National Grid

Cable Tunnel Replacement Project

Environmental Statement

Volume I
Non-Technical Summary
(Revision 1)

~~December 2023~~July 2024

Quality information

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1 Introduction

1.1 Overview

1.1.1 The Proposed Development is being developed by National Grid (hereafter referred to as "the Applicant"). The Applicant owns and operates the national high-voltage electricity transmission system and holds the electricity transmission license in England and Wales. The Applicant is therefore obligated to develop and maintain an efficient, co-ordinated and economical system of electricity transmission and facilitates competition in the generation and supply of electricity, as set out in the Electricity Act 1989.

1.2 Why do we need the Cable Tunnel Replacement Project?

1.2.1 As part of their commitments to tackling climate change, the UK Government has set legally binding targets to become net-zero in all greenhouse gases by 2050 for England and Wales. To meet these targets, the UK will need to continue to move away from traditional forms of energy generation to heat homes, charge vehicles and power businesses, and there will be a greater need for cleaner, greener energy.

1.2.2 A large amount of renewable and low carbon energy generation has been forecast connecting into the electricity transmission network in the east coast of England, together with three interconnectors from the continent. Through these forecasts, it has been identified that the Tilbury to Grain and Tilbury to Kingsnorth 400 kV circuits will become significantly overloaded in their current capacity and require uprating.

1.2.3 Therefore, it has been recommended that investment is made in upgrading the 400kv circuits. As the Transmission Licence Holder with responsibility for the circuits, National Grid is required to upgrade the existing circuits.

1.3 Overview of the Cable Tunnel Replacement Project

1.3.1 The existing Grain to Tilbury400kV circuits are mostly overhead lines, however a section is cabled within a tunnel underneath the River Thames. This tunnel in its current state would not safely accommodate an upgrade to the new cables.

1.3.2 Therefore, the Cable Tunnel Replacement Project (hereafter the Proposed Development) consists of a boring a new tunnel under the River Thames. In order for the overhead lines to transition to a cable under the River Thames, the following above-ground components are required at both ends of the new tunnel at Tilbury and Gravesend:

- **A new cable sealing end compound**: consisting of:
  - **a new tunnel headhouse** which will cover the shaft into the tunnel;
  - **a new overhead line gantry structure** which will connect the overhead line downlead conductors and transfer them to six sealing end structures; and
- **Modifications to the existing overhead line (OHL)**: The new OHL conductors will be connected to the existing 400kV OHL conductors via new terminal pylons. The old OHL conductors and existing pylons will be either replaced, refurbished or removed.

1.4 Planning Permission and Environmental Impact Assessment

Planning Permission

1.4.1 Planning permission is required for the Proposed Development under the Town and Country Planning Act 1990 (excluding overhead lines and pylon alterations). The planning applications will be examined and determined by the relevant local planning authorities - Thurrock Council for the development north of the River Thames in Tilbury, and Gravesham Borough Council for the development south of the River Thames in Gravesend.

Marine Management Organisation

The Marine Management Organisation (MMO) is responsible for marine licensing in English inshore and offshore waters and for Northern Ireland offshore waters.

1.4.2 The section of the tunnel which falls within Mean Low Water Spring is within the Marine Management Organisation's jurisdiction. The boring of the tunnel is exempt from marine licensing.

1.4.3 The alterations to pylons and overhead line required for the Proposed Developed are consented under the Electricity Act 1989. The Department for Energy Security and Net Zero is the determining body.

Environmental Impact Assessment

1.4.4 Environmental assessment is the process of identifying, evaluating and mitigating the likely significant environmental effects of a proposed development. It promotes the early identification and evaluation of any issues which may cause negative socio-economic impacts, harm to the environment or human health, or be a source of nuisance to local people. This enables appropriate measures to avoid, reduce or offset any significant negative effects to be put in place. This can include measures incorporated into the design of the development, or commitments to implement environmentally sensitive construction methods and practices.

1.4.5 The results of the environmental assessment also ensure that decision makers, such as Thurrock Council and Gravesham Borough Council and statutory consultees like Natural England and the Environment Agency, as well as other interested parties including local communities, are aware the types of environmental effects which may occur and the potential scale (severity) of those effects. This allows a judgement to be made as to whether the effects may be significant or not, so that they may be properly considered when the application for planning permission is being assessed.

1.4.6 The Proposed Development has been Screened under The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended). This is where an opinion is requested from the Local Planning Authorities, in this case, Thurrock Council and Gravesham Borough Council, as to whether they believe the Proposed Development may cause a significant effect on the environment and whether planning applications should be accompanied during submission by an Environmental Impact Assessment (EIA).

1.4.7 An EIA screening report was produced in June 2023 and submitted to Thurrock Council, Gravesham Borough Council, and the Marine Management Organisation (MMO).

1.4.8 Gravesham Borough Council determined the Proposed Development to be EIA. Thurrock Council determined the Proposed Development to be 'not EIA Development'.

1.4.9 As the Proposed Development includes a new cable tunnel under the River Thames, it was also Screened under the Marine Works (Environmental Impact Assessment) Regulations 2007. The Marine Management Organisation determined the Proposed Development does not constitute a project under either Schedule A1 or A2 of the Marine Works (Environmental Impact Assessment) Regulations 2007, and therefore the screening was revoked.

1.4.10 The whole of the Proposed Development has been considered as EIA Development and so an Environmental Statement (ES) has been written to provide Thurrock Council, Gravesham Borough Council and the Department of Energy Security and Net Zero with information on the likely significant

environmental effects of the Proposed Development, to inform their decision in granting planning permission

1.4.11 It is not necessary to screen the overhead line and pylon alterations under The Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2017 because the proposed Development does not fall within Schedule 1 of the regulations and schedule 2 of the regulations only applies to development that does not provide an EIA report.

1.4.12 This Non-Technical Summary (NTS) forms Volume I of the ES and presents the findings, in non-technical language.

2 Consideration of Alternatives

2.1 Approach to the Consideration of Alternatives

Strategic Options Appraisal

2.1.1 In 2022, a Strategic Options Appraisal was undertaken. This included appraisal of the following three options:

- Option 1 - The installation of new cables within the existing tunnel;
- Option 2 - The installation of new cables within the new tunnel; and
- Option 3 - The installation of a new overhead line across the River Thames.

2.1.2 Option 1 would not be feasible due to the health and safety risks posed and therefore the choice was limited to Option 2 or Option 3.

2.1.3 Option 2, the installation of new cables within the new tunnel, was considered to be preferable overall. This is because the required height of the pylons for Option 3 posed a risk of potentially significant environmental effects.

Alternative Locations of the Infrastructure and Overhead Lines

2.1.4 Following the decision to adopt Option 2 (installation of new cables in a new tunnel), further appraisal work was carried out to identify the most suitable areas for the tunnel and the required infrastructure either side of the River Thames.

2.1.5 It was identified that the required infrastructure should be located to the existing tunnel and associated infrastructure as possible, to reduce the amount of permanent construction work required to divert the existing overhead line.

2.1.6 The land adjacent to both existing Sealing End Compound at Tilbury and Gravesend was identified as suitable for the construction of both temporary and permanent works. The land was divided into sections so compare them from an environmental and engineering constraints point of view, weighing up the pros and cons associated with each parcel of land.

2.1.7 At Tilbury, of the seven land parcel options identified, option 5 was determined to be the most appropriate and was taken forward for further design development.

2.1.8 At Gravesend, of the six land parcel options identified, option 2 was determined to be the most appropriate option and was taken forward for further design development.

2.1.9 More detailed information on the consideration of alternatives can be found in ES Volume II Chapter 2: Alternatives.

3 Overview of Key Components of the Proposed Development

3.1.1 The Proposed Development comprises the following above-ground components at both ends of the new tunnel:

- **A new cable sealing end compound**: consisting of:
  - a new tunnel headhouse which will cover the shaft into the tunnel;
  - a new overhead line gantry structure which will connect the overhead line downlead conductors and transfer them to six sealing end structures; and
- **Modifications to the existing overhead line**: The new overhead line conductors will be connected to the existing 400kV overhead line conductors via new terminal pylons. The old OHL conductors and existing pylons will be either replaced, refurbished or removed.

3.1.2 The Proposed Development is located in part in Tilbury, Thurrock and in part in Gravesend, Kent.

3.2 Cable Tunnel

3.2.1 A new tunnel will be bored under the River Thames. It will be approximately 2.2km in length (measured from headhouse to headhouse) and 4m in internal diameter. The depth of the tunnel will be approximately 34-32 metres above Ordnance Datum (above mean sea level).

3.2.2 Once the tunnel is installed, twelve new cross linked polyethylene (XLPE) cables will be installed. XLPE is now the preferred cable type – a modern cable requiring less maintenance and which doesn't contain any fluids, such as oils or sulphur hexafluoride, which is greenhouse gas.

3.2.3 Each cable needs to be well-spaced from the other cables so they do not over heat.

Sulphur hexafluoride (SF6) explained

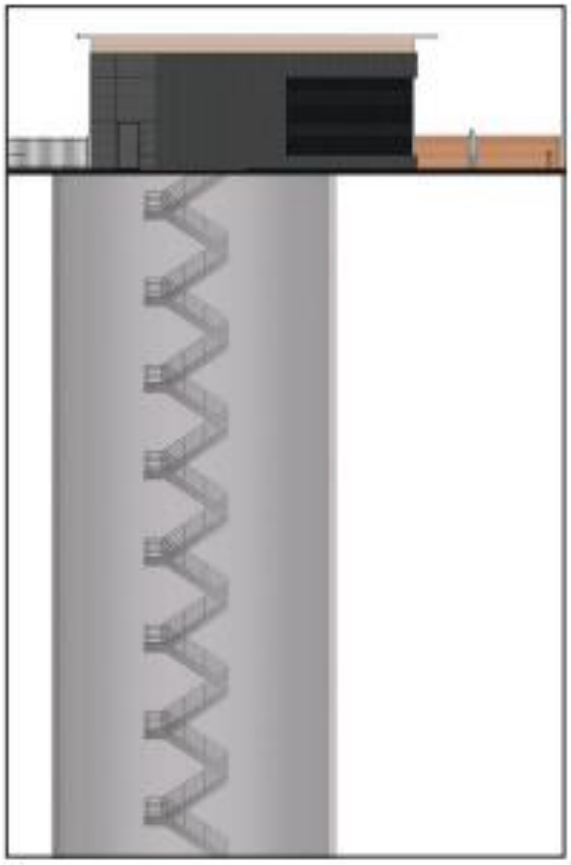
Sulphur hexafluoride – also known as SF6 – is a 'greenhouse gas' that has long played a part in global warming, similar to that of carbon dioxide (CO_2). SF6 is one of the most potent greenhouse gases we know. Around 80% of the SF6 used globally is in electricity transmission and distribution. It is not required in this Proposed Development.

Figure 3-1: Example of XLPE Cables installed in a deep bored tunnel

3.3 Tunnel Shafts

3.3.1 In order to construct the new cable tunnel, vertical shafts will need to be constructed at Tilbury and Gravesend. These will be approximately 15m in diameter and around 40m deep. Once constructed, these will in place permanently.

Figure 3-2: Cross section of tunnel shaft with stair access



3.4 Sealing End Compounds

3.4.1 Two Sealing End Compounds are required to be constructed, one at Tilbury and one at Gravesend.

3.4.2 The Sealing End Compounds will contain the equipment required to transition the cables out of the tunnel and up onto to the overhead lines supported by pylons.

Cable Sealing End Compounds
A plot of fenced land similar to an electricity substation that allows underground cables to join onto an overhead line.

3.4.3 The Sealing End Compounds will be surrounded by a security fence and electric pulse fence at a maximum height of 3.4m.

3.5 Tunnel headhouses

3.5.1 Within each Sealing End Compound, there will be a tunnel headhouse which will sit on top of the tunnel shafts. They provide controlled safe and secure access into the tunnel shafts, enclosure for ventilation fans and equipment to regulate the temperature in the tunnel, to locate associated mechanical and electrical equipment and to house control equipment for the cable circuits.

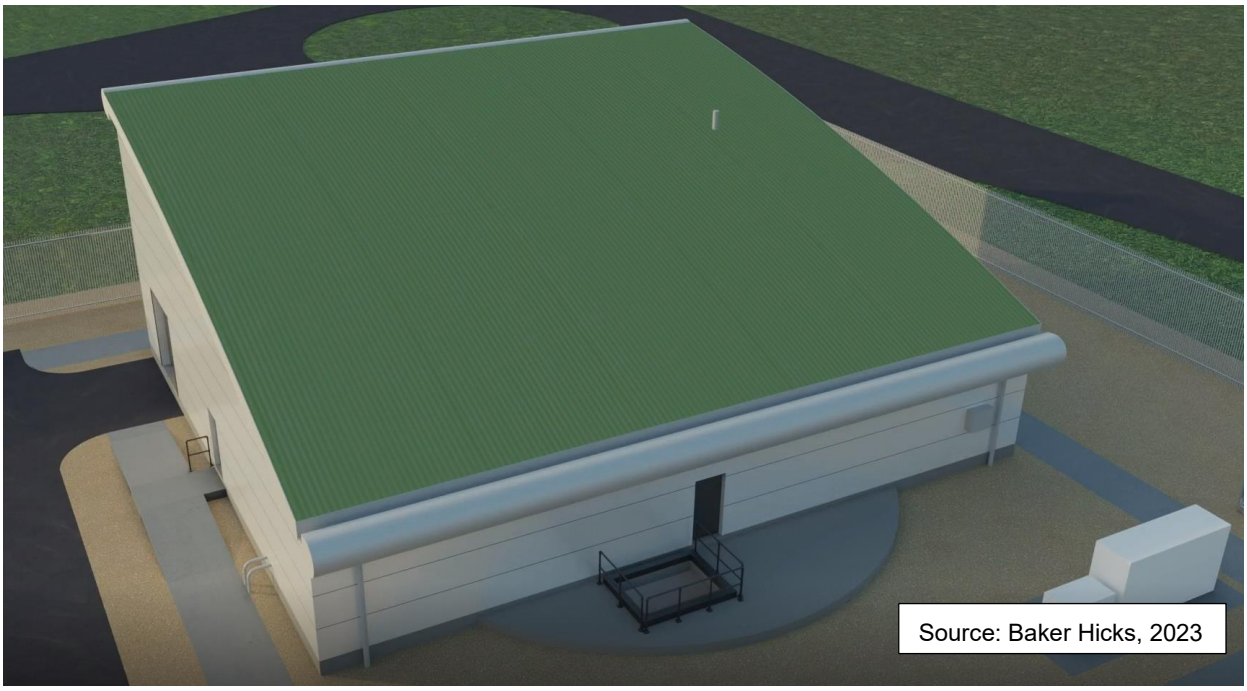
3.5.2 The tunnel head houses have been sized to accommodate only the required equipment for the operation of the tunnel. Each has been designed in a way to fit in with the environment and surroundings.

Tunnel Headhouse and Shafts

A tunnel shaft is a cylindrical pit which provides a permanent access point to the cable tunnel via stairs.
A tunnel headhouse (a building) sits on top of this to provide an access point to the shaft and cable tunnel for maintenance and houses the necessary equipment such as ventilation fans.

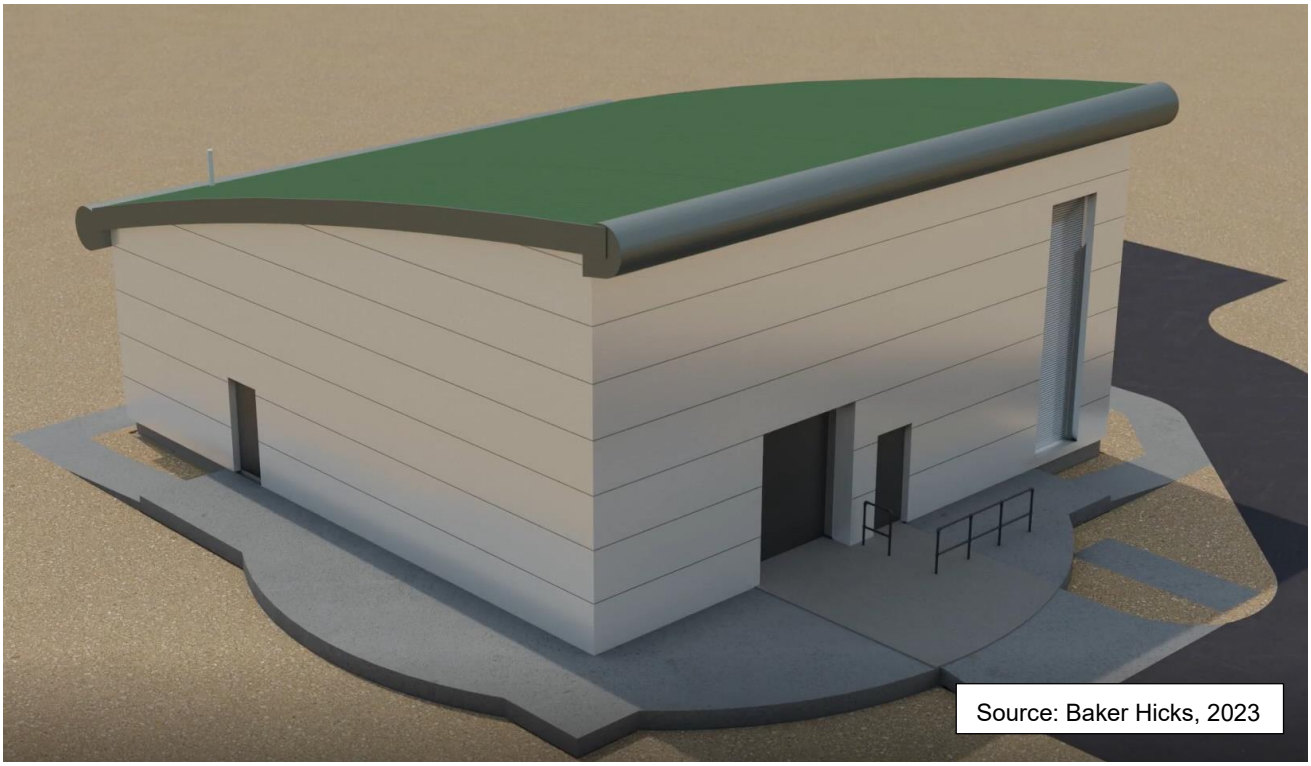
3.5.3 The new headhouse would have a biodiverse roof and would contain shaft access via staircase, welfare facilities for visiting staff, control rooms and electrical equipment.

Figure 3-3: Tilbury headhouse (indicative)



Source: Baker Hicks, 2023

Figure 3-4: Gravesend headhouse (indicative)



3.7 Overhead Line Diversions

3.7.1 The new Sealing End Compounds need connecting into the existing wider overhead line network. During a formally arranged outage, existing pylons and overhead line will be removed, new pylons constructed, and new overhead line cables installed.

Outages or planned interruptions

National Grid maintain and improve the electricity network, which sometimes means supply needs to be interrupted for short periods. A pre-arranged outage means work can be completed safely and without damage or disruption.

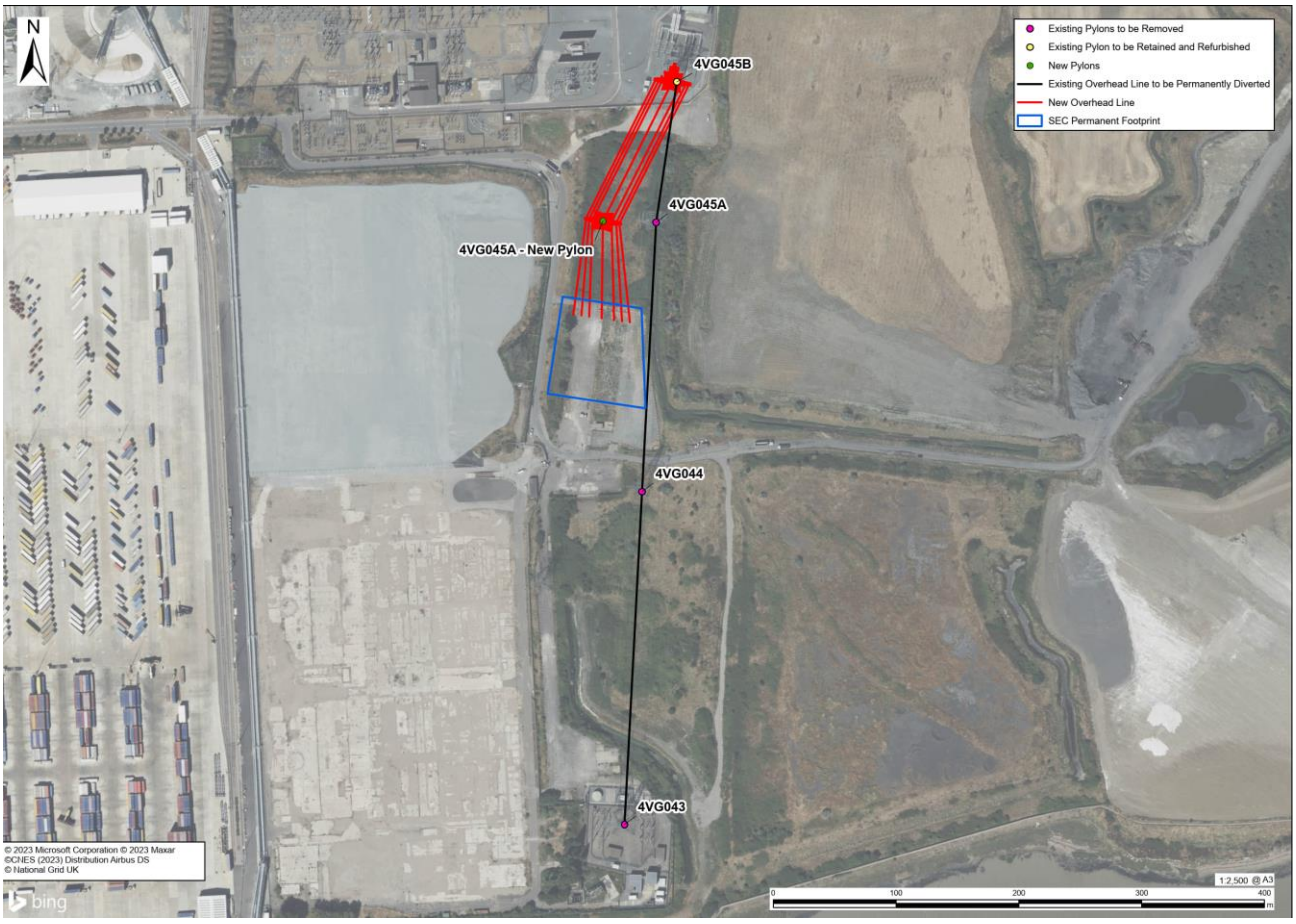
3.7.2 The proposes changed at Tilbury are shown in Figure 3-5 below. Existing terminal pylon 4VG045A will be replaced with a new terminal pylon (with same reference), which will be erected adjacent to its existing location and to the north of the proposed Tilbury SEC. This will form the new commencement of the 400kV overhead line. Pylons 4VG044 and 4VG043 will be removed and the existing terminal pylon 4VG045B inside the Tilbury Substation will be refurbished. Approximately 600m of overhead line conductor will be removed.

Single and Double Span Overhead Line

A single span carries conductors (cables) for only one circuit.
A double span carries conductors for two circuits.

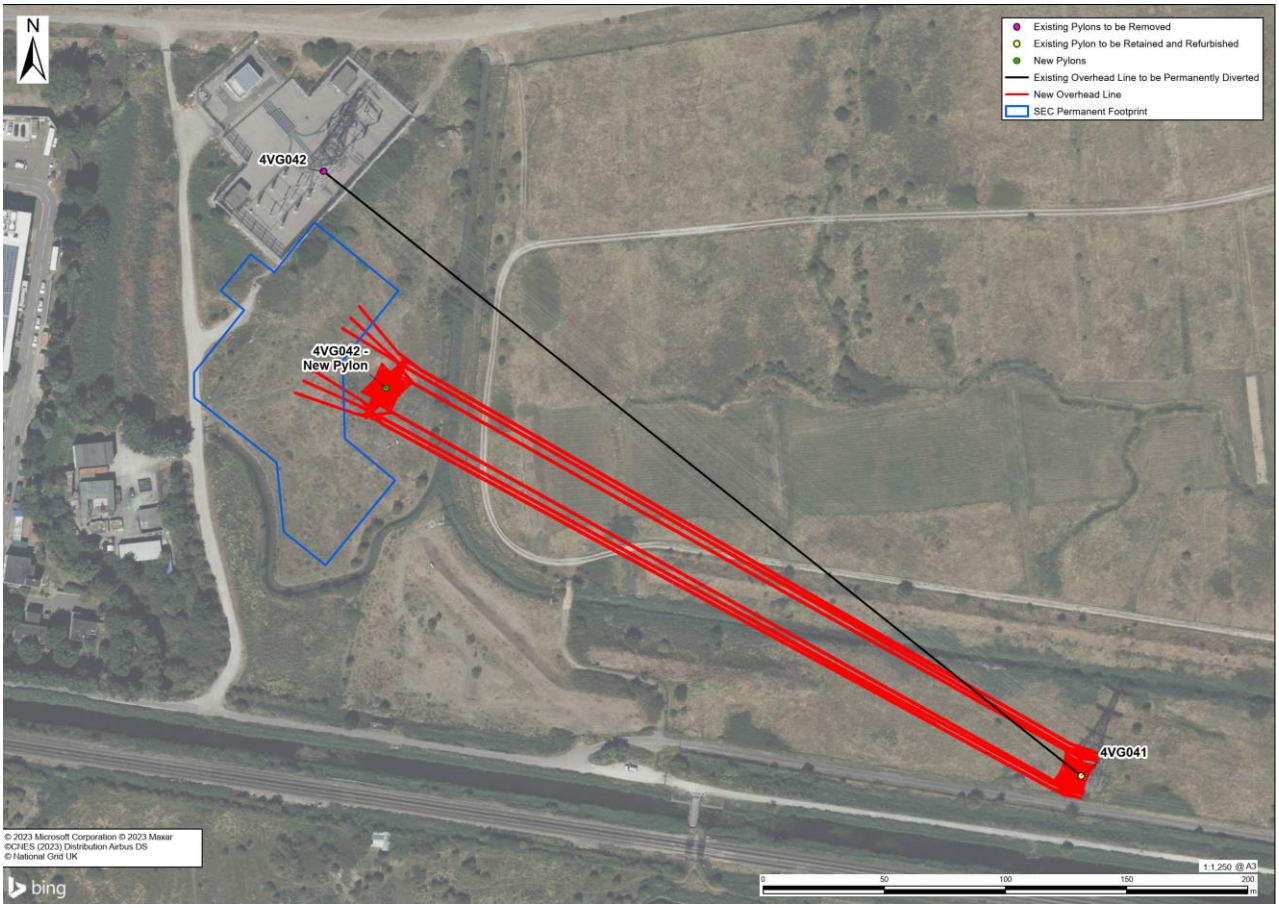
3.7.3 Approximately 200m of new double span overhead line will be installed from the existing terminal pylon (4VG45B) within the Tilbury Substation, to the new pylon 4VG045A. This is illustrated on the figure below.

Figure 3-5: Overhead Line Reconfiguration at Tilbury



3.7.4 At Gravesend, the new arrangement is shown on Figure 3-6. In summary, approximately 400m of single span overhead line will be permanently removed and approximately 330m new double span overhead line will be installed between pylons 4VG041 and new pylon 4VG042. The existing pylon 4VG042 will be removed. Pylon 4VG042 will be replaced by a new terminal pylon which will be erected near the new Sealing End Compound. The existing Pylon 4VG041 will be refurbished.

Figure 3-6: Overhead Line Reconfiguration at Gravesend



3.8 Construction Phase

Construction of the Tunnel

3.8.1 Using a tunnel boring machine, a tunnel will be constructed between the two shafts. The machine will be launched from the Tilbury side and be received at the shaft on the Gravesend side. Tunnelling works are expected to take place for approximately eight months.

Tunnel Boring Machines
A tunnel boring machine can excavate a tunnel and insert concrete lining using a rotating head with cutting parts, running on motors.

Figure 3-7: Example Tunnel Boring Machine

Source: National Grid, 2020.

Tunnel and Shaft Spoil

3.8.2 National Grid have a target for zero waste to landfill by 2026, which will come into force during the construction phase of the Proposed Development. There are numerous promising local opportunities have been explored for the reuse of the spoil materials to meet National Grid's commitment to avoid landfill.

3.8.3 Currently, National Grid are exploring opportunities to transport the spoil to habitat enhancement projects in the local vicinity such as the RSPB site at Cliffe Pools which would provide benefits to aquatic invertebrates and wading birds.

3.8.4 Whichever site is chosen, the removal of the tunnel and shaft spoil at Tilbury will be via the River Thames, to reduce the number of HGV required on the local and strategic road network.

~~3.8.5 National Grid will seek to utilise either :~~

~~3.8.6 the existing and working jetty to the south-east of the proposed Tilbury SEC, delivering the tunnel and Tilbury shaft spoil to the jetty via HGV and transferring to barge. There is an existing road extending to the jetty, however some upgrading of the existing road will be required.~~

~~3.8.7~~3.8.5 Berth 5 at the Port of Tilbury, delivering the tunnel spoil to the berth via HGV and transferring to barge. No road upgrading will be required ~~for this option~~. This route is depicted in the Planning Application – Red Line Boundary on Figure 1.1 of this ES.

~~3.8.8~~3.8.6 The ~~jetty or~~ berth would not be used during weekend or night-time hours, as spoil from the 24-hour tunnelling process will be stored within the temporary construction compounds overnight and during the weekend. The spoil will only be transported to the jetty or berth during daytime working hours.

Temporary Construction Compounds

~~3.8.9~~3.8.7 To facilitate the construction of the Proposed Development, a temporary construction compound will be required at both Tilbury and at Gravesend. These are required to provide space

for construction of the Proposed Development, the storage of construction plant and equipment, and provide offices and welfare facilities for construction workers.

~~3.8.10~~3.8.8 The construction compounds will be configured to suit the phase of the construction, starting with construction of the tunnel shafts, then the tunnelling phase, then the build of the headhouse and sealing end compound, and finally the alterations to the overhead lines.

Overhead Line Reconfiguration – temporary working areas

~~3.8.11~~3.8.9 Temporary working areas and plant areas are required to allow for the refurbishment, removal or erection, as well as overhead line restringing (when the cables are installed between the pylons).

3.9 Construction Traffic

3.9.1 The tunnelling phase will involve the busiest period of construction activity and so will see the most traffic generation during the whole of the Proposed Development.

3.9.2 By utilising the River Thames to remove the shaft and tunnel spoil from Tilbury, approximately ~~11,440~~11,426 HGV movements (in and out of the site), or 5,713 two-way HGV movements would be removed from the local and strategic highway network. This equates to approximately 50~~42~~% of total HGV movements for the Proposed Development at Tilbury.

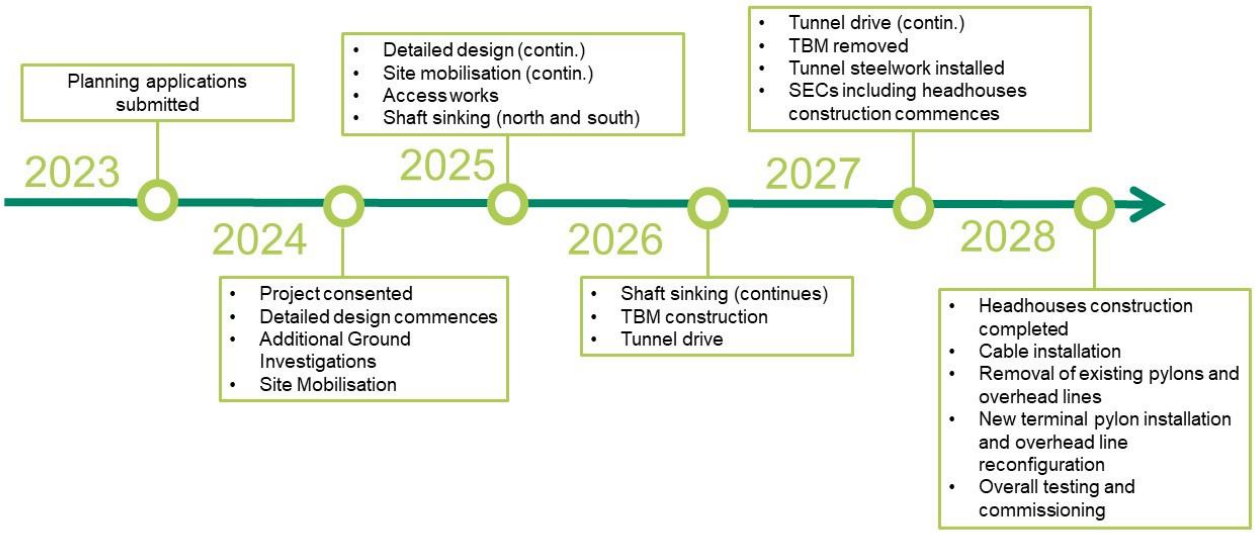
3.9.3 The construction works required at Gravesend is less intensive than at Tilbury. This is because the tunnelling will be driven from the Tilbury side. The busiest period of construction activity at Gravesend will be during the sinking of the tunnel shaft. During this period, there would be approximately ~~2,462~~2,436 HGV movements spread over ~~24~~26-33 weeks.

3.9.4 An Outline Construction Traffic Management Plan has been produced (See ES Volume VI Appendix 10.1) to accompany the planning application. This identifies a safe and efficient transport route for vehicles to access both the Gravesend and Tilbury sites during the construction period, whilst minimising impacts on the local highway network.

3.10 Construction Programme

3.10.1 Early construction activity will take place from late 2024. The main construction work will commence in 2025 and run until approximately 2028, when the Proposed Development is to be commissioned. The indicative construction programme is shown in **Figure 3-8.**

Figure 3-8: Indicative Construction Programme



3.11 Working Hours

3.11.1 The core working hours for the construction activities will be between 8:00 – 18:00 (Monday to Sunday). A period of up to one hour before and one hour after core working hours is envisaged for start-up and close down activities. These activities will not create significant disturbance to neighbouring residents/businesses but may include movement to place of work, maintenance and general preparation works.

3.11.2 No works are to be undertaken out of hours (subject to delivery of the Tunnel Boring Machine), or on Bank Holidays without prior agreement with Thurrock Council and/or Gravesham Borough Council.

3.11.3 An exception to these hours is the tunnelling phase. Once the Tunnel Boring Machine starts, it will need to continue running 24 hours a day until completed. It is expected to take eight months. The potential impacts of this have been assessed as part of the Environmental Impact Assessment.

3.12 Public Rights of Way

3.12.1 At Tilbury, there would be no temporary or permanent changes required to any Public Rights of Way.

3.12.2 At Gravesend, the Thames & Medway Canal Road hosts the National Cycle Network (NCN) Route 1, managed by Sustrans (custodian of the NCN in the UK) and aPublic Right of Way (NS317). For health and safety reasons, both of these would need to be diverted during appropriate phases of construction. Pedestrians will be diverted onto nearby Public Right of Way NS318 and NG1 (Sanon Shore Way / England Coast Path). Whereas, cyclists would be diverted onto Chequers Street (at Lower Higham) – Chalk Road – Lower Road – Lower Higham Road – A226 (Rochester Road) – Raphael Road – subway – Prospect Grove – Norfolk Road.

3.13 Environmental Management during Construction

3.13.1 An important measure to avoid significant environmental effects is effective management during the design and construction of the Proposed Development, details of which are included in an Outline Construction Environmental Management Plan (CEMP), which can be found in ES Volume VI Appendix 3.1.

3.13.2 The Construction Environmental Management Plan aims to ensure that any adverse effects of construction on the environment and local communities are minimised by establishing a framework within which the appointed Contractor (including any sub-contractors or suppliers involved in the works) will plan, implement and deliver environmental management, mitigation and monitoring requirements during the construction phase of the Proposed Development. National Grid will ensure adherence to the requirements of the CEMP during the detailed design and construction phase. National Grid will undertake assurance audits and inspections throughout the construction phase to ensure that the Contractor is in compliance with the CEMP and other applicable requirements.

3.14 Electric and Magnetic Fields

3.14.1 All equipment that generates, distributes or uses electricity produces Electric and Magnetic Fields (EMFs). The exposure limits for EMFs in the UK are set by the Government on advice from Public Health England, and the electricity industry strictly follows these limits.

3.14.2 The Proposed Development will be designed to comply with the guidelines for exposure to EMFs.

3.15 Operational Phase

3.15.1 Once the construction phase is completed and the new tunnel is commissioned and in operation, it is expected that visits will mirror those of the existing sealing end compounds.

3.15.2 The Sealing End Compounds will be unmanned, and infrequent maintenance visits required as detailed below:

- Bi-monthly visits (Tilbury) / monthly visits (Gravesend) with a light van or car for e.g., safety checks on such equipment as fire alarms; inspection or minor maintenance of electrical and ventilation equipment; and
- Maintenance work on electrical/ventilation equipment or buildings involving five to ten light good vehicles visits once every two to five years.

3.16 Decommissioning

Decommissioning of existing assets

3.16.1 Decommissioning of the existing tunnel and associated infrastructure does not form part of the Proposed Development. However, it is expected that the existing cables and cable joints within the existing tunnel will have the oil removed and be sent for recycling. Further tunnel inspection work will be needed.

3.16.2 Where possible, materials such as steel and cable terminations, within the existing SEC's will be recycled, or reconditioned for reuse, or repurposed.

Decommissioning of new assets

3.16.3 The overall design life of the new tunnel, sealing end compounds including the headhouses is approximately 120 years. During that time, the cables are likely to be replaced more than once.

3.16.4 If the Proposed Development is to be decommissioned in the future, its parts will be decommissioned in accordance with the relevant legislation at the time. They will be removed, disposed of or reused in an appropriate manner.

4 EIA Methodology

4.1 Environmental Impact Assessment

4.1.1 The full Environmental Impact Assessment is reported within the Environmental Statement (ES), of which this document constitutes the ES Non-Technical Summary (ES Volume I). The ES will be submitted alongside the planning application and has been undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The ES provides the decision maker, in this case Gravesham Borough Council, Thurrock Council and the Department of Energy Security and Net Zero as much information as possible about:

- The baseline environment (the environment as it is today);
- The likely environmental effects resulting from the Proposed Development in all phases of development (construction, operation and decommissioning);
- Appropriate mitigation being delivered as part of the Proposed Development (to avoid, reduce or offset adverse effects); and
- Any residual effects that cannot be mitigated.

4.1.2 This allows the decision makers to make a fully informed choice when it comes to considering consent for the Proposed Development.

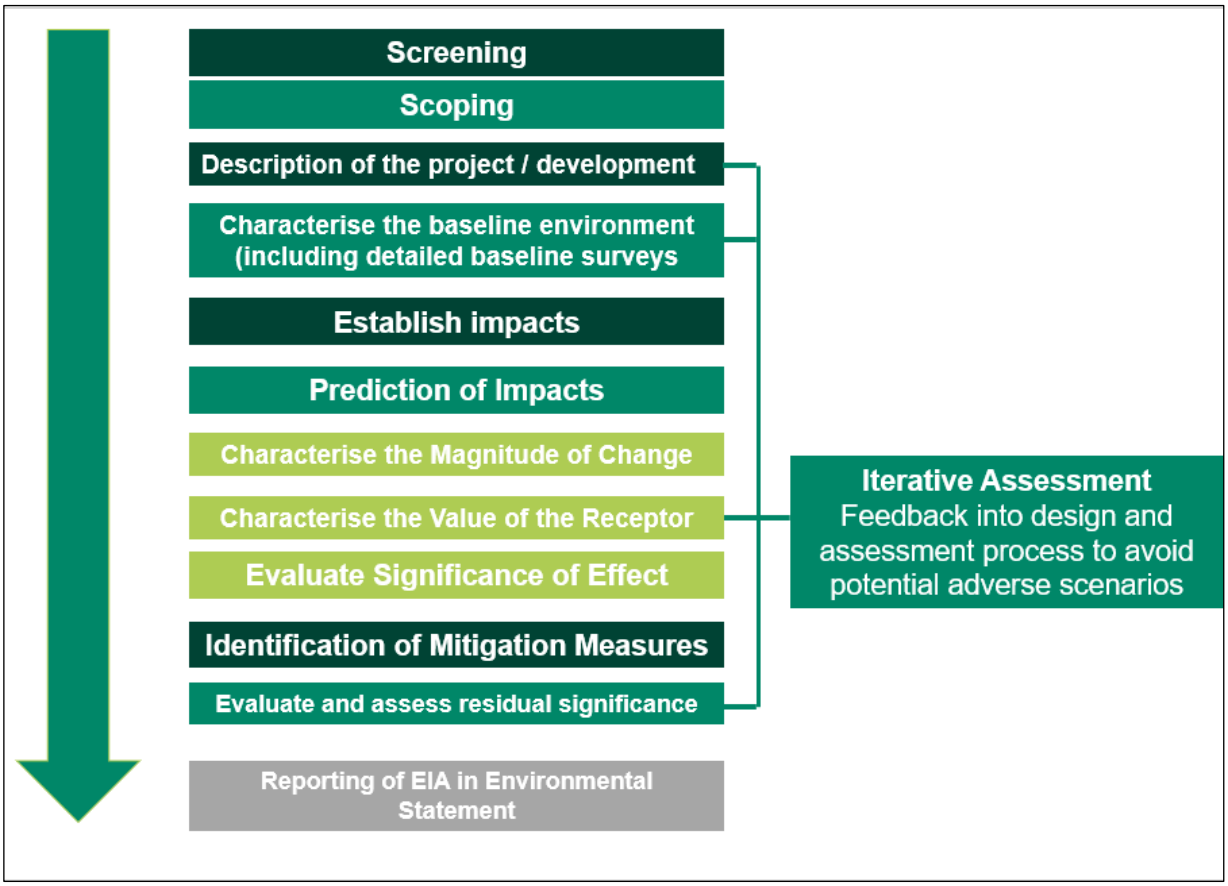
4.2 Methodology

4.2.1 The Applicant has gathered information about the existing environment in a study area around the Proposed Development. The size of the study area depends on the topic that is being assessed and is reported in each technical ES chapter along with a rationale for its selection.

4.2.2 The method for assessing the significance of effects is reported in full in ES Volume II Chapter 4: EIA Methodology. More specific methods for each technical topic, based on relevant standards or guidelines, are presented in ES Volume III Chapters 7-14 for Tilbury and ES Volume IV Chapters 15-22 for Gravesend. Any deviation from the methodology presented in Chapter 4 is explained in each respective chapter.

4.2.3 The assessment methodology for the ES follows a systematic approach in order to identify the significant environmental effects of the Proposed Development. The staged approach for the ES assessment methodology is shown in **Figure 4-1.**

Figure 4-1: Staged Approach for ES Assessment Methodology



Mitigation

4.2.4 A standard hierarchical approach to identifying mitigation requirements has been used:

- **Avoid or Prevent**: In the first instance, mitigation should seek to avoid or prevent the adverse effect at source, for example by locating the headhouse and CSES away from a sensitive receptor. Mitigation by design has played an important role in avoiding impacts as the design of the Proposed Development has evolved;
- **Reduce**: If the effect is unavoidable, mitigation measures should be implemented which seek to reduce the significance of the effect; and
- **Offset**: If the effect can neither be avoided nor reduced, mitigation should seek to offset the effect through the implementation of compensatory mitigation, for example offsite habitat creation to replace habitat losses.

4.2.5 The mitigation measures described in the ES fall into two categories, as follows:

- **Mitigation by design**: This is where the design of the Proposed Development is developed through an iterative process which involves seeking to avoid or reduce potential environmental effects through appropriate routeing, siting and design specifications. This is also often referred to as mitigation by design; and
- **Mitigation specific to the Proposed Development**: This refers to additional measures which have been identified as being necessary following an initial assessment, to help ensure any potential effects are minimised further wherever possible.

5 Consultation

5.1.1 As part of the environmental assessment process varying types of stakeholder engagement has been undertaken. This has included engagement with statutory bodies as well as consultation with the members of the public.

5.1.2 A website was launched in October 2023 and can be accessed via the link below. This website includes detailed information about the Proposed Development including an interactive map, online public information exhibitions and contact information. The website can be found at:

https://www.nationalgrid.com/electricity-transmission/network-and-infrastructure/infrastructure-projects/grain-to-tilbury

5.1.3 A separate Statement of Community Involvement Report is included as part of the planning applications, which further explains how the public were engaged during the development of the Proposed Development. Further information on the consultation undertaken is also present within ES Volume II Chapter 5: Consultation.

5.2 Early engagement on the Proposed Development

5.2.1 In 2022, National Grid assessed a selection of options for the upgrade of the circuits within the existing cable tunnel under the River Thames. The following three options were identified:

- the installation of new cables within the existing tunnel;
- the installation of new cables within the new tunnel; and
- the installation of a new overhead line across the River Thames.

5.2.2 On balance, it was considered that the installation of new cables within a new tunnel was the most viable preferable option overall. Feedback from the following stakeholders was sought to inform this decision:

- Thurrock Council;
- Gravesham Borough Council;
- Natural England;
- Historic England;
- Environment Agency;
- Port of Tilbury;
- Port of London Authority; and
- Royal Society for the Protection of Birds (RSPB).

5.3 EIA Scoping

5.3.1 A formal EIA Scoping Report was not submitted to Thurrock Council or Gravesham Borough Council. However, consultation was held on specific elements of the scope of the ES with relevant consultees to ensure the Environmental Statement is robust and proportionate.

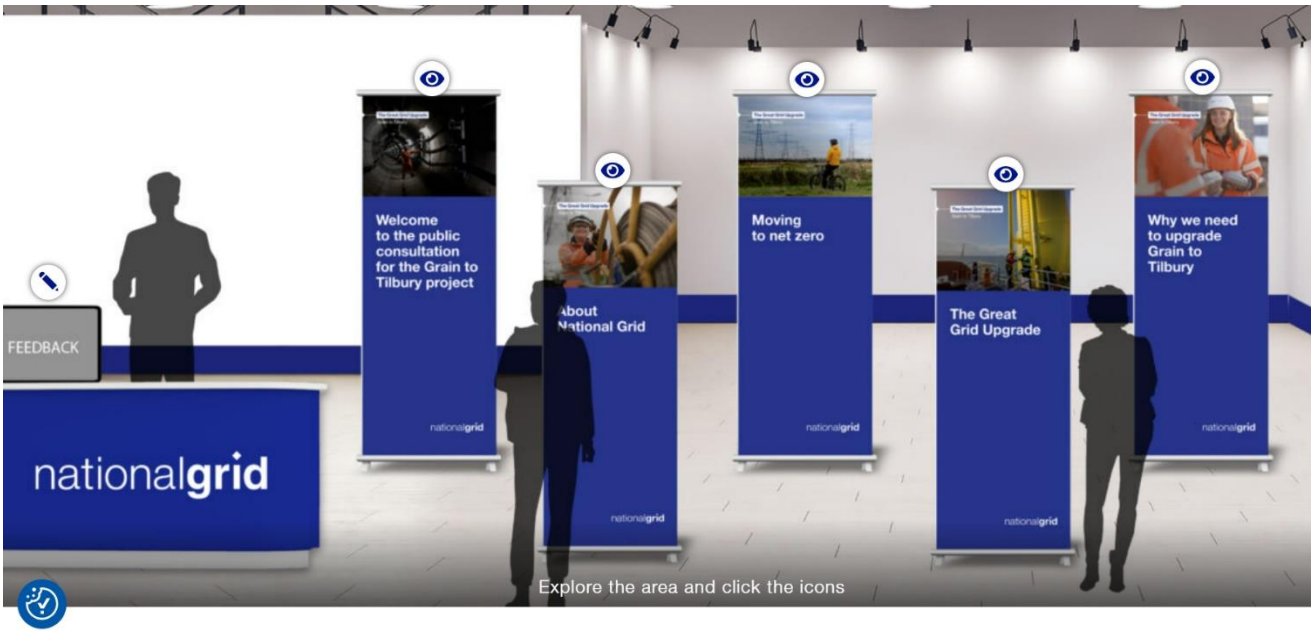
5.3.2 Technical specialists also consulted with relevant statutory consultees, regulatory bodies and specialist advisors throughout the production of the Environmental Statement as part of the baseline data gathering and assessment process.

5.4 Public consultation

5.4.1 Two in-person public exhibition events and two webinars were held to introduce the proposals to residents in Gravesend and Tilbury and provide the local communities and key stakeholders with the opportunity to speak to the Proposed Development design team. To ensure the wider community

was aware of the consultation, a detailed press release was issued to several local media publications.

Figure 5-1: Virtual Exhibition at nationalgrid.com



In person Events

5.4.2 A public consultation event for the Gravesend site was held on 11 October 2023, and a public event for the Tilbury site was held on 13 October 2023. These events provided an opportunity for the team to share the proposals for submission with residents and invite the public to meet the team and have their questions answered. These events were supported by a consultation website which could be viewed at any time online. The website was made publicly available from 27 September 2023, feedback was then accepted until 11:59pm on 29 October 2023.

5.4.3 These events were advertised extensively via a newsletter which was sent to over 11,000 households and businesses in the local areas surrounding the two proposed sites. The events were also advertised on the dedicated Proposed Development website, and through social media advertisements.

5.4.4 National Grid held a four-week public consultation which included in person and online events that ran from the 27th September 2023 to the 29th October 2023. The purpose of the consultation was to inform members of the public, the local community, and other interested stakeholders on the details of the Proposed Development and also allows an opportunity for people to provide feedback relating to the Proposed Development so that useful insights can be integrated into the evolving design in advance of planning submission.

Webinar Events

5.4.5 Two webinar events were also held to provide people with an opportunity to engage with the proposals and ask questions to the Proposed Development design team virtually. The first webinar was held on 18th October 2023 to present the Gravesend proposals. 12 people registered for this event. The second webinar was held on 19th October 2023 to present the Tilbury proposals. Nine people registered for this event.

Feedback Form and Feedback Received

5.4.6 A feedback form allowing residents to share their views on the proposals was available at the in-person events and published online via the consultation website. Those without access to the internet were also able to request a paper copy of the feedback form to be sent to their home address.

5.4.7 The form asked five questions covering different aspects of the proposals with a mixture of question formats, including multiple-choice and open-ended questions. The feedback obtained from the forms is shown in the next chapter.

5.4.8 The following review includes all comments received up to the closure of the public consultation on 29 October 2023, including online, public exhibition and postal responses. A total of 24 visitors attended the two in-person exhibition events.

5.4.9 During the consultation period, a total of 16 feedback forms were received. In addition to this, the Proposed Development design team also received six emails from residents and local businesses. These emails ranged from providing feedback, as well as asking questions to the wider Proposed Development design team.

5.4.10 Overall, the feedback received was broadly positive, with the majority of respondents stating that they were in favour of the proposals. 66% of respondents strongly supported or supported the proposal to upgrade the existing cable tunnel. 56.5% of respondents strongly supported or supported the construction process plan, including the proposal to move spoil via barge on the Thames.

5.4.11 For more information, refer to the Statement of Community Involvement.

6 Biodiversity

6.1 Introduction

6.1.1 The biodiversity assessment looks at the effects of the Proposed Development on animal and plant species in the area. Survey work and desk-based research has helped to inform this assessment by establishing the baseline (or existing) environment, in particular any protected or valuable habitats, including designated sites and protected species that fall within the Site Boundary and the surrounding area.

6.1.2 The full biodiversity impact assessment can be found in ES Volume III Chapter 7: Biodiversity – Tilbury and ES Volume IV Chapter 15: Biodiversity – Gravesend.

6.2 Baseline Environment

6.2.1 A 10 km Study Area around the Proposed Development Boundary has been used to identify European and international statutory designated sites, and a 2 km Study Area has been used for the identification of local non-statutory conservation sites and for gathering third party records of habitats and protected and notable species.

Tilbury

6.2.2 At Tilbury, there are eight Statutory Designated Sites within the study area:

- Thames Estuary & Marshes Special Protection Area (SPA);
- Thames Estuary & Marshes Ramsar site;
- Mucking Flats & Marshes Site of Special Scientific Interest (SSSI);
- South Thames Estuary and Marshes SSSI;
- Swanscombe Marine Conservation Zone (MCZ);
- Swanscombe Peninsula SSSI;
- North Downs Woodlands Special Areas of Conservation (SAC); and
- Medway Estuary and Marshes SPA.

Designated Sites

- **Special Protection Area** - protected areas for birds in the UK
- **Special Areas of Conservation** - protected areas for habitat types and species most considered in need of conservation
- **Ramsar site** - a wetland site designated to be of international importance under the Ramsar Convention
- **Site of Special Scientific Interest** – an area of particular interest to science due to rare species of flora or fauna
- **Marine Conservation Zone –** areas that protect a range of nationally important, rare or threatened habitats and species

6.2.3 In addition, there are six non-statutory sites, designated for their local nature conservation value, within the 2 km study area. This includes Tilbury Power station Local Wildlife Site.

6.2.4 A preliminary ecological appraisal, which included a Phase 1 habitat survey of the land within the Site Boundary, was produced for both Tilbury and Gravesend in January 2023 (survey undertaken in November 2022). In addition to this, further surveys were undertaken for a variety of species to help further inform the baseline information and the assessment presented within the ES.

6.2.5 All widespread reptile species are known to occur at Tilbury. Ornithology surveys have recorded gadwall; little egret; avocet; whimbrel; black tailed godwit; dunlin; and redshank. There are no badgers setts which the Tilbury, but they are known to be active in the local area. No bats, great crested newts or otter/water vole were recorded at the Tilbury.

6.2.6 Invertebrate surveys at Tilbury undertaken in 2023 identified a total of 334 species of which 35 are regarded as ‘key species’. This is higher than average and suggests that the Tilbury survey area is a very diverse site for invertebrates. However, these vary in importance between areas, with some

of very high importance (in particular the tall fescue dominated areas) and others of much lower importance.

Gravesend

6.2.7 At Gravesend, there are 6 Statutory Designated Sites within the study area:

- Thames Estuary & Marshes Ramsar site;
- South Thames Estuary and Marshes SSSI;
- Thames Estuary & Marshes Special Protection Area (SPA);
- Mucking Flats & Marshes Site of Special Scientific Interest (SSSI);
- North Downs Woodlands Special Areas of Conservation (SAC); and
- Medway Estuary and Marshes SPA.

6.2.8 In addition, there are 5 non-statutory sites, designated for their local nature conservation value, within the 2 km study area, one of which is within the Proposed Development site.

6.2.9 A preliminary ecological appraisal, which included a Phase 1 habitat survey of the land within the Site Boundary, was produced for both Tilbury and Gravesend in January 2023 (survey undertaken in November 2022). In addition to this, further surveys were undertaken for a variety of species to help further inform the baseline information and the assessment presented within the ES.

6.2.10 Slow worm, common lizard and grass snake are known to occur at Gravesend. Ornithology surveys have recorded Cetti's Warbler, Skylark, Song Thursh, Dunnock and Linnet. No bats, great crested newts, otter/water vole were recorded at Gravesend. Badger is also assumed to be currently absent.

A Hornet Robberfly at Gravesend

6.2.11 Invertebrate surveys at Gravesend undertaken in 2023 identified a total of 307 species of which 27 are regarded as 'key species'. This is a higher than average and suggests that the Gravesend survey area is a diverse site for invertebrates. A total of 4 Rare Key Species were found.

6.2.12 Japanese knotweed is present to the north of Wharf Road adjoining the Site. It is listed under Schedule 9 of the Wildlife and Countryside Act (1981 as amended) making it an offence to plant or cause its spread in the wild.

6.3 Overview of Assessment

6.3.1 Potential impacts during the construction phase include:

- Habitat loss and or gain;
- Habitat degradation;
- Species mortality / death;
- Species disturbance/displacement;
- Fragmentation/connectivity of populations or habitats; and
- Introduction/spread of invasive species.

6.3.2 Potential impacts during the operational phase include:

- Habitat degradation/disturbance.

6.4 Mitigation

Construction

Tilbury

6.4.1 The Proposed Development design has evolved to consider sensitive ecological receptors, for example the Tilbury site has been located to minimise impacts on both the existing Tilbury Power Station Local Wildlife Site (LWS) and the proposed extension to the Mucking Flats and Marshes SSSI, through targeting the construction of the permanent development, and construction laydown to areas of existing hard-standing.

6.4.2 The design of the Proposed Development has also considered sensitive habitats, including grassland habitats that fall within the Tilbury Power Station LWS and proposed SSSI. This acted to minimise the loss of more valuable semi-natural habitats and in turn potential losses of reptile, invertebrate, bird nesting and foraging habitats. In addition, it acted to increase the distance between key noise generating activities associated with the tunnelling works and sensitive intertidal habitats utilised by wintering and passage birds, and thus reduce potential for disturbance of these bird populations during construction.

6.4.3 An Outline Construction Environmental Management Plan (CEMP) (provided in ES Volume VI - Appendix 3.1) summarises the types of mitigation measures that will be considered to mitigate against the effects of the Proposed Development.

6.4.4 It was identified that additional mitigation would be required to mitigate and compensate for potential impacts on terrestrial invertebrate populations, in particular the tall fescue planthopper. Tall fescue tussocks will be translocated (moved) from the affected areas between mid-July and end of August 2024. Once construction is complete, these tussocks and associated soil will be transferred to the area of hardstanding surrounding the proposed Tilbury SEC and utilised to provide enhancement of the habitats to be created in these areas.

Gravesend

6.4.5 The Proposed Development design at Gravesend has evolved to consider sensitive ecological receptors, for example the design of the Proposed Development at Gravesend has sought to minimise impacts on the Thames Estuary and Marshes SPA and Ramsar Site through siting the proposed new Gravesend Sealing End Compound (SEC) in close proximity to the existing SEC, while ensuring main works will avoid direct impacts on the SPA and Ramsar and minimise risk of disturbance impacts.

6.4.6 An Outline Construction Environmental Management Plan (CEMP) (provided in ES Volume VI - Appendix 3.1) summarises the types of mitigation measures that will be considered to mitigate against the effects of the Proposed Development.

Operation

6.4.7 The proposed lighting during operation will be managed to ensure it is avoided wherever possible, and where required sensitive design ensures that spillage into adjacent habitats is minimised.

Additional Mitigation

Tilbury

6.4.8 A number of additional mitigation and enhancement measures have been identified to reduce potential impacts. These include:

- Translocation of tussocks of tall fescue (the key foodplant of the tall fescue planthopper) from the areas impacted on the western margin of the proposed Tilbury SEC in order to reduce the level of direct mortality and maintain the availability of suitable habitat throughout the construction phase for this invertebrate.

- Undergoing negotiations for the use of spoil generated by the tunnel excavation for large scale habitat creation.

Gravesend

6.4.9 Requirements for additional mitigation is not required for the Gravesend site.

6.5 Residual Effects and Conclusions

Tilbury

Construction

6.5.1 There are no significant effects anticipated during the construction phase at Tilbury. Minor to negligible effects are expected as follows:

- A temporary minor beneficial effect (not significant) to grassland, scrub and reed mosaic habitats 1-2 years following construction due to creation of habitat.
- Temporary negligible beneficial effect (not significant) at Site level, 1-2 years following construction on reptile assemblage utilising tilbury site and adjacent habitats.
- Temporary adverse effects (minor adverse, not-significant) effect to the conservation status of tall fescue planthopper due to habitat loss, loss of individuals during site clearance / translocation.

Operation

6.5.2 There are no significant effects during the operational phase.

Gravesend

6.5.3 At the Gravesend site, there are no significant effects during the construction or operational phases.

7 Landscape and Visual

7.1 Introduction

7.1.1 The landscape assessment considers how the Proposed Development could affect the landscape through physical change and what impact this has on the existing character and setting. The visual assessment considers how the views of the landscape would be altered by the Proposed Development and the impact this could have on people.

7.1.2 The full landscape and visual impact assessment can be found in ES Volume III Chapter 8: Landscape and Visual – Tilbury and ES Volume IV Chapter 16: Landscape and Visual – Gravesend.

7.2 Baseline Environment

7.2.1 A Study Area of 1.5 km from the radius of the Site has been used for the landscape and visual assessment. Beyond this distance it is anticipated that the Proposed Development would be unlikely to give rise to significant landscape or visual effects.

7.2.2 Site visits were undertaken by qualified and experienced landscape architects in summer 2023 to assess the existing character of the landscape and to photograph representative viewpoints. A thorough review of desk-based sources including mapping, aerial photography, planning and policy documents, landscape character assessments and other sources of information was also undertaken to identify the existing landscape character.

7.3 Landscape Baseline

Tilbury

7.3.1 The site is not subject to any locally, nationally or internationally important landscape designations.

7.3.2 The Study Area falls within:

- Two National Character Areas;
- One Marine Character Area; and
- Four Local Landscape Character Areas.

7.3.3 Neither the Tilbury site or its respective study area are covered by any statutory landscape designations. The nearest Area of Outstanding National Beauty (AONB) is the Kent Downs located approximately 5km south of the Tilbury site.

7.3.4 Whilst there are no landscape designations, there are a number of ecological and cultural heritage designations within the study area and these can inform landscape value and are of importance in terms of visitor destinations and visual amenity for the area.

Landscape Designations

- **National Character Areas** – divide England in to 159 distinct natural areas, each defined by a unique combination of landscape, biodiversity, geodiversity, history and cultural and economic activity.
- **Local Landscape Character Area** – divide counties or boroughs in to units of countryside character
- **Marine Character Area** - highlight the key natural, cultural and perceptual influences that make the character of each seascape distinct and unique

Gravesend

7.3.5 The site is not subject to any locally, nationally or internationally important landscape designations.

7.3.6 The Study Area falls within:

- Two National Character Areas;
- One Marine Character Area;
- Two County Landscape Character Areas;

- Two Local Landscape Character Areas; and
- Four Urban Landscape Character Areas.

7.3.7 Neither the Gravesend site or its respective study area are covered by any statutory landscape designations. The nearest Area of Outstanding National Beauty (AONB) is the Kent Downs located 3.2km south of the Gravesend site.

7.3.8 Whilst there are no landscape designations, there are a number of ecological and cultural heritage designations within the study area and these can inform landscape value and are of importance in terms of visitor destinations and visual amenity for the area.

7.4 Visual Baseline

7.4.1 In order to identify locations with the potential to have views of the Proposed Development and understand to what extent it is likely to be visible, a number of 'Zones of Theoretical Visibility' have been produced.

7.4.2 The types of visual receptor and receptor groups within the study area who have the potential to experience views of the Proposed Development at Tilbury and Gravesend are listed below and grouped into the following categories:

- Views from residential developments;
- Views from recreational routes and places of interest;
- Views from roads and rail;
- Views from places of work; and
- Views for those engaged in outdoor sport or recreation.

7.5 Overview of Assessment

7.5.1 During construction of the Proposed Development, several elements and activities have the potential to temporarily impact landscape character and visual amenity within the Study Area. The potential for temporary impacts on landscape and visual receptors may arise from a number of construction activities including:

- The site preparation and construction works, especially:
  - Vegetation clearance;
  - Removal of top soil;
  - Areas for plant maintenance, site offices and compound areas;
  - Storage areas for construction and for excavated materials;
  - The construction of new access routes – temporary and permanent
  - The movement of construction workers and plant within the site;
  - The movement of materials and plant within the vicinity of the site;
  - Acoustic disturbance from construction activities; and
  - Lighting during preparation and construction – particularly noting the 24 hour tunnel construction upon the completion of shaft construction.
- Land uses within the operational Proposed Development in particular:
  - New Sealing End Compound including headhouse;
  - New access roads and utilities;
  - Removal, replacement and additional OHLs;
  - New drainage; and

– Lighting.

7.6 Mitigation

7.6.1 The Proposed Development's landscape design has been developed to reduce the visual impact of the Proposed Development and integrate it into the existing landscape context, while improving biodiversity through planting new habitat such as trees and scrub.

7.6.2 Embedded mitigation has been taken into consideration when assessing the landscape and visual impacts of the Proposed Development, including but not limited to:

- Proposed Development extents have been minimised as far as possible to reduce land take and allow greater retention of existing vegetation including scrub and other landscape features;
- Incorporate new and additional planting such scrub, and landform elements including ditches and creeks to help tie the Proposed Scheme into the existing landscape character and provide localised screening.
- Optimising zones within construction compounds to minimise their temporary impact on the landscape and views, including at night;
- Returning and reinstating land used temporarily to its former condition and profiles, where appropriate;
- Confining lighting on new and improved sections of the compound / road within the Proposed Development site to locations where safety is a priority to minimise the potential for light spill in night-time views;
- Designing permanent structures, such as the sealing end compound and security fencing, in a way that minimises their visual impact and achieves good visual appearance. This may include selection of a muted colour palette that appears recessive within views;
- Construction programme to be kept to the minimum practicable time to reduce the duration of any landscape and visual impacts and areas will be cleared for construction as close as possible to works commencing and top-soiling, reseeding and planting shall be undertaken as soon as practicable after sections of work are complete; and
- Due to the openness of the site and surrounding marshland landscape, careful consideration has been given to landscape planting such that these are considered in keeping with the existing character of the open landscape.

7.6.3 The Outline Construction Environmental Management Plan (CEMP) (ES Volume VI Appendix 3.1) sets out additional mitigation measures identified by the assessment such as fencing working areas and retaining vegetation where possible.

7.7 Residual Effects and Conclusions

7.7.1 The Proposed Development will be adjacent to existing National Grid infrastructure. It is also situated within the wider industrial landscape of this area of the River Thames and the associated industrial sites at both Tilbury and the Gravesend.

7.7.2 Construction would be short-term, reversible and occur in an industrialised context. No landscape elements of value would be lost as a result of the construction, with effects being temporary and of minor adverse to negligible, which is not significant.

7.7.3 Construction of above ground infrastructure would result in a negligible change in views for the majority of potential viewers, including the most sensitive groups of residents in Tilbury/Gravesend. Recreational users of the long distance routes which run to the south of the site at Tilbury, and north of the site at Gravesend, will experience minor adverse change in views at Gravesend only, which is not significant. Construction plant and activity will be apparent within the context of more prominent industrial elements, within their wide, panoramic views across the Thames estuary.

7.7.4 Once operational the Proposed Development will result in a barely perceptible change in the views would be perceived as part of, and an extension to, this existing industrial landscape.

7.7.5 Once established, the network of drainage channels, marshland habitat improvements and scrub planting would provide increased landscape connectivity and habitat improvement to the local landscape character and visual amenity.

7.7.6 In summary, there would be no likely significant landscape or visual effects during either the construction or operational phases of the Proposed Development.

8 Historic Environment

8.1 Introduction

8.1.1 The historic environment assessment considers the potential effects of the Proposed Development on cultural heritage – namely archaeological remains, historic buildings and the historic landscape character.

8.1.2 The full historic environment impact assessment can be found in ES Volume III Chapter 9: Historic Environment – Tilbury and ES Volume IV Chapter 16: Historic Environment – Gravesend.

8.2 Baseline Environment

8.2.1 The known heritage assets within the Study Area were identified through comprehensive desk-based research, fieldwork surveys and consultation with stakeholders.

Listed Buildings and Scheduled Monuments

8.2.2 A building is listed when it is of special architectural or historic interest considered to be of national importance and therefore worth protecting.

Tilbury

8.2.3 At the Tilbury site, there are no World Heritage Sites, registered parks and gardens, registered battlefields or Conservation Areas located within the 1km study area.

8.2.4 There is a single scheduled monument asset, Tilbury Fort, which is located within the study area. The associated grade II* listed Officers' Barracks also lie within the fort, approximately 840m west of the Proposed Development.

8.2.5 There is ~~as single~~two non-designated heritage assets (Medieval Sea Wall and Tilbury Power Station) within the limits of the Proposed Development. A further ~~24~~34 non-designated heritage assets have been recorded within 1km of the Proposed Development.

Listed Buildings and Scheduled Monuments

- Grade I buildings are of exceptional interest, only 2.5% of listed buildings are Grade I
- Grade II* buildings are particularly important buildings of more than special interest; 5.8% of listed buildings are Grade II*
- Grade II buildings are of special interest; 91.7% of all listed buildings are in this class and it is the most likely grade of listing for a home owner
- A scheduled monument is a heritage asset of national importance protected under legislation.

8.2.6 The Proposed Development is situated within an area identified as coastal wetland; historic defensive elements are still part of this landscape and include the Tilbury Fort scheduled monument, the Proposed Development is also within a landscape area of industrial buildings that date to the latter half of the 20th century.

Gravesend

8.2.7 There are no World Heritage Sites, scheduled monuments, registered parks and gardens or registered battlefields located within 1km of the Proposed Development

8.2.8 Seven grade II listed buildings are located within the 1km study area.

8.2.9 A single non-designated archaeological asset, Milton Rifle Range has been recorded within the limits of the Proposed Development. A further 53 non-designated archaeological assets have been recorded within 1km of the Proposed Development.

8.2.10 The Proposed Development is located within the Kent Historic Landscape Character Area (KHLC) Reclaimed Marsh - Small Regular Enclosures.

8.3 Overview of Assessment

8.3.1 During construction of the Proposed Development, temporary impacts to the setting of heritage assets are likely to include:

- The presence and movement of construction plant, equipment and traffic, including change arising from noise and dust; and
- The presence of construction compounds as a result of noise or light intrusion.

8.3.2 Permanent construction impacts that would last beyond the construction phase may include:

- Physical impacts on known and previously unknown buried archaeological assets arising from construction activities, including earthworks;
- Physical impacts on landscapes of historical, cultural or archaeological significance as a consequence of construction, such as the loss of important elements of the landscape as a result of site clearance; and
- The disturbance, compaction or removal of previously unrecorded subsurface archaeological remains through construction activities.

8.3.3 Operational impacts that could result in changes to the settings of heritage assets are considered in relation to limited noise and visual intrusion associated with the above ground installations.

8.4 Mitigation

8.4.1 The design of the Proposed Development involved careful consideration to avoid direct physical impacts on heritage assets. Other embedded mitigation measures include:

- Construction and implementation of a biodiverse headhouse roof which will be used to limit the visual intrusion of the headway house structure; and
- Implementation and use of landscaping to the east of the Proposed Development which will provide some limited screening of the headhouse.

8.4.2 Additional mitigation measures have been identified to help mitigate potential impacts to heritage assets, including measures which are considered to be standard requirements of statutory stakeholders. The Outline Construction Environmental Management Plan (ES Volume VI Appendix 3.1) sets out the additional mitigation measures identified, which include such commitment as continued discussion and engagement with the Historic Environment officers at Essex and Kent County Councils, and what to do if archaeological finds or artefacts are find during the construction works.

8.5 Residual Effects and Conclusions

Tilbury

8.5.1 Construction of the Proposed Development has the potential to result in a temporary effects on the setting of the Tilbury Fort Scheduled Monument (NHLE 1021092) and the Tilbury Fort Officers Barracks (NHLE 1375568), however, these effects are not considered to be significant. The Tilbury Clock Tower War Memorial (NHLE 1471691) will not experience any effects as a consequence of the Proposed Development.

8.5.2 There is potential for adverse effects (which are not significant) on the surviving non-designated extant pillbox (MEX31812), Tilbury Power Station and any non-designated archaeological remains associated with the Medieval Sea Wall (MEX6629) in addition to previously unknown buried archaeological and paleoenvironmental remains within the Proposed Development. An appropriate programme of archaeological investigation, sampling and recording developed in consultation with the Historic Environment Officers at Essex County Council will help mitigate these effects.

8.5.3 Therefore, the Proposed Development would not give rise to any residual significant effects on the historic environment at Tilbury.

Gravesend

8.5.4 Construction and operation of the Proposed Development will not affect the setting of the seven grade II listed buildings.

8.5.5 There is potential for adverse effects on any surviving non-designated archaeological remains associated with the Milton Rifle Range (TQ 67 SE 1185) in addition to previously unknown buried archaeological and palaeoenvironmental remains within the Proposed Development, these are considered not to be significant. A programme of borehole surveys, followed by archaeological investigation and recording will take place prior to the construction.

8.5.6 It is therefore not anticipated that the Proposed Development would give rise to any residual significant effects on the historic environment.

9 Traffic and Transport

9.1 Introduction

9.1.1 The traffic and transport assessment considers how the Proposed Development could cause changes in traffic numbers and vehicle types on the local and the strategic road network. It also assesses how the construction of the Proposed Development could impact road users including pedestrians.

9.1.2 During the operational phase, traffic will be limited to periodic inspections and maintenance, similar to the frequency of visits the current infrastructure receive. On this basis, operational traffic was not considered in the assessment.

9.1.3 The full traffic and transport impact assessment can be found in ES Volume III Chapter 10: Traffic and Transport – Tilbury and ES Volume IV Chapter 18: Traffic and Transport – Gravesend.

9.2 Baseline Environment

9.2.1 The Study Area for the traffic and transport assessment includes the anticipated routes that would be used by construction vehicles associated with the Proposed Development.

9.2.2 Data sources used to establish the current traffic and transport baseline included automatic traffic count survey data, personal injury accident analysis data from the relevant highway authority as well as traffic flow data from the department for transport. The automatic traffic count surveys were undertaken to understand the existing levels of traffic using the local road network. Public Rights of Way were identified through online mapping data.

9.3 Overview of Assessment

9.3.1 The forecast increase in traffic levels (including heavy goods vehicles) on the surrounding highway network during the busiest construction phase (2026) has been assessed to determine whether it would have a significant impact on other road users, cyclists and pedestrians.

9.4 Mitigation

9.4.1 The Proposed Development will minimise construction impacts through the implementation of a Construction Traffic Management Plan (CTMP) and Construction Environmental Management Plan.

9.4.2 These documents detail mitigation measures that will reduce construction-related effects on traffic and transport. Outline versions are presented in ES Volume VI Appendix 10.1 and Appendix 3.1, and both documents will be updated and finalised in discussions with Thurrock Council and Gravesham Borough Council, and other relevant consultees, before the construction phase of the Proposed Development begins.

9.5 Residual effects and conclusions

9.5.1 The assessment of residual effects related to traffic and transport for both Tilbury and Gravesend is summarised below:

- Severance and pedestrian delay: minor – negligible (**not significant**);
- Non-motorised user amenity: minor – negligible (**not significant**);
- Fear and Intimidation: minor – negligible (**not significant**);
- Driver Delay: minor – negligible (**not significant**); and
- Road Safety: Hazardous / Large Loads: minor – negligible (**not-significant**).

Cumulative effects

9.5.2 The traffic and transport assessment has also assessed the potential for significant effects based on the Proposed Development and other proposed developments in the vicinity, that may be using the same construction traffic routes. These are known as ‘cumulative effects’.

9.5.3 The other developments considered include such large infrastructure projects as Lower Thames Crossing (National Highways) and Thurrock Flexible Generation Plant (Thurrock Power).

Tilbury

9.5.4 Cumulative traffic increases have been identified for the A1089 (South) and the A1089/Station Approach junction. It is considered however, that the potential impacts and environmental risks relating to traffic and transport associated with the works can be effectively managed between the different developers through effective consultation and the application of accepted good practice and compliance.

Gravesend

9.5.5 Cumulative increases in traffic have been identified for the A226. It is considered however, that the potential impacts and environmental risks relating to traffic and transport associated with the works can be managed between the different developers through effective consultation and the application of accepted good practice and compliance.

10 Noise and Vibration

10.1 Introduction

10.1.1 The noise and vibration assessment considers how the construction and operational phases of the Proposed Development may change the influence the current levels of noise and vibration, and the impact of this on sensitive noise receptors, such as residents, hospitals, schools and care homes.

10.1.2 The full water environment impact assessment can be found in ES Volume III Chapter 11: Noise and Vibration – Tilbury and ES Volume IV Chapter 19: Noise and Vibration – Gravesend.

10.2 Baseline Environment

10.2.1 The Study Area includes sensitive noise receptors within 1km of the newly proposed headhouses and within 300m of the construction site boundaries. These distances have been selected based on previous experience that operational noise sources are likely to be negligible at distances greater than 1km and that construction noise predictions are generally reliable up 300m.

10.2.2 There are no identified Noise Important Areas and Noise Action Plan Priority Areas within the Study Area described above.

10.2.3 Baseline noise monitoring was undertaken at the Gravesend site from 18th April to 19th June 2023 and at the Tilbury site from 18th April to 14th June 2023. This monitoring established the levels of existing noise in the area, providing a baseline against which the construction and operational noise associated with the Proposed Development could be measured.

10.2.4 A selection of sensitive noise receptors were identified. The sensitive noise receptors considered are the nearest receptors to the Proposed Development (i.e. the receptors that will experience the highest levels of noise and vibration).

10.2.5 The nearest sensitive receptors to the Tilbury Site are non-residential office buildings (Tilbury Substation Offices and Tarmac Tilbury offices) on the wider industrial area. The nearest residential receptors to the Tilbury Site are those on Sandhurst Road, approximately 800m to the northwest of the Tilbury site.

10.2.6 The nearest sensitive receptors to the Gravesend Site are the National Maritime Training Centre (NMTC) and the Metropolitan Police Specialist Training Centre (MPSTC) (non-residential receptors) located directly to the west of the Gravesend Site at a minimum distance of approximately 50m. The nearest residential receptors are located near to Dalefield Way, to the south of the Gravesend Site at a distance of approximately 700m south-east.

10.3 Overview of Assessment

10.3.1 The noise and vibration assessment considers the following:

- Noise and vibration associated with construction works;
- Road traffic associated with construction works; and
- Noise associated with operational activities associated with the tunnel headhouses (ventilation fans at Tilbury only).

10.4 Mitigation

10.4.1 Embedded mitigation has been included as part of the Proposed Development design that will ensure that all reasonable steps are taken to minimise noise and vibration emissions from construction activities, these measures are provided in the Outline CEMP provided in ES Volume Vi Appendix 3.1. These include such measures as a set of generic best practice working methods referred to as Best Practicable Means, as well as closed board fencing to be installed around construction compounds, which can reduce noise by 10 decibels.

10.4.2 No additional mitigation measures are considered to be necessary following the conclusions of the assessment.

10.5 Residual Effects and Conclusions

Tilbury

10.5.1 Due to the distance between the Tilbury Site and sensitive receptors, no significant noise or vibration effects are expected during the construction or operational phases.

Gravesend

10.5.2 Due to the distance between the Gravesend Site and sensitive receptors, and baseline background noise levels in comparison to operational noise levels, no significant noise or vibration effects are expected during the construction or operational phases.

11 Air Quality

11.1 Introduction

11.1.1 The air quality assessment assesses how the construction of the Proposed Development may cause changes to the local air quality. This includes airborne pollutants such as dust, nitrogen dioxide and particulate matter.

11.1.2 The full air quality environment impact assessment can be found in ES Volume III Chapter 12: Air Quality – Tilbury and ES Volume IV Chapter 20: Air Quality – Gravesend.

11.1.3

11.2 Baseline Environment

11.2.1 A desk study was carried out to review the existing publicly available air quality information to inform baseline information on air quality. Data sources used include Local Authority monitoring reports, background concentrations and Air Quality Management Area (AQMA) boundaries provided by DEFRA's UK Air Information Resource as well as designated ecological sites provided by DEFRA's MAGIC maps.

PM
Particulate Matter or PM are very small particles (10 micrometres (0.01 mm) or smaller) found in dust and smoke and are a common air pollutant.

11.2.2 The following Study Areas have been used where an assessment of dust emissions produced by construction activities is required:

11.2.3 A human receptor (sensitive for harm to human health and amenity) within:

- 250 m of the limits of construction activity within the site considered; or
- 50 m from the construction route on the public highway, up to 500 m from the site entrance(s).

11.2.4 An ecological receptor within:

- 50 m of the limits of construction activity within the Site Boundary; or
- 50 m of the construction route on the public highway, up to 500 m from the site entrance(s).

Air Quality Management Area
Areas that are likely to exceed the national air quality objective for a specific pollutant. They are determined by Local Authorities.

Tilbury

11.2.5 There is currently one AQMA in Tilbury, AQMA 24, declared by Tilbury Council due to exceedances of the annual mean nitrogen dioxide (NO_2) air quality objective. The AQMA is located in an area which encompasses Calcutta Road, Dock Road and St Chads Road, in Tilbury.

Gravesend

11.2.6 In 2022, there were three AQMA's located in Gravesend, near the southern construction site. These AQMAs have been declared due to exceedances of the annual mean NO_2 or particulate matter (PM_{10}) air quality objective:

- Northfleet Industrial Area AQMA (Declared 2005 due to elevated PM_{10})
- Gravesham A226 One Way System AQMA (Declared 2005 due to elevated NO_2)
- A227/B621 Wrotham Road/Old Road West Junction AQMA (Declared 2005 due to elevated NO_2).

11.3 Overview of Assessment

11.3.1 During the construction phase, air quality impacts to human health and ecological receptors may result from:

- Construction dust emissions;
- Construction plant emissions;
- Construction traffic emissions; and
- Emissions from diesel-fired generators that may be required to meet the energy demand of the tunnel boring equipment.

11.3.2 Operational phase emissions are limited to intermittent maintenance activity and would have no significant effects on air quality.

11.4 Mitigation

11.4.1 Mitigation measures have been identified and adopted as part of the evolution of the Proposed Development design. For example:

During the construction phase, the preferred option for powering the tunnel boring equipment will be connection to the existing electrical grid, if feasible. If this is not feasible, onsite diesel generators will be required to provide power to the tunnel boring equipment. Should this be the case, a stack with a suitable emission release height will be required so that it does not cause a significant effect for ecological receptors;

- An Outline Construction Traffic Management Plan (ES Volume VI Appendix 10.1) has been produced with the intention of mitigating traffic impacts on the local road network. Good traffic management will have a positive impact on vehicle emissions, by avoiding congested routes and congested periods of the day.
- The spoil generated by the tunnelling works will be removed from the Tilbury construction site by barge, thus mitigating the impact of construction traffic movements on the local road network.
- During the operational phase, no mitigation will be required due to the limited sources of emissions to the air.

11.4.2 Additional mitigation measures have been identified to reduce the effects associated with construction activity impacts. These include a range of best practice measures to reduce and minimise air quality emissions, such as the production of a Dust Management Plan which will include specific measures to control dust and other emissions and undertaking daily on-site and off-site inspections.

11.5 Residual Effects and Conclusions

11.5.1 The Proposed Development has the potential to impact on local air quality through construction phase dust emissions, construction phase traffic emissions and construction phase generator plant emissions. These impacts have the potential to impact on amenity, human health and nature conservation receptors close to the site, and human health sensitive receptors adjacent to the road network on the construction traffic route. In the absence of the mitigation, there is potential for increased emissions from construction to result in likely significant effects on local air quality. However, it is considered that the proposed mitigation measures to be incorporated into design and construction will reduce effects such that they are unlikely to be significant.

12 Water Environment

12.1 Introduction

12.1.1 The water environment assessment considers the effects of the Proposed Development on surface water quality, hydromorphology, groundwater and flood risk.

12.1.2 The full water environment impact assessment can be found in ES Volume III Chapter 13: Water Environment – Tilbury and ES Volume IV Chapter 21: Water Environment – Gravesend.

12.2 Baseline Environment

12.2.1 The general Study Area for the Water Environment assessment is 1km from the Proposed Development, the study area is used to identify all water features that may be affected by the Proposed Development and is extended to 2km for any surface water, groundwater bodies or water dependent ecological sites that are considered to be hydraulically linked.

12.2.2 Data sources used to establish the baseline environment included Ordnance Survey Maps, Land Use Mapping, British Geological Survey and Soilscapes mapping, Environment Agency mapping and abstraction data, and Local Authority flood risk assessments. Site walkovers of the Study Area were also carried out which focused on surface water features in the study area.

Hydromorphology
The physical characteristics of the shape, boundaries and content of a water body.

Main Rivers
Statutory watercourse, typically larger streams or rivers but can also include smaller watercourses of strategic drainage importance.

Ordinary Watercourse
Every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows and which does not form part of a Main River.

Water Framework Directive
The overarching aim of the Water Framework Directive is to protect and enhance watercourses.

Flood Zones
Zones based on annual probability of river and sea flooding:
Flood Zone 1 – low probability of flooding (annual <0.1% chance of flooding from rivers or sea).
Flood Zone 2 - medium probability of flooding (annual 1%-0.1% chance of flooding from rivers and 0.5%-0.1% chance of flooding from the sea).
Flood Zone 3 - high probability of flooding (annual ≥1% chance of flooding from rivers or ≥0.5% chance of flooding from the sea).

Tilbury

12.2.3 The South Essex Thurrock Chalk Water Body underlies the Tilbury Site.

12.2.4 The Thames Estuary is located approximately 350m south of the Proposed Development. It is considered a Main River and the only Water Framework Directive (WFD) designated surface water body within the site boundary and study area. The Proposed Development is surrounded by a number of ditches.

12.2.5 The Tilbury Site is located within Flood Zone 3. The Environment Agency Flood Risk from Surface Water map indicates a medium to high risk from surface water flooding.

Gravesend

12.2.6 The Thames Estuary is situated approximately 170m north of the Proposed Development. There are a number of water features within the study area, including drains, ditches and ponds but are not designated as WFD water bodies in their own right. This includes the Thames and Medway Canal which is a disused canal situated south of Wharf Road and approximately 80m south of the Proposed Headhouse Location.

12.2.7 There are a series of ditches that are part of Eastcourt Marshes which are recognised as Main River which bound the east and south of the Gravesend Site.

12.2.8 The Environment Agency Flood Map shows that the Gravesend Site is located within Flood Zone 3. The majority of the Gravesend Site is in an area where there is a reduction in risk of flooding from rivers and the sea due to flood defences present along the banks of the Thames estuary and therefore the fluvial and tidal flooding from the Thames Estuary is said to have a very low risk to low risk of flooding.

12.3 Overview of Assessment

12.3.1 The construction and operation of the Proposed Development may cause the following impacts to the water environment:

- Mobilisation of fine sediment affecting water quality through runoff or scour;
- Impacts to hydromorphology of watercourses;
- Release of oils and / or other chemicals affecting water quality including ground water; and
- Increase in flood risk.

12.4 Mitigation

12.4.1 The Proposed Development has been designed, as far as possible, to avoid and minimise impacts and effects on the water environment through the process of design development, and by embedding measures into the design of the Proposed Development.

12.4.2 The Outline CEMP (ES Volume VI Appendix 3.1) sets out the mitigation measures identified in the assessment. Guidance of Pollution Prevention has been used to inform the measures set out in the Outline CEMP. The measures will ensure management of construction site runoff and sediment, management of spillage risk, management of flood risk during construction and management of groundwater activities.

12.5 Residual Effects and Conclusions

12.5.1 With the incorporation of mitigation including the development of management plans and adherence to best practice, effects on the water environment due to the construction and operation of the Proposed Development are expected to be not significant.

12.5.2 The full water environment assessment can be found in ES Volume III Chapter 13 (Tilbury) and ES Volume IV Chapter 21 (Gravesend).

Water Framework Directive Assessment

12.5.3 A Water Framework Directive (WFD) Assessment was carried out to support the planning application for the Proposed Development. The WFD Assessment assesses whether the Proposed Development meets the requirements of the WFD, ensuring that new developments do not cause the deterioration or prevent the improvement of WFD waterbodies.

12.5.4 For this assessment, three water bodies were considered:

- South Essex Thurrock Chalk water body;
- North Kent Medway Chalk water body; and
- Thames Middle waterbody.

12.5.5 Construction activities such as spoil handling and storage and tunnel and shaft construction were identified during the screening process as potentially impacting the WFD water bodies. This would be through contamination from soils, sediments, oils, fuels, or other construction chemicals, or through mobilisation of contamination following disturbance of contaminated ground or groundwater. However, the mitigation measures within the CEMP, once implemented would ensure these potential impacts are effectively managed.

12.5.6 The Proposed Development is considered to be compliant with all WFD Objectives for these water bodies. The full WFD assessment can be found in ES Volume VI Appendix 13.1.

Flood Risk Assessment

12.5.7 A Flood Risk Assessment (Document Reference 30003364-BHK-XX-XX-RA-C-02002) was prepared for the Proposed Development. This assesses flood risk to and from the Proposed Development from groundwater, river (fluvial), surface water (pluvial), estuary/coastal (tidal), or from sewer sources.

12.5.8 The Flood Risk Assessment has concluded that it will be possible to effectively manage flood risk to and from the Proposed Development.

13 Materials and Waste

13.1 Introduction

13.1.1 This assessment presents the assessment of the likely significant effects of the Proposed Development on materials and waste. The assessment includes consideration of impacts to landfill capacity, national and regional availability of key construction materials and safeguarded waste sites.

13.1.2 The full materials and waste impact assessment can be found in ES Volume III Chapter 14: Materials and Waste – Tilbury and ES Volume IV Chapter 22: Materials and Waste – Gravesend.

13.2 Baseline Environment

13.2.1 The Study Area for construction waste generation, use of construction materials, impacts on safeguarded mineral and waste sites, presence of mineral safeguarding areas (MSA's) for context, and presence of historic landfills is considered to be the Site Boundary.

13.2.2 The expansive Study Area for non-hazardous waste management comprises the East of England and South East of England. For hazardous waste management, the Study Area is England. For the availability of key construction materials this is assessed on a national scale (United Kingdom or Great Britain, depending on where information is available).

13.2.3 The baseline from a material assets and waste perspective covers the availability of key construction materials, potential recycled content, landfill capacity and sites, and the presence of safeguarding areas and sites within the Study Area.

Tilbury Site

13.2.4 The Proposed Development lies within the boundary of two~~one~~ historic landfill sites and two authorised landfills.~~-~~ There is one Permitted Waste Site on its boundary where the access road for transfer of excavated tunnel spoil (via HGV) will be put on a barge for transport offsite. There are no other permitted or application waste sites within the Proposed Development boundary~~other permitted waste sites or waste site applications in the vicinity (within 500m) of the Proposed Development~~.

13.2.5 There are no mineral safeguarding areas (MSAs) or safeguarded mineral or waste sites in the vicinity of the Proposed Development.

Gravesend Site

13.2.6 There are no historic or authorised landfill, permitted waste sites or waste site applications in the vicinity of the Proposed Development.

13.2.7 There are no safeguarded mineral or waste sites in the vicinity of the Proposed Development.

13.2.8 The Site Boundary passes through a Mineral Safeguarding Area (MSA) for sand and gravel. Additionally, there are two safeguarded waste sites and 12 local permitted and surrendered waste sites in close proximity to the DCO Site Boundary as well as nine local waste site permit applications.

13.3 Overview of Assessment

13.3.1 The materials and waste assessment considers:

- The types and quantities of materials which would be required to construct and operate the Proposed Development and the availability of these materials and their potential recycled content;
- The types and quantities of waste produced to construct and operate the Proposed Development, and the planned recovery of this waste; and

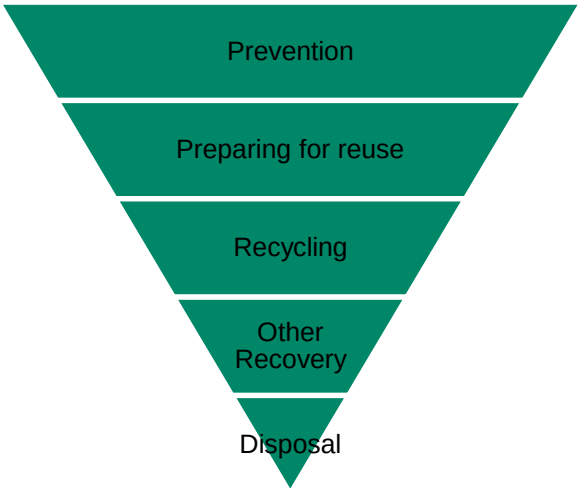
- The cut and fill balance of the earthworks associated with constructing the Proposed Development.

13.3.2 The final details of the materials and waste associated with the Proposed Development is not yet fully established. Therefore, the assessment is based upon worst case early estimations, likely types of materials that will be used and wastes that are likely to be generated during the construction of the Proposed Development in order to adequately predict the likelihood of significant environmental effects.

13.3.3 During the construction phase, the potential impacts on materials and waste as a result of the Proposed Development are expected to be:

- Changes in landfill capacity; and
- Changes in demand for materials.

13.3.4 During operation, maintenance activities will be required. Waste arising from these maintenance activities during Proposed Development operation are expected to be negligible and less than construction. Materials and waste types will generally be the same to those generated by other National Grid sites; and wastes would be managed using established procedures and facilities. Therefore, significant effects are unlikely.



13.4 Mitigation

13.4.1 Embedded mitigation in relation to material assets and waste follows a hierarchy (see adjacent image) which prioritises waste prevention, followed by preparing for re-use, recycling and recovery, and lastly disposal to landfill. Other measures include design for materials optimisation, design for off-site construction to encourage a process of assembly and designing for the future to allow for materials to be more easily adapted over an asset's lifetime.

13.4.2 The additional mitigation measures which would be implemented in the construction phase include the production of a Site Waste Management Plan which would incorporate measures to ensure that waste produced or held on the Proposed Development's construction site is disposed of safely, efficiently and lawfully. Waste would be sorted and segregated into different waste streams (where feasible).

13.5 Residual Effects and Conclusions

13.5.1 The impacts on materials and waste receptors during the construction and operational phases of the Proposed Development have been assessed and their effects are deemed to be Not Significant.

14 Cumulative Effects

14.1 Introduction

14.1.1 The cumulative effects assessment considers both cumulative and combined effects as a result of the Proposed Development. These are described below:

- **Combined Effects** – these are where an individual environmental receptor or resource will likely be affected by more than one type of impact as a result of the construction / operation of the Proposed Development. For example, a residential receptor may experience air quality effects as well as noise and vibration effects and visual effects.
- **Cumulative Effects** – these are effects caused by the Proposed Development in-combination with other developments which are within close proximity and whose development phases may overlap.

14.2 Combined Effects

14.2.1 This assessment involves the identification of those receptors that have the potential to be affected by more than one of the identified residual effects as identified in the individual technical chapters within Environmental Statement. These receptors include residential properties and public rights of way.

14.2.2 Examples of the types of impacts that could be jointly experienced by the residential receptors and the users of public rights of way are activities relating to noise, air quality, visual and transport effects, during both construction and operation.

14.2.3 Following the incorporation of the embedded and additional mitigation, no significant combined effects are expected to occur.

14.3 Cumulative Effects

14.3.1 The assessment of cumulative effects follows a four-stage approach in accordance with the guidance detailed within Planning Inspectorate's Advice Note Seventeen: cumulative effects assessment. The stages to the Cumulative Effects Assessment are as follows:

- **Stage 1**: Establish and identify long list of 'other existing development and/or approved development' in the surrounding area;
- **Stage 2**: Identify the shortlist of 'other existing development and/or approved development' for inclusion within the cumulative effects assessment;
- **Stage 3**: Information gathering; and
- **Stage 4**: Assessment of shortlisted 'other existing development and/or approved development'.

14.3.2 The potential for cumulative effects to arise, from one or several of the shortlisted developments in combination with the Proposed Development has been assessed. Each environmental topic reviewed other relevant schemes in the locality to establish the potential for any cumulative effects to occur. Where necessary, a narrative was provided to support the findings of each cumulative assessment undertaken for each technical topic and the details are provided within ES Volume V Chapter 23: Cumulative Effects.

14.3.3 Through consideration of the available information for each of the identified shortlisted developments, and of the effects associated with the Proposed Development, it has been concluded there is the potential for the following significant cumulative effects to occur:

- Temporary moderate adverse (i.e. significant) cumulative effects for Filborough Farmhouse and Granary at Little Filborough Farm from visual intrusion during construction of Lower Thames Crossing and the Proposed Development.

- Temporary adverse (significant) effect (for approximately 4 years) on the structure and function of the Canal and Grazing Marsh Higham Local Wildlife site at the District level, temporary adverse (significant) effect (for approximately 4 years) on conservation status of remnant grazing marsh habitats and a temporary adverse (significant) effect (for approximately 4 years) on conservation status of breeding and wintering bird populations utilising habitats at and adjacent to the Gravesend Site.
- Moderate adverse (i.e. significant) cumulative effect on Tilbury Fort during operation as a result of Thurrock Flexible Generation Plant and the Proposed Development due to an alteration of the setting of the asset.

14.3.4 Although the cumulative effects reported above are 'significant', it should be noted that this is driven by the moderate adverse (i.e. significant) effects assessed by the Lower Thames Crossing and Thurrock Flexible Generation Plant projects. The Proposed Development is an insignificant contributor.

14.3.5 It is considered that the cumulative effect identified in this cumulative effects assessment would be no worse than the effect presented in isolation in the other planning application assessments. The assessment for the Proposed Development presents minor adverse effects (i.e. not significant) for Filborough Farmhouse, Granary at Little Filborough Farm and they have been mitigated as far as appropriate and therefore there are no additional mitigation measures proposed beyond those recommended in the technical chapter.

14.3.6 The full cumulative effects assessment can be found in ES Volume V Chapter 23.

15 Summary

15.1.1 This section provides an overview of the conclusions of the EIA, including any Significant Residual Effects. These are effects which have been classed as being of an either Major or Moderate significance which remain after the consideration and adaptation of both embedded and additional mitigation measures.

15.1.2 The summary has been split between the three key phases of the Proposed Development, namely the construction phase, operational phase, and decommissioning. Where no significant effects have been identified, this is also stated.

Tilbury

Construction Phase

- **Biodiversity** – No significant adverse effects have been identified;
- **Landscape and Visual** - No significant adverse effects have been identified;
- **Historic Environment** - No significant adverse effects have been identified;
- **Traffic and Transport** - No significant adverse effects have been identified;
- **Noise and Vibration** - No significant adverse effects have been identified;
- **Air Quality** - No significant adverse effects have been identified;
- **Water Environment** - No significant adverse effects have been identified; and
- **Materials and Waste** - No significant adverse effects have been identified.

Operational Phase

- **Biodiversity** – No significant adverse effects have been identified
- **Landscape and Visual** - No significant adverse effects have been identified;
- **Historic Environment** - No significant adverse effects have been identified;
- **Traffic and Transport** - No significant adverse effects have been identified;
- **Noise and Vibration** - No significant adverse effects have been identified;
- **Air Quality** - No significant adverse effects have been identified;
- **Water Environment** - No significant adverse effects have been identified; and
- **Materials and Waste** - No significant adverse effects have been identified.

Gravesend

Construction Phase

- **Biodiversity** – No significant adverse effects have been identified;
- **Landscape and Visual** - No significant adverse effects have been identified;
- **Historic Environment** - No significant adverse effects have been identified;
- **Traffic and Transport** - No significant adverse effects have been identified;
- **Noise and Vibration** - No significant adverse effects have been identified;
- **Air Quality** - No significant adverse effects have been identified;

- **Water Environment** - No significant adverse effects have been identified; and
- **Materials and Waste** - No significant adverse effects have been identified.

Operational Phase

- **Biodiversity** – No significant adverse effects have been identified;
- **Landscape and Visual** - No significant adverse effects have been identified;
- **Historic Environment** - No significant adverse effects have been identified;
- **Traffic and Transport** - No significant adverse effects have been identified;
- **Noise and Vibration** - No significant adverse effects have been identified;
- **Air Quality** - No significant adverse effects have been identified;
- **Water Environment** - No significant adverse effects have been identified; and
- **Materials and Waste** - No significant adverse effects have been identified.

Cumulative Effects

- **Construction** - The cumulative effects assessment has identified that Filborough Farmhouse and Granary at Little Filborough Farm are likely to experience temporary moderate adverse (i.e. significant) cumulative effects from visual intrusion during the construction of the Lower Thames Crossing Project, and the Proposed Development. It should be noted that these cumulative effects are both driven by the moderate adverse (i.e. significant) effects reported in the Lower Thames Crossing environmental assessment. It is considered that the contribution from the Proposed Development in isolation would be no worse than the effect from the other planning application assessments combined - the Proposed Development is an insignificant contributor.
- **Construction** - There is also the likelihood of temporary adverse (significant) effect (for approximately 4 years) on the structure and function of the Canal and Grazing Marsh Higham Local Wildlife Site, temporary adverse (significant) effect (for approximately 4 years) on conservation status of remnant grazing marsh habitats and a temporary adverse (significant) effect (for approximately 4 years) on conservation status of breeding and wintering bird populations utilising habitats at and adjacent to the Gravesend Site as a result of overlapping construction phases of the Proposed Development and Lower Thames Crossing. It should be noted that all of these effects will be reversible following completion of construction and reinstatement.
- **Operation** - The assessment of cumulative effects determines that during operation there is likely to be a moderate adverse (significant) cumulative effect to Tilbury Fort (NHLE 1021092) as a result of Thurrock Flexible Generation Plant (ID N.2 - EN010092) and the Proposed Development due to an alteration of the setting of the asset. As per the significant effect identified above, it should be noted that the residual significant cumulative effect in this case is also driven by the moderate adverse effect detailed in the Thurrock flexible generation plant assessment and it is considered that the cumulative effect would be no worse than the effect presented in isolation in the Thurrock Flexible Generation Plant assessment. No significant adverse effects have been identified.

16 Next Steps

16.1.1 The results of this environmental assessment will be considered as part of the decision-making process to determine whether to grant permission for the Proposed Development and associated overhead line and pylon alterations that are included in the applications made to local councils and the Department of Energy Security and Net Zero.

16.1.2 In considering the planning applications, Thurrock Council and Gravesham Borough Council will consult with a range of organisations such as Natural England, the Environment Agency and Historic England, as well as inviting comments from the local community.

16.1.3 The responses to the planning application from all parties, including comments made in relation to results of this Environmental Statement, will be considered in determining the planning applications.

16.1.4 Should permission be granted, a Contractor(s) will be appointed and the detailed design of elements of the Proposed Development will be progressed. Where appropriate, the detailed design will be agreed with Thurrock Council and Gravesham Borough Council prior to construction works commencing.