due to changes within their setting.

5.4.25. Potential physical impacts on heritage assets during construction comprise:

- partial or complete removal of archaeological remains or historic landscape elements (such as hedgerows) through groundworks associated with construction such as excavation, piling, or topsoil stripping; and
- damage to archaeological remains within the area of overhead line works through their compression during construction, such as through the movement of machinery or within laydown or spoil storage areas.

5.4.26. Potential impacts on heritage assets through changes to their setting during construction comprise:

- the physical removal of, damage to, or severance of associated archaeological remains which form the setting of a heritage asset;
- the alteration to the setting of archaeological remains, historic buildings, or HLT through the removal of vegetation or associated elements during construction; and
- temporary noise and visual intrusion within the setting of archaeological remains, historic buildings, or HLT during construction activities and / or from increased traffic.

Archaeological Remains

5.4.27. Due to the distance involved and only the potential for oblique intervisibility with the overhead line works, no designated archaeological remains (scheduled monuments) would be affected by the proposed overhead line works physically or through changes to their setting during construction.

5.4.28. There is a low potential for physical impacts on archaeological remains given that:

- The proposed temporary access tracks largely follow existing tracks and would either involve a small amount of topsoil stripping to level with crushed stone or laying down of aluminium or plastic trackway. This would limit the potential for physical impacts through removal of archaeological remains as any groundworks would be above the archaeological horizon or through compaction
- The erection of the temporary pylon would have the potential for ground impacts within the footprint of the pylon base. No archaeological remains were recorded in the archaeological trial trenches at the locations of the proposed temporary pylon and the potential for unknown archaeological remains which would be of archaeological value is very low.

Built Heritage

5.4.29. Due to the distance involved, no direct physical impact on listed buildings is anticipated during construction.

5.4.30. Section 5.6 (Geology and Hydrogeology) outlines how the potential for changes to the baseline groundwater environment are limited and no indirect physical impact on designated heritage assets is anticipated.

5.4.31. No listed buildings are situated within close enough proximity to the construction works to be adversely affected by noise or vibration.

5.4.32. In terms of setting, no listed buildings would have direct visibility of the overhead line works. Butler's Hall Farmhouse (NHLE 1169693, Grade II*) and Nether House Farmhouse (NHLE 1123031, Grade II) would have the most potential for intervisibility, however:

- Butler's Hall Farmhouse is situated approximately 500m to the northwest of the overhead line works. Butler's Wood and Waldegrave Wood would largely filter views of the temporary 400kV overhead line diversion. The house fronts to the southwest, which is facing away from the overhead line works, and is situated within a small land parcel bounded by vegetation. The house is further screened from the overhead line works by the intervening agricultural outbuildings which are immediately adjacent to it; and
- Nether House Farmhouse is situated approximately 250m to the southwest of the nearest temporary access track. The house fronts to the east and overlooks the adjacent field system. There is the potential for some partial intervisibility with the entrance to the access track off of Old Road and the potential for some partial intervisibility with the 132kV cable sealing end platform pylon to the south.

5.4.33. While potential impacts on heritage assets through changes to their setting are not restricted to intervisibility with the proposed overhead line works, there is limited potential for other impacts:

- temporary noise intrusion during construction would be limited due to the distance and the baseline setting of a working agricultural environment;
- no severance is anticipated between heritage assets and any elements of their setting which contributes to their cultural value; and
- no removal of vegetation will be undertaken.

5.4.34. Due to the limited potential for intervisibility with the overhead line works, no impact on the cultural value of these heritage assets from visible development within their setting is anticipated during construction.

5.4.35. There are no non-designated historic buildings within the baseline (up to 250m from the overhead line works).

Historic Landscapes

5.4.36. As there are no designated historic landscapes (Registered Parks and Gardens) within the baseline (up to 2km from the overhead line works), there would be no impacts on designated HLT.

5.4.37. No vegetation will be removed during construction. There would be no adverse physical impacts on non-designated HLT through removal of landscape elements.

5.4.38. Temporary noise intrusion within the setting on non-designated HLT including protected lanes is anticipated to be short term and generally comparable to the baseline of a working agricultural environment.

5.4.39. Effects to historic landscapes through minor temporary changes within their setting during construction (e.g. from increased noise, dust, or visual intrusion) and through increased traffic on Old Road protected lane, would be managed through the good practice measures in Annex 1 (CoCP) of Appendix 1(CEMP).

5.5 Water Environment

Baseline

5.5.1. The study area for the water environment includes land and water features within 500m of the overhead line works.

5.5.2. There is a minor watercourse, which flows alongside the temporary access route. This minor watercourse drains north to the Belchamp Brook approximately 3km downstream of the site. The Belchamp Brook is a tributary of the River Stour, both are Main Rivers.

5.5.3. There are also numerous ditches which drain the study area and a number of small ponds, including an agricultural drain/ditch that the overhead line diversion would cross and that the temporary pylon would be located approximately 50m west of. This drainage ditch connects to a wider network of drainage features that run along the edge of Butler's Wood and Waldegrave Wood. These water features are classified as ordinary watercourses.

5.5.4. There are no active licenced discharges to surface waters nor any permitted or deregulated abstractions from surface or groundwater sources within the study area. The closest existing water interests are in excess of 600m from the overhead line works.

5.5.5. Appendix 5 (Flood Risk Assessment (FRA)) explains that the overhead line works are located entirely within Flood Zone 1 on the Flood Map for Planning (Environment Agency, 2021) and there are no records of flooding from rivers at the site according to the Environment Agency's 'Historic Flood Map' (Environment Agency 2018). The watercourses in the vicinity of the overhead line works are inland and are not tidally influenced.

5.5.6. The Risk of Flooding from Surface Water Map (Environment Agency, 2019) indicates that the overhead line works are at 'very low risk' of surface water flooding, equivalent to an annual chance of flooding less than 1 in 1,000 (0.1%). However, areas are shown to be at higher risk of flooding from this source as detailed in Appendix 5 (FRA), in particular along the access route in the vicinity of Old Road. The FRA concludes the site is at low risk of flooding from groundwater, sewer and artificial sources.

Measures to Avoid or Reduce Impacts

5.5.7. Good practice measures that would avoid or reduce water environment impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP) and are outlined below:

- Runoff across the site will be controlled through a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding (GG15).
- Where new or additional surfacing is required on any access tracks and compound areas, these will be permeable surfaces where ground conditions allow (W07).
- Land used temporarily will be reinstated where practicable (bearing in mind any restrictions on planting and land use) to its pre-construction condition and use. Boundary features will be reinstated to a similar style and quality to those that were removed, with landowner agreement. Existing land drainage regimes would also be reinstated following construction (GG07).

Potential Impacts

5.5.8. The following potential impacts have been identified taking into account the measures identified in paragraph 5.5.7.

Construction

5.5.9. During construction, earthworks have the potential to cause deterioration of surface water quality through generation of silted or polluted runoff. Good practice measures within the CoCP would reduce the risk of pollution to the water environment during construction by removing the pathway between source and receptors identified in the baseline.

5.5.10. No impacts on the flow regime of any of the watercourses or drainage ditches are anticipated, as no new crossings or any other in channel works are required.

5.5.11. Due to their distance, there would be no effect on private water supplies or active discharges.

5.5.12. As the overhead line works are not located in Flood Zone 2 or 3, there is a negligible risk of increases in flood risk during construction.

5.5.13. The good practice measures within the CoCP would also reduce effects on the existing land drainage network during construction.

5.6 Geology and Hydrogeology

Baseline

5.6.1. The study area the land immediately adjacent to the overhead line works. A Phase 1 Contaminated Land Assessment was prepared to support planning application for the proposed GSP substation and it is considered appropriate to inform the baseline for the overhead line works.

5.6.2. There are no sites designated for geological importance (e.g. Sites of Special Scientific Interest (SSSIs) designated for their geological importance) and no groundwater dependent terrestrial ecosystems (GWDTEs) within the study area.

5.6.3. The superficial geology underlying the site comprises the Lowestoft Formation, which is found to typically comprise a chalky diamicton, together with outwash sands and gravels, silts, and clays.

5.6.4. Underlying the Lowestoft Formation, the Kesgrave Catchment Subgroup is likely to be present which is typically found to comprise moderately sorted sands and gravels. To the west of the study area, underlying the temporary access tracks, the Lowestoft Formation is absent, and the Kesgrave Catchment Subgroup is likely to be present at the surface.

5.6.5. The London Clay Formation underlies the superficial deposits and is described by the British Geological Survey (BGS) as comprising laminated, blue-grey, pyritic, bioturbated, silty and fine-grained sandy clay with common seams or nodules of calcareous ‘cement stone’. Glauconite is also known to be present in some of the sand and clay layers.

5.6.6. Underlying the London Clay Formation is likely to be the Lambeth Group, overlying the Thanet Sand formation and the White Chalk Subgroup.

5.6.7. The hydrogeology is classified by the Environment Agency (Defra, 2021) with the Kesgrave Catchment Subgroup being classified as a Secondary A Aquifer and the Lowestoft Formation as a Secondary (undifferentiated) Aquifer. The London Clay Formation is classified as Unproductive Strata The study area does not cross any groundwater inner source protection zones and is located within Zone III (Total Catchment) (Defra, 2021). Groundwater vulnerability is mapped as medium across the study area (Defra, 2021). There are no groundwater abstractions within the study area. Private water supplies are considered in Section 5.5 (Water Environment).

5.6.8. The preliminary conceptual model undertaken for the proposed GSP substation did not identify any significant source of contamination and the contamination potential has been classified as Very Low, and as such no source-pathway-receptor linkages have been identified. However, potential receptors and potentially viable pathways have been identified.

Measures to Avoid or Reduce Impacts

5.6.9. Good practice measures that would avoid or reduce Geology and Hydrogeology impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP). This includes training with regards to working with potentially contaminated materials (GG05), storage of fuels, oils and chemicals (GG14), and those related to pollution events (GG22 and W10).

5.6.10. No potential sources of contamination have been identified, however, there remains a residual risk that unidentified contamination is present. In accordance with commitment

GH02, if unexpected contaminated ground is uncovered during construction, it shall be tested to determine the levels of contamination. Where contamination is confirmed, it will be reported to the local authority in writing. An investigation and risk assessment of the contamination will be undertaken. If the material is found to be unsuitable for reuse it will be segregated from other material and transported off-site in suitable vehicles for disposal. Vehicles will contain and cover the materials to prevent loss of leachate, dust or other material during transport. Ground arisings deemed unsuitable for reuse within the project will be disposed of appropriately, for example to a soil treatment centre or landfill.

Potential Impacts

5.6.11. The following potential impacts have been identified taking into account the measures identified in paragraphs 5.6.9 – 5.6.10.

Construction

5.6.12. No impacts are predicted on construction workers, groundwater receptors, designated sites or GWDTE.

5.6.13. Any dewatering required for construction would be short term and shallow in nature and direct discharge of untested water to water bodies would be avoided. Water discharges would also be disposed of in accordance with any agreements made with the relevant authorities.

5.6.14. Ground disturbance during construction has the potential to create new groundwater flow pathways, where permeable materials or flow routes are introduced. In contrast, installation of impermeable structures or backfill can impede groundwater flow. The scale and nature of the planned works are such that no new pathways are likely to be created and no barriers to flow are envisaged.

5.6.15. The qualitative risk assessment presented in the planning application for the proposed GSP substation did not identify any notable source of contamination currently present based on the current and historical land uses. Therefore, the contamination potential of the site is considered to be Very Low. As no current source has been identified a source-pathway-receptor linkage has also not been identified and therefore there is not considered a risk to sensitive receptors.

5.6.16. Any risks from spills or accidents involving construction plant, would be managed through the good practice measures in Annex 1 (CoCP) of Appendix 1 (CEMP).

5.7 Agriculture and Soils

Baseline

5.7.1. The study area is the land immediately adjacent to the overhead line works. The land use is arable, with large woodland blocks on the adjacent land.

5.7.2. An Agricultural Land Classification (ALC) assessment for the proposed GSP substation was undertaken to support the planning application. This showed that land comprises Grade 3a land, which is categorised as ‘Good Quality Agricultural Land’ and is one of the three grades (Grades 1 to 3a) considered to be the best and most versatile. The soils present within the site of the proposed GSP substation which includes the temporary pylon comprise soils of the Oak 2 Soil Association. These are described as slowly

permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils. It is also noted that some soils will have a chalky subsoil. The ALC survey confirmed these general characteristics. Topsoil thickness ranged from 32cm to 42cm and is likely to represent the general plough depth. All profiles taken as part of the ALC survey exhibited evidence of gleying in the subsoil, with one profile also showing evidence of gleying in the topsoil. The topsoil had a clay loam texture, with one profile recorded as having a silty clay loam texture, with the subsoil texture ranging from clay loam to heavy silty clay loam.

5.7.3. It is likely that similar soils and ALC grade land are present for the overhead line works, with the potential for slightly heavier textured soils associated with the western limit of the temporary 400kV overhead line diversion.

Measures to Avoid or Reduce Impacts

5.7.4. Good practice measures that would avoid or reduce Agriculture and Soils impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP). This includes providing a record of condition of the working areas affected (GG06, reinstatement of land used temporarily (GG07), soil management measures (AS01) and maintaining access to and from agricultural land uses (AS03).

5.7.5. Further measures related to site preparation, soil stripping, stockpiling and reinstatement are provided in Sections 4 and 9 of Appendix 1 (CEMP). In particular, the soil stripping method will follow the guidance set out in Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009) and where land is reinstated, the appropriate soil conditions (for example through the replacement of stripped layers and the removal of any compaction) will be created. This will be achieved to a depth of 1.2m (or the maximum natural soil depth if this is shallower).

Potential Impacts

5.7.6. The following potential impacts have been identified taking into account the measures identified in paragraphs 5.7.4 – 5.7.5.

Construction

5.7.7. Effects on land drainage are considered in Section 5.5 (Water Environment).

5.7.8. During construction there would be a temporary loss of Best and Most Valuable land (ALC Grade 3a) from agricultural productivity. There would also be disturbance to soils due to topsoil stripping required to construct the temporary access tracks or soil compaction through the use of trackway, as well as the potential for impacts on the ecosystem services the soils provide. In addition, there would be potential impacts on agricultural operations due to disturbance and access restrictions. The good practice measures set out within the CoCP would reduce these effects. All land required temporarily would be reinstated by the end of the construction.

5.8 Traffic and Transport

Baseline

5.8.1. The A120, the A12 and the A14 are all part of the Strategic Road Network managed by National Highways and provide strategic connections to the rest of the east of England

and beyond. The A131 is to the east of the overhead line works, which links Sudbury and Halstead to the A120 and A12 to the south. Temporary accesses extend to the north and south of Old Road which is approximately 420m south of the temporary 400kV overhead line diversion and 200m north of the downleads on the 132kV cable sealing end platform pylon. The remainder of the roads near to the overhead line works comprise of B-roads and lanes providing access to towns, villages and individual properties and farms.

5.8.2. The study area for the assessment for National Cycle Network (NCN) and Public Right of Way (PRoW) is 500m from the overhead line works. There are no NCNs in the study area. There are approximately 10 interlinked PRoW within the study area, including a system of PRoWs extending westwards from the A131. Two of the temporary access roads follows existing PRoW which extend to the north and south of Old Road. One connects Old Road to the western edge of the overhead line, and one connects Old Road to the downleads on the 132kV cable sealing end platform. The PRoW are shown on Figure 3.

Measures to Avoid or Reduce Impacts

5.8.3. Good practice measures that would reduce Traffic and Transport impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP). This includes plant and vehicles conforming to applicable standards (GG12) and washdown of vehicles (GG16 and GG17). Section 10 of Appendix 1 (CEMP) also explains measures associated with construction traffic using the local road network.

Potential Impacts

5.8.4. The following potential impacts have been identified taking into account the measures identified in paragraph 5.8.3.

Construction

5.8.5. Roads that may be affected are expected to be located within the area bounded by the A120 (Braintree to Marks Tey), the A12 (Marks Tey to Copdock) and the A131 (Sudbury to Braintree).

5.8.6. A traffic assessment was undertaken for the planning application for the proposed GSP substation which included vehicle movements required for the overhead line works. This concluded that construction traffic numbers, including those associated with worker numbers is low for the proposed GSP substation and the overhead line works with daily total of less than 30 inbound and 30 outbound vehicles per day.

5.8.7. There are two PRoW which are to be utilised to support the temporary accesses to the overhead line works that would be temporarily diverted while construction activities occur. Any required temporary diversions will be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns. Temporary diversions of PRoW would be reinstated post-construction. Potential impacts on views from these receptors is considered in Section 5.2 (Landscape and Visual).

5.9 Air Quality

Baseline

5.9.1. The air quality study area is based on an area up to 500m from the overhead line works. Air Quality Management Areas (AQMAs) are also considered within the wider road network which may be used by construction traffic. The nearest AQMA is on the A131 in the centre of Sudbury approximately 4km north of the overhead line works (Braintree District Council, 2020).

5.9.2. The nearest residential properties (Netherhouse Farmhouse where there is also planning permission to convert existing farm buildings into two residential properties; Braintree District Council planning reference 18/00032/FUL) to the site is approximately 210m to the west of the temporary access extending south from Old Road.

5.9.3. Ecological air quality receptors within the study area comprise Butler's Wood LWS and Waldegrave Wood LWS, to the north and south of the temporary 400kV overhead line diversion respectively. Twinstead Marsh LWS lies at the eastern extent of the 500m study area on the existing 400kV line.

Measures to Avoid or Reduce Potential Impacts

5.9.4. Good practice measures that would avoid or reduce Air Quality impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP). This includes conforming to applicable standards for vehicle types (GG12), wash down of vehicles (GG16), wheel washing (GG17) and soil management measures (AS1).

5.9.5. Section 9 of Appendix 1 (CEMP) describes the construction methods associated with soil stripping, creation of stockpile and stockpile maintenance including measures to protect stockpiles and reduce the risk of dust generation from soils. Section 11 of Appendix 1 (CEMP) also sets out the below measures that will be implemented to reduce dust:

5.9.6. Monitoring of weather forecasts and registration to weather warnings will aid preparation for earthwork operations. In dry conditions, appropriate water and dust suppression equipment will be available. In wet conditions, the site will be prepared with suitable cleaning equipment and silt controls.

5.9.7. Large earthworks and exposed areas or soil stockpiles will be managed to prevent windborne dust. For example, this could include covering, sealing with an excavator bucket or using water suppression.

5.9.8. During reinstatement, methods such as loosening the top of subsoil will be used to limit decompaction of the subsoil; this activity will avoid windy conditions and use water to damp down the surface.

5.9.9. Where possible, subsoil and topsoil will be returned at the earliest suitable time of year after construction has been completed. In the circumstances that work is delayed due to an unforeseen event, the measures listed above will be implemented.

Potential Impacts

5.9.10. The following potential impacts have been identified taking into account the measures identified in paragraphs 5.9.4 – 5.9.9.

Construction

5.9.11. Dust is generated from construction activities from the handling of waste, movement of earth, the handling of materials and the tracking of vehicles. Dust can affect human health, local amenity or ecological receptors (through deposition) within the locality of the activities being undertaken. The concentrations of suspended dust particles reduce with increased distance from the construction works and the nearest property is 210m from the temporary access. Appendix 1 (CEMP) includes a number of good practice measures that would reduce the generation of dust during construction.

5.9.12. Construction vehicles and plant would also generate emissions from vehicles delivering materials and construction workers to and from the construction site. Emissions could affect receptors located close to the working area and also along construction routes along the local road network. The emissions would be short term at any given location within the construction period and there would be no construction traffic through the centre of Sudbury, where there is an AQMA. Air emissions would also be reduced through the implementation of good practice measures and set out in Appendix 1 (CEMP).

5.10 Noise and Vibration

Baseline

5.10.1. The study area for assessing the potential for noise impacts on Noise Sensitive Receptors (NSR) is 300m for construction and 1km for operation. The study area for construction vibration impacts is based on 100m from the closest construction activity. Noise Important Areas (NIA) (areas identified based on strategic noise maps of England, prepared under the Environmental Noise (England) Regulations, 2006 (as amended)) are also considered within the wider road network which may be used by construction traffic.

5.10.2. There are relatively isolated receptors located in all directions from the proposed overhead line works. The closest residential NSRs to the overhead line works are:

- approximately 210m to the west located off Old Road;
- approximately 344m to the southeast located off Whitelands Road;
- approximately 460m to the northwest at Butler's Hall Farm; and
- approximately 550m to the northeast off Watery Lane.

5.10.3. There is a NIA on the A131 southwest of Twinstead Green (NI_12016) on the A131, a route which may be used for construction traffic. NIA are determined via strategic noise maps and highlight the residential areas experiencing the highest 1% of noise levels form road and rail sources in England. There are additional NIA in the wider area on main transport routes (e.g. A13, A14, A131).

5.10.4. With regards to the vibration baseline, it is assumed that existing vibration levels are negligible in the study area.

5.10.5. A baseline noise survey was conducted to support the planning application for the proposed GSP substation, the results of which have informed this appraisal. The noise climate in the vicinity of the proposed overhead line works and at nearby NSR is typical of a rural area, being generally quiet with the exception areas close to main roads. The main noise source in the area is road traffic on the A131, which is a moderately busy road running between Sudbury to the north and Halstead to the south. Other sources of noise include rustling foliage, birdsong, local road traffic, and general rural ambient sounds.

Measures to Avoid or Reduce Potential Impacts

5.10.6. Good practice measures that would avoid or reduce noise and vibration impacts during construction are set out in Annex 1 (CoCP) of Appendix 1 (CEMP). This includes locating equipment that may produce a noticeable nuisance away from sensitive receptors where practicable (GG10), appropriate site layout and housekeeping measures (GG11), construction working within agreed working hours and applying best practicable means to reduce construction noise (NV1). Section 12 of Appendix 1 (CEMP) sets out the best practicable means that will be implemented.

Potential Impacts

5.10.7. The following potential impacts have been identified taking into account the measures identified in paragraph 5.10.6.

Construction

5.10.8. The nearest residential receptor is greater than 300m away from potential piling works associated with the temporary pylon construction. Threshold noise levels for significant impacts would only be expected to be exceeded within approximately 100m of pylon works during core daytime working periods, with the main source of noise being from piling activities required for foundations. Works outside of core daytime periods would not be expected.

5.10.9. With regards to vibration, levels which may be considered to cause potential annoyance to human receptors would only be expected to be exceeded within approximately 70m of piling works. Such works are only required for a relatively short duration, typically less than one week at any specific location, and are therefore less than the temporal thresholds required for significant adverse effects (more than 10 days in any consecutive 15 days, or more than 40 days in any consecutive six months).

5.10.10. Additionally, best practicable means (BPM) will be employed, as described in Appendix 1 (CEMP), to reduce construction noise and vibration levels from proposed works.

5.10.11. As reported in Section 5.8, construction traffic numbers would also be low and would not notably change the baseline noise and vibration levels.

5.11 Other Issues

5.11.1. A number of other issues were considered in the screening assessment for the Form B process. These are set out below for reference.

Socio-economics

5.11.2. Compensation payments lie outside of the environmental assessment process. The overhead line works lie on agricultural land. There are no nearby socio-economic receptors, and the works are unlikely to disrupt access to businesses in the wider area. Furthermore, the workforce numbers are expected to be below 20 per day combined for the proposed GSP substation and overhead line works at their peak. Therefore, the project is unlikely to result in effects on socio-economic receptors.

Health and Electromagnetic Fields (EMF)

5.11.3. The overhead line works will be designed in accordance with National Grid design standards and will be compliant with the guidelines and policies relating to EMF stated in NPS EN-5, including the International Commission on Non-Ionizing Radiation Protection guidelines (1998) which developed health protection guidelines in 1998 for both public and occupational exposure to EMF. UK Government policy is that exposure of the public should comply with the International Commission on Non-Ionizing Radiation Protection (1998) guidelines and the electricity industry has agreed to follow this policy.

5.11.4. There are also three DECC Codes of Practice relating to demonstrating compliance with EMF public exposure:

- Power Lines: Demonstrating compliance with EMF public exposure guidelines. A Voluntary Code of Practice (DECC, 2012a);
- Optimum Phasing of high voltage double-circuit Power Lines. A voluntary Code of Practice (DECC, 2012b); and
- Power lines: Control of microshocks and other indirect effects of public exposure to electric fields. A voluntary Code of Practice (DECC, 2013).

5.11.5. National Grid's policy, as set out in its Public Position Statement (National Grid, 2018), states that '…*as a minimum we comply with EMF regulations, guidelines or practices in force… in which we operate*'. This policy will apply to the overhead line works and all the equipment installed will comply with guidelines. Given that EMFs resulting from electrical equipment must comply with the relevant exposure guidelines as specified by Government and with the additional precautionary policies set out within the DECC Codes of Practice, the overhead line works are unlikely to result in effects to health in relation to EMF.

Major Accidents and Disasters

5.11.6. The overhead line works would be designed, constructed and operated in accordance with applicable health and safety legislation. It would comply with design safety standards including NETS SQSS. The overhead line works also fall under the Construction (Design and Management) Regulations 2015. As the overhead line works would be managed under many existing health and safety and risk assessment regimes, it is therefore not expected to result in likely effects relating to major accidents and disasters.

Climate

5.11.7. The overhead line works are located outside of Flood Zones 2 and 3 and will be constructed to withstand extreme climatic events and will comply with design safety standards including NETS SQSS. The overhead line works are to be in place for up to a year, considered to be resilient to climate change over the short design life.

5.11.8. In relation to contribution to climate change, the overhead line works provide a beneficial opportunity to help realise the Government's ambitions for 40GW of offshore wind by 2030.

5.12 Cumulative Effects

5.12.1. Two categories of cumulative effects are considered: 'intra-project' and 'inter-project' effects (IEMA, 2011):

- Intra-project effects occur when a resource, receptor or group of receptors are potentially affected by more than one source of direct environmental impact resulting from the same development (IEMA, 2011). Environmental receptors are identified in Sections 5.2-5.10 of this report.
- Inter-project effects occur when a resource, receptor or group of receptors are potentially affected by more than one development at the same time (IEMA, 2011).

Baseline

5.12.2. The study area extends to 2km from the overhead line works to coincide with the study areas for the landscape and visual and setting of heritage assets assessments. A review of major planning applications on Braintree District Council's planning portal, the Planning Inspectorate's Programme of Projects and development allocations was undertaken. Major developments are defined under Development Management Procedure (England) Order 2010 (as amended).

5.12.3. The review was undertaken on 14 April 2022, and applications dating back to 2014 have been considered to take into consideration submitted or approved planning applications that may have a temporal overlap with the overhead line works. Withdrawn applications have not been considered. There are no development allocations within 2km of the proposed overhead line works.

5.12.4. A search for minor non-EIA developments (e.g. farm building conversions, erection of farm buildings, house extensions and changes of land use) intersecting the overhead line works with none present. Other minor non-EIA developments are not considered further as their small scale nature is not expected to result in inter-project cumulative effects.

5.12.5. The review identified three major planning applications within 2km of the overhead line works:

- Application 16/00323/FUL: Feed and Straw Storage Building at Broomhills Farm. Approximately 1.4km south of the works.
- Application 18/01159/FUL: Conversion and alteration of part of The Ryes to form two units of holiday accommodation. Approximately 1.9km northeast of the works.
- Application 19/00443/FUL: Change of use for storage, repair and sales of Motorcaravans. Approximately 1.9km southwest of the works.

5.12.6. The wider reinforcement project described in Section 1.1 of this report and the accompanying works are also considered in the inter-project effects. It is expected that the measures in the Annex 1 (CoCP) of Appendix 1(CEMP) would also be applicable to the wider reinforcement project and proposed GSP Substation works.

Potential Impacts

5.12.7. The following potential impacts have been identified taking into account the measures identified in the preceding environmental topic assessments.

Construction

Intra-project

5.12.8. During construction the closest residential properties, users of the PRoWs and Protected Lanes may be subject to temporary disturbance through a combination of visual, air quality and noise and vibration impacts. However, the measures in Appendix 1 (CEMP) would reduce these.

Inter-project – Wider Reinforcement Project

5.12.9. The Preliminary Environment Information Report (PEIR) for the wider reinforcement project was submitted to the Planning Inspectorate in January 2022 and the application for development consent is provisionally due in winter 2022/23. Construction programmes and associated traffic are unlikely to overlap with the overhead line works.

5.12.10. The nearest section of the wider reinforcement project involves removal of a section of the existing 400kV overhead line south of Twinstead Tee, a CSE compound and a section of underground cable and is over 2km from the overhead line works at its closest point. When considering this alongside the localised nature of the impacts associated with the overhead line works there is limited potential for intra-project cumulative effects as a result of the construction of the proposed GSP substation in combination with the wider reinforcement project.

Inter-project – the proposed GSP Substation

5.12.11. As explained in Sections 1 and 2, the overhead line works are also currently being progressed both as part of development consent for the wider reinforcement project and a separate planning application under the TCPA.

5.12.12. A cumulative effects assessment was undertaken for the proposed GSP substation, which considered the cumulative effects with overhead line works. This concluded that given the nature of the potential impacts associated with the proposed GSP substation, there is limited potential for cumulative effects during construction either alone or in combination with the overhead line works.

5.12.13. Similarly, the potential impacts of the overhead line works on the receptors described in Sections 5.2 – 5.11 described above have limited potential for inter-project cumulative effects with the proposed GSP substation.

Inter-project – Other Proposed Developments

5.12.14. Given the nature of the works required for the other developments within 2km of the overhead line works and the distance to them, there is limited potential for cumulative effects resulting from the overhead line works with other proposed developments during construction.

6. Planning and Policy

6.1 Introduction

6.1.1. If consent is granted for the overhead line works, the consent would result in a deemed grant of planning permission. As such, the section below considers the predicted effects of the proposed overhead line works against relevant planning policy.

6.2 National Planning Policy Framework (NPPF)

6.2.1. As with an application for planning permission, National planning policy, which is set out in the National Planning Policy Framework (NPPF) (2021), is a material consideration. Central to national planning policy is a '*presumption in favour of sustainable development'*.

6.3 Local Planning Policy

6.3.1. The current adopted Development Plan for Braintree District Council is made up of the following policy documents:

- Local Development Scheme (LDS);
- Local Plan, Section 1 (2013-2033);
- Core Strategy (2011-2026);
- Braintree District Local Plan Review (2005) (Saved Policies);
- The Essex Minerals Local Plan (2014);
- Essex and Southend-On-Sea Waste Local Plan (2017); and
- Supplementary Planning Documents (SPDs) & Neighbourhood Plans.

6.4 Neighbourhood Planning Policy

6.4.1. The northern and western extents of the overhead line works lie within the parish boundary of Bulmer Parish, meanwhile the southern extent lie within Twinstead Parish. Neither Bulmer or Twinstead have adopted or are preparing a neighbourhood plan.

6.5 Infrastructure Delivery Plan

6.5.1. The provision of the required overhead line works within the administrative boundaries of Braintree District Council does not benefit from a specific policy or site allocation within an adopted Development Plan Document (DPD). However, the wider reinforcement project is cited in Braintree District Council's Infrastructure Delivery Plan (June 2021) (hereafter referred to as 'the IDP'). Braintree District Council's IDP is a live document which details the strategic infrastructure required to underpin the planned growth as set out in the Local Plan, over the plan period 2013 – 2033. In respect of the wider reinforcement project, the IDP considers that this infrastructure item is not directly related

to any of the outstanding site allocations within the Local Plan; however, acknowledges that the wider reinforcement project will '*help to maintain a long-term steady energy supply throughout the District and wider region'*.

6.6 Planning Appraisal

Principle of proposed development

6.6.1. In preparing an application for consent pursuant to Section 37, National Grid must have regard to Schedule 9 of the Electricity Act 1989 in the formulation of proposals to transmit electricity, to preserve amenity by:

- Schedule 9(1)(a) *'…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 interes*t; and
- Schedule 9(1)(b) *'…do what [it] reasonably can 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'.*

6.6.2. The overhead line works fall outside of a defined development boundary and is, therefore, considered to fall within the countryside for planning policy purposes. Policy RLP2 (Town Development Boundaries and Village Envelopes) details that '*new development will be confined to the areas within Town Development Boundaries and Village Envelopes. Outside these areas countryside policies will apply*.' Policy CS5 (The Countryside) builds upon this principle and prescribes that, '*development in the countryside will be strictly controlled to uses appropriate to the countryside, in order to protect and enhance the landscape character and biodiversity, geodiversity and amenity of the countryside.*'

6.6.3. Policy RLP 161 (Utilities Development), would likely be considered the most relevant policy in respect to the overhead line works and states: '*Proposals for development required for the operational needs of utilities serving the public will be supported and approved where applicable, subject to their acceptability on environmental and amenity grounds in terms of the other policies in this Plan. In considering proposals the Council will take into account existing levels of infrastructure, technical and operational requirements, and opportunities for the sharing of sites, facilities and installations*.'

6.6.4. Policy RLP 161, therefore, provides general policy support for this type of infrastructure, subject to more precise considerations such as landscape impact, amenity impact and impact on protected species etc. The policy also advocates 'shared facilities'; as such, the fact the overhead line works would be read in context with the proposed GSP substation infrastructure and existing 132kV and 400kV overhead lines would weigh in favour of the overhead line works.

6.6.5. Whilst not a 'renewable energy scheme' by definition, the overhead line works, proposed GSP substation and wider reinforcement are intrinsically linked to such schemes in the East of England as it facilitates the distribution of low carbon electricity across the region and beyond. The overhead line works are required as part of the necessary network reinforcements borne out of the systemic shift away from fossil fuels and commitment to achieving 40GW of offshore wind connected to the network by 2030.

6.6.6. In this context and as stated above, Braintree District Council declared a Climate Change Emergency in July 2019 and announced a target to be carbon neutral as far as practical by 2030, as well as supporting their local communities to reduce the impacts of climate

change. Braintree District Council acknowledge in their response to the statutory consultation for the wider reinforcement project, that the proposals will help achieve the aims set out in the Climate Change Strategy.

6.6.7. In combination, these local and national aims, alongside National Grid's statutory obligations to connect any new generation to the transmission system while maintaining an efficient, co-ordinated, and economical system of electricity transmission and Policies RLP 161 and RLP 40, results in a development which is overall, considered acceptable in principle.

Landscape, natural environment and biodiversity impacts

6.6.8. Policy RLP 81 (Trees, Woodlands, Grasslands and Hedgerows) encourages the retention, maintenance, and planting of locally native trees, woodlands, grasslands and hedgerows and requires new planting to replace the loss of the like. The overhead line works do not result in the permanent loss of any locally native trees, woodlands, grasslands and hedgerows. As such, the proposals can proceed in accordance with Policy RLP81.

6.6.9. Policy RLP 84 (Protected Species) considers the protection of native species and states that planning conditions and or obligations will be imposed to supplement habitats (amongst others). The overhead line works do not require any hedgerow or tree removal and therefore are not anticipated to have any effect on hazel dormouse or nesting birds. No other protected or notable species have been identified as associated with the overhead line works. Measures in Appendix 1 (CEMP) would reduce impacts on protected species during construction. As such, the proposals can proceed in accordance with Policy RLP 84.

6.6.10. Policy RLP 36 (Industrial and Environmental Standards) requires all new development to not give rise to unacceptable visual impacts. Policy RLP 90 (Layout and Design of Development) requires development to: be of an appropriate scale; high standard of design and materials; reflect local distinctiveness and be sensitive to its context. The proposed overhead line works are functional in nature and appearance and are also largely temporary. The downleads on the 132kV cable sealing end platform pylon are very minor in nature and occur in the same location as an existing pylon. For these reasons, the proposals are considered minor in nature and would not give rise to unacceptable visual impacts, in accordance with Policies RLP 36 and RLP 90.

6.6.11. Policy CS8 (Natural Environment and Biodiversity) requires development to have regard to the character of the landscape and its sensitivity to change and enhance locally distinctiveness in accordance with the Landscape Character Assessment. Meanwhile, emerging Policy LPP 71 (Landscape Character and Features) recognises the intrinsic character and beauty of the countryside and requires any development to be suitable for the local context. The Policy requires new development to be informed by, and be sympathetic to, the character of the landscape as identified in the District Council's Landscape Character Assessments. This application is supported by an LVA in Appendix 2 of this report which has regard to the Local Landscape Character Assessments. The assessments conclude that overhead line works would not cause notable effects to landscape character or give rise to notable visual effects to local receptors. This is largely due to the short term, temporary nature of the 400kV overhead line diversion, together with the presence of intervening vegetation. As such, the proposals can proceed in accordance with Policies CS8 and LPP 71.

6.6.12. Policy CS8 (Natural Environment and Biodiversity) requires development to protect the best and most versatile agricultural land. This is derived from national planning policy and Paragraph 174 of the NPPF. The majority of agricultural land within BDC is classified as Grade 2 or 3, with 65.8% of agricultural land classified as Grade 2, and 29.9% as Grade 3. It would appear due to this resource being so abundant in the administrative boundaries of BDC, it is difficult to avoid when proposing new development. The Development Plan, therefore, tolerates the fact that not all of this resource can be retained for agriculture. Measures to reduce impacts during construction are set out in Appendix 1 (CEMP) of this report and land used temporarily during construction would be reinstated. As such, the proposals can proceed in accordance with Policy CS8.

Heritage Impact

6.6.13. Paragraph 194 of the NPPF states that when determining applications, local planning authorities should require applicants to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and sufficient to understand the potential impact of the proposal on their significance. Policy RLP 100 (Alterations and Extensions and Changes of Use to Listed Buildings and their settings) is relevant in this context. Emerging Policies LPP 49 (Built and Historic Environment), LPP 55 (Conservation Areas), LPP 56 (Demolition in Conservation Areas) and LPP 59 (Heritage Assets and their Settings) are also relevant. Due to the distance involved and only the potential for oblique intervisibility with the overhead line works, no designated archaeological remains (scheduled monuments) would be affected by the overhead line works physically or through changes to their setting during construction. Due to the distance involved, no direct physical impact on listed buildings is anticipated. In terms of setting, due to the limited potential for intervisibility with the overhead line works, no impact on the cultural value of listed buildings from visible development within their setting is anticipated. Effects to historic landscapes would be minor through temporary changes within their setting during construction. As such, the proposals can proceed in accordance with Policies RLP 100, LPP 49, LPP 55, LPP 56 and LPP 59.

Noise and contamination impact

6.6.14. Policy RLP 36 (Industrial and Environmental Standards) requires all new development to not give rise to unacceptable impacts in terms of contamination to air, land or water (amongst other considerations). Policy RLP 64 (Contaminated Land) sets out the steps required when proposing development on or near a site where contamination may exist. In addition, emerging Policy LPP 72 (Protecting and Enhancing Natural Resources, Minimising Pollution and Safeguarding from Hazards) requires all new development to not give rise to unacceptable impacts in terms of contamination to air, land or water (amongst other considerations). No potential sources of contamination have been identified and Appendix 1 (CEMP) includes measures to reduce the risk associated with encountering unidentified contaminant and well as measures to reduce potential air and water pollution. As such, the proposals can proceed in accordance with Policies RLP 64 and LPP 72.

6.6.15. A number of local plan policies have regard to the impact of noise arising from new development, particularly in more sensitive countryside locations. Policy RLP 36 (Industrial and Environmental Standards) requires all new development to not give rise to unacceptable impacts in terms of noise (amongst other considerations) similarly to Policy RLP 40 (Minor Industrial and Commercial Development in the Countryside). Finally, Policy CS8 (Natural Environment and Biodiversity) recognises that noise can have a

detrimental impact on the natural environment and biodiversity. Noise and vibration is discussed in Section 5.10 of this report. The nearest residential property is in excess of 300m to the nearest potential piling works. Additionally, best practicable means (BPM) will be employed, as described in Appendix 1 (CEMP), to reduce construction noise and vibration levels from proposed works. As such, the proposals can proceed in accordance with Policies RLP 36, RLP 40 and CS8.

Flood risk

6.6.16. As per the NPPF, flood risk must be considered at all stages of the planning process, avoiding inappropriate development in areas at risk of flooding and directing development away from those areas where risks are highest. Emerging Policy LPP 76 (Flooding Risk and Surface Water Drainage) is relevant in this context. The overhead line works are not located in Flood Zone 2 or 3 and there is a negligible risk of increases in flood risk during construction. Therefore, can proceed in accordance with Policy LPP 76.

Highway impact

6.6.17. Paragraph 111 of the NPPF considers 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 would be severe*.' Temporary accesses extend to the north and south of Old Road, which is an unadopted highway, which is approximately 420m south of the temporary 400kV overhead line diversion and 200m north of the downleads on the 132kV cable sealing end platform pylon. These accesses will be reinstated to their former condition after use. The proposed overhead line works, and associated infrastructure, will be seldom accessed by authorised personnel. For these reasons, the proposals can proceed in accordance with Paragraph 11 of the NPPF.

Presumption in favour of sustainable development

6.6.18. Meanwhile, central to national planning policy is a *'presumption in favour of sustainable development'*. Achieving sustainable development means that the planning system has three overarching objectives; an economic objective, social objective and environmental objective. In respect to the overhead line works, the three strands to sustainable development are met, as detailed below.

Economic objective

6.6.19. The overhead line works needs case as part of the wider reinforcement project is intrinsically linked to a number of renewable energy infrastructure schemes in the East of England as it facilitates the distribution of low carbon electricity across the region and beyond. The overhead line works are, therefore, required as part of the necessary shift away from fossil fuels and commitment to achieving 40GW or more of offshore wind connected to the network by 2030.

Social objective

6.6.20. The overhead line works will contribute to maintaining essential infrastructure for electricity supply and thus result in public benefits. The overhead line works will help achieve the aims set out in Braintree District Council's Climate Change Strategy as the

proposals enable a greater proportion of new renewable energy to be connected to the network for the district and beyond.

6.6.21. In addition, the overhead line works are required as part of the necessary shift away from fossil fuels and commitment to achieving 40GW of offshore wind connected to the network by 2030. The key role of National Grid's transmission system is to connect the electricity generators' power stations with regional Distribution Network Operators who then supply businesses and homes. This means that more homes and businesses can be powered by renewable and sustainable energy sources to meet the needs of present and future generations. Meanwhile, the overhead line works are considered to not cause unacceptable harm to the intrinsic and spatial qualities of the local landscape, whilst not impacting or severing public spaces or having an unacceptable impact on local roads or neighbouring amenity.

Environmental objective

6.6.22. In respect to the location of the overhead line works, robust environmental work has been undertaken to establish that the works would be small-scale in nature and would not cause notable environmental effects as presented in Section 5 of this report. Meanwhile, the environmental reporting has considered that the overhead line works are not expected to be harmful to the landscape and visual character of the area, not cause unacceptable impacts to protected and priority species, preserve amenity in respect to noise, air quality, pollution and traffic generation; preserve the natural and built historic environment; and not give rise to concerns of flooding or highway safety. Thus, the overhead line works are considered in accordance with Schedule 9 of the Electricity Act 1989 as well as national and local planning policy.

6.6.23. In addition, Braintree District Council declared a Climate Change Emergency in July 2019 and announced a target to be carbon neutral as far as practical by 2030, as well as supporting their local communities to reduce the impacts of climate change. The overhead line works is a key step in this direction for Braintree District Council and the rest of the UK's commitments to achieving net zero carbon emissions by 2050.

6.7 Summary

6.7.1. It is for these reasons the overhead line works are considered acceptable in accordance with national and local planning policy.

7. Conclusion

7.1.1. This report provides a description of the overhead line works and presents an assessment of likely effect, informed by the supporting appendices.

7.1.2. The assessment of potential effects takes into account a number of environmental commitments, good practice measures and construction methodologies to avoid or reduce potential impacts. These are set out in the CEMP (Appendix 1) and Code of Construction Practice (CoCP; Annex 1 of the CEMP).

7.1.3. This environmental appraisal demonstrates that effects to the environmental receptors discussed in Section 5 of this report would either be temporary and reversible or small scale in nature and Section 6 demonstrates that the overhead line works are consistent with relevant planning policy.

7.1.4. In respect of the Section 37 application requirements, Table 7.1 sets out what is required as per the 2014 Statutory Guidance and where the information can be found (where applicable).

Table 7.1: Section 37 Application Requirements

Information Required	Temporary diversion of the existing 400kV overhead line	The downleads forming part of a new 132kV cable sealing end platform pylon
The company's reference number	National Grid plc, Registered Office: 1-3 Strand, London WC2N 5EH. Registered in England and Wales No. 4031152.	
The name of the scheme/line	Overhead Line Works off the A131/Works to Line 4YL and PCB.	
Relevant planning authority and parish	Braintree District Council in the Parishes of Bulmer and Twinstead	Braintree District Council in the Parish of Bulmer
Confirmation that the applicant will comply with the Electricity Safety, Quality and Continuity Regulations 2002	National Grid will comply with the Electricity Safety, Quality and Continuity Regulations 2002. All electricity companies are bound by these rules, standards and technical specifications. They are required to uphold them by their operator's licence.	
The specification and length of the proposed route	The temporary diversion of the existing 400kV overhead line (Route 4YL) for a length of approximately 700 metres between existing pylons 4YL80 and 4YL82, which would include the construction of a temporary pylon with a height of between approximately 44 metres and 48 metres above ground level and which would be in place for up to a year (Grid Reference: E584602 N237084 to E583919 N237044, spanning east to west).	The downleads would be approximately 15m in length and form part of a new 132kV cable sealing end platform pylon (Route PCB) (Grid Reference: E584287 N236431).
The voltage of the line	400kV	132kV
Any tolerance requested	See Section 3.5 (Tolerance) of this report.	

If the relevant planning authority/other consultees have requested conditions to be included	Appendix 6 (Consultation) of this report includes consultation responses
Whether all permissions have been obtained from landowners and/or occupiers for the land along the proposed route	See Section 4.3 (Consultation with Landowners) of this report.

References and Acronyms

References

Department of Energy and Climate Change (2012a) Power Lines: Demonstrating compliance with EMF public exposure guidelines. A Voluntary Code of Practice.

Department of Energy and Climate Change (2012b) Optimum Phasing of high voltage double-circuit Power Lines. A voluntary Code of Practice.

Department of Energy and Climate Change (2013) Power lines: Control of microshocks and other indirect effects of public exposure to electric fields. A voluntary Code of Practice.

DCLG (2010). The Town and Country Planning (Development Management Procedure) (England) Order 2010. Department for Communities and Local Government.

Defra (2006). The Environmental Noise (England) Regulations (as amended)). Department for Environment, Food & Rural Affairs.

Defra (2009). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Department for Environment, Food and Rural Affairs.

Defra (2021). Flood Map for Planning (Rivers and Sea), accessed February 2022 via https://flood-map-for-planning.service.gov.uk/

Environment Agency (2018). Historic Flood Map, accessed February 2022 via https://environment.data.gov.uk/dataset/889885c0-d465-11e4-9507-f0def148f590

Environment Agency (2019). Risk of Flooding from Surface Water Map, accessed February 2022 via https://flood-warning-information.service.gov.uk/long-term-flood-risk

IEMA (2011). Special Report – The State of Environmental Impact Assessment Practice in the UK. The Institute of Environmental Management & Assessment.

International Commission on Non-Ionizing Radiation Protection (1998). Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz).Health Phys. 74, 494-522; 1998.

National Grid (2018) Electric and Magnetic Fields Corporate Public Position Statement, National Grid.

National Grid (2022) caring for the natural environment. Available at: https://www.nationalgrid.com/electricity-transmission/environment-and-net-zero/caring-natural-environment [accessed January 2022)

Acronyms

Acronym	Full Reference
ALC	Agricultural Land Classification
AQMA	Air Quality Management Area
AWI	Ancient Woodland Inventory
BDC	Braintree District Council
BEIS	Department for Business, Energy and Industrial Strategy
BGS	British Geological Survey
BS	British Standard
CEMP	Construction Environmental Management Plan
CoCP	Code of Construction Practice
CSE	Cable Sealing End
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DNO	Distribution Network Operator
ECC	Essex County Council
EIA	Environmental Impact Assessment
EMF	Electromagnetic field
FRA	Flood Risk Assessment
GCN	Great crested newt
GSP	Grid Supply Point (substation)
GW	Gigawatt (1,000 million Watts)
GWDTE	Groundwater dependent terrestrial ecosystem
HER	Historic Environment Record
HPI	Habitats of Principal Importance
HLT	Historic Landscape Type
IEMA	Institute of Environmental Management and Assessment
INNS	Invasive and non-native species

Acronym	Full Reference
kV	Kilovolt (1,000 Volts)
LoWS	Local Wildlife Site
NCN	National Cycle Network
NHLE	National Heritage List for England
NIA	Noise important area
NPPF	National Planning Policy Framework
NPS	National Policy Statements
NSIP	Nationally Significant Infrastructure Project
NSR	Noise and vibration sensitive receptor
PEIR	Preliminary Environmental Information Report
PRoW	Public Right of Way
SAC	Special Area of Conservation
SGT	Super Grid Transformer
SPA	Special Protection Area
SPD	Supplementary Planning Documents
SQSS	Security and Quality of Supply Standards
SSSI	Site of Special Scientific Interest
TCPA	Town and Country Planning Act

Figures and Appendices

Figure 1: Location Plan

Figure 2: Layout of the overhead line works

Figure 3: Constraints Plans

Appendix 1: Construction Environmental Management Plan (CEMP)

Appendix 2: Landscape and Visual Appraisal (LVA)

Appendix 3: Biodiversity Baseline

Appendix 4: Historic Environment Baseline

Appendix 5: Flood Risk Assessment

Appendix 6: Consultation

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