PORT OF TILBURY LONDON

PLANNING ACT 2008
INFRASTRUCTURE PLANNING
(APPLICATIONS: PRESCRIBED FORMS AND PROCEDURE) REGULATIONS
2009 REGULATION 5 (2) (a)

PROPOSED PORT TERMINAL AT FORMER TILBURY POWER STATION

TILBURY2

TR030003

VOLUME 6 PART D

NON-TECHNICAL SUMMARY

ERRATA SUBMISSION - TRACKED CHANGES

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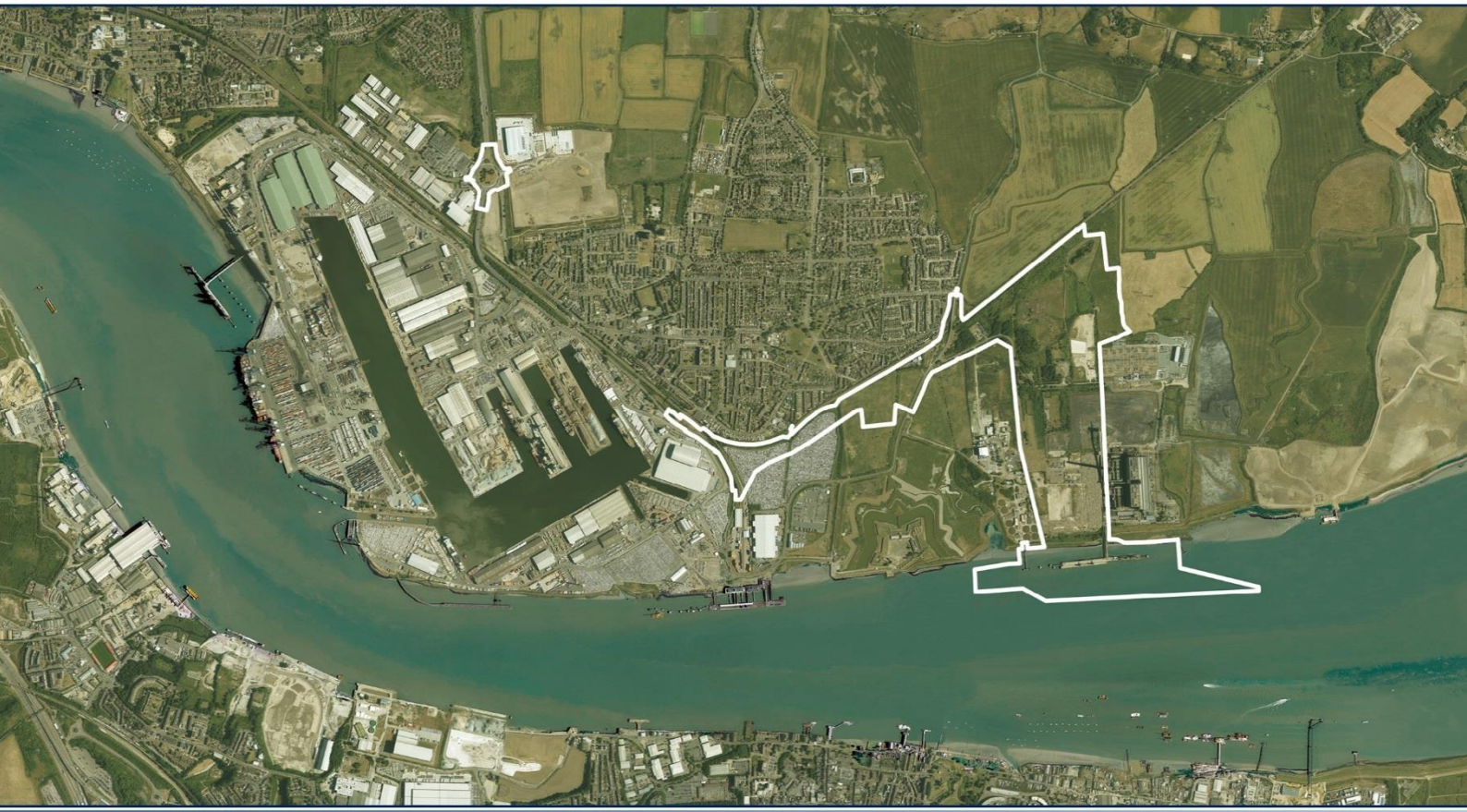


TILBURY2

1.0 NON-TECHNICAL SUMMARY

INTRODUCTION

1.1 Port of Tilbury London Limited ("PoTLL") is proposing a new port terminal on the north bank of the River Thames at Tilbury, a short distance to the east of its existing Port. The proposed port terminal will be constructed on land that formed the western part of the now redundant Tilbury Power Station. The site is situated within Tilbury Borough in Essex, to the south east of Tilbury town and directly across the river from Gravesend as shown in Figure 1 below. The site comprises of four areas, namely:

- the main site of the new port facility on the former Tilbury Power Station land;
- sections of the tidal Thames required for the construction of expanded berthing capacity and associated dredging;
- an infrastructure corridor to the main site between Ferry Road and Fort Road; and
- land around the roundabout to the north of the Port where highway improvements will be required.

~~1.1~~ Figure 1: Location of Tilbury2 proposals

1.2 This document is the Non-Technical Summary (NTS) of the Environmental Statement (ES) that provides a description of the proposals for Tilbury2 and a summary of the environmental impact assessment findings and potential mitigation measures identified.

Figure ~~1~~2: Aerial image of the Tilbury2 site.

Need for the proposed works

1.3 The Port of Tilbury has experienced significant growth in throughput and all indications are that this will continue. It has made, and continues to make, the best use of its landholding and has gradually expanded the land occupied by the Port, particularly since being acquired by Forth Ports in 1995.

The Planning Process

1.4 The planning process for dealing with proposals for Nationally Significant Infrastructure Projects (NSIPs) was established by the Planning Act 2008 (the 2008 Act). This process, as amended by the Localism Act 2011, involves an examination of major proposals relating to harbour facilities, energy, transport, water, waste and waste water, and includes significant consultation and engagement before a decision is made by the relevant Secretary of State (SoS).

1.5 The 2008 Act sets out the thresholds for NSIPs. For the ports sector, applications for development consent will be referred to the Secretary of State if the construction of the new facilities meet certain thresholds. The proposed scheme, once fully developed and operational, would provide for a RoRo terminal with an initial expected throughput of 360,000 units per annum. The Construction Materials and Aggregates Terminal is likely to have a throughput of circa 1.9 million metric tons of bulk products per annum which exceeds the thresholds in the 2008 Act. The

proposed port terminal therefore constitutes an NSIP, requiring consent from the Secretary of State via a Development Consent Order (DCO).

1.6 Pursuant to section 104 of the Planning Act 2008, in considering a DCO, the Secretary of State must have regard to any relevant National Policy Statements that are in force. National Policy Statements are documents produced as a consequence of the Planning Act that have been designated by the Secretary of State following public consultation and scrutiny by the Houses of Parliament.

1.7 For the ports sector, there is a National Policy Statement for Ports (2012) ('the NPS'), which will apply to the proposals. The NPS is the most important policy document[s] against which the proposals will be assessed.

Statutory Consultation

1.8 Statutory consultation on the proposals ran from 19th June to 28th July 2017. The proposals were set out in a consultation booklet. A range of detailed technical reports, including the Preliminary Environmental Information Report (PEIR), were available online and submitted in hard copy to key stakeholders. The PEIR, Non-Technical Summary and all other consultation documents were made available online. The public were also able to view the documents at the deposit locations until 28th July 2017 and at exhibition events

1.9 A questionnaire was available at exhibition and the online consultation website provided access to a questionnaire which respondents were asked to complete. POTLL held exhibitions in Tilbury and the wider area. These events enabled the members of the public to speak to key members of the Tilbury2 project team and to query or clarify areas of concern. In addition, a series of stakeholder meetings were held with interested parties and groups to provide additional information on the proposals and answer any questions.

1.10 There were 74 responses to the questionnaire. A number of overall common themes have emerged from the consultation in relation to: visual impact, public transport, walking and cycling, construction, operation, environment (particularly air quality and noise), traffic and highways, and the quality of the consultation itself. PoTLL also received responses to the consultation from stakeholder organisations and further consultation meetings were undertaken with Statutory Consultees, and others, during 2016 to respond to points raised and provide update on design.

1.11 A Consultation Report, setting out PoTLL's response to every issue raised in the consultation is included in the submissions to PINS (Document Reference: 5.1).

2.0 SUMMARY OF PROPOSALS

2.1 The proposed main uses on the site will be a Roll-on/Roll-off (RoRo) terminal and a Construction Materials and Aggregates terminal (the "CMAT"), and associated infrastructure including rail and road facilities and revisions to the existing marine infrastructure. An 'infrastructure corridor' is proposed that will accommodate road and rail links to the existing rail and road network. The CMAT will include stockpiling of construction materials and some processing of aggregates for the production of asphalt and concrete products.

2.2 The project will require works including, but not limited to:

- creation of hard surfaced pavements;
- improvement of and extensions to the existing river jetty including creation of a new RoRo berth. The RoRo berth will accommodate two vessels at a time, one moored against the existing jetty at its western end, and one moored against mooring dolphins to the west of the existing jetty. A central pontoon will be constructed against which stern ramps of each vessel will be placed to allow embarkation and disembarkation of trailers and containers;
- associated dredging of berth pockets around the proposed and extended jetty and dredging of the approaches to these berth pockets. The proposals are currently progressing several dredging options including Back Hoe Dredging and Water Injection Dredging (WID). The latter would retain the sediment within the estuarine system. This prevents the need for disposal. Where this technique is not appropriate, due to contamination or the physical properties of the material, re-use of the material within the proposals is being considered, with disposal at sea or on land being used if other options are not possible;
- new and improved conveyors. A conveyor and supporting structure will be constructed close to the eastern boundary of the site linking the CMAT Berth to the area of aggregate stockpiles within the CMAT itself;
- erection of security, welfare and ancillary buildings;
- erection of a single 10,200sq.m. warehouse;
- a number of storage and production structures associated with the CMAT such as an aggregates storage yard, processing facilities and a silo;
- the construction of a new link road from Ferry Road to Fort Road It is proposed to construct a new single lane two way highway to link Ferry Road from a location to the south of Tilbury Railway station, along an alignment which closely follows the existing railway line to the Tilbury2 site; and
- formation of a rail spur and sidings. The proposed new rail siding alignment will be routed between the southern boundary of the existing main line

railway and the proposed new highway, passing under the extended Fort Road bridge.

2.3 The proposed volumes of import/export of RoRo units for the terminal exceed the threshold of 250,000 units stated in the Planning Act 2008 for throughput per annum. The Tilbury2 project therefore constitutes a Nationally Significant Infrastructure Project (NSIP).

2.4 It is important to recognise that the application essentially seeks a DCO to approve an operational port. Whilst the application seeks consent for the elements listed above, ports clearly evolve over time as changing trends in technology and commodities mean that facilities change and the Port will need such flexibility in the future. The Port has permitted development rights at present within its current operational area, limited by the fact that nothing could in any event be permitted under PD rights that has a likely significant effect on the environment. These rights would be extended to Tilbury2

2.5 Hence, the application seeks to establish a 'Rochdale Envelope' of development based upon the description within the draft DCO. Some elements of the proposal – particularly the infrastructure corridor and the marine infrastructure, have been the subject of engineering design and can therefore be assessed in detail. The land within the main site will be occupied by tenants of PoTLL. Their exact requirements will be established through further iterations of design within the Rochdale Envelope established by the DCO and this ES. The envelope established for the purposes of this environmental assessment process is considered a reasonably likely 'worst-case' scenario. This worst-case approach is specifically considered in each of the topic chapters. Whilst future use of the site may change it would necessarily be based on the "Not Environmentally Worse Than' (NEWT) approach within the Rochdale Envelope defined by this application given that any development outside of this would require a separate planning application, as it would fall beyond the scope of permitted development powers.

CONSTRUCTION METHODOLOGY

General approach

2.6 The following provides an overview of the construction methodology as it is envisaged at this time. More detail in relation to specific environmental topics can be found in the relevant ES chapters. The construction methodology has been developed to inform the assessment of the environmental impacts of the proposals given knowledge at the present time. However, the methodology ultimately employed will be determined by future contractors and is dependent upon the detailed engineering design and the methodology developed by these contractors appointed by either PoTLL or their tenants in accordance with the parameters of the DCO, which provides for overall control and assessed limitation.

2.7 A Construction Environmental Management Plan (CEMP) has been prepared and is included with the application for development consent (document reference xx) as a document by which the proposals will be required to have regard to, and will set out the principles for the preparation of subsidiary plans (either to be created anew in detailed design, or to be developed further in accordance with preliminary application documents such as the Construction Traffic Management Plan (CTMP) document reference xx). The CEMP will ensure that any construction

methodologies employed are consistent with the assessments and mitigation measures set out in this ES.

Hours of construction working

2.8 The core working hours will be as follows for works that involve use of the indicative plant listed in Appendix 17A, marine piling activities and for works on the infrastructure corridor:

- Monday – Friday 0800 – 1800
- Weekends 0800 – 1600

2.9 For the avoidance of doubt, these hours do not apply to non-piling marine works.

2.10 The exception to these working hours would be in respect of terrestrial piling activities which will not take place at all on weekends or bank holidays.

2.11 No deliveries to site will be permitted on Saturdays after 1200 and none allowed on Sundays.

2.12 On the Tilbury2 site, but not the infrastructure corridor, some equipment maintenance or set up and lay down work may need to take place outside of the hours specified above. Such activities will not include the use of plant or machinery likely to cause disturbance to neighbouring residents/ businesses but may include deliveries, movement to place of work, unloading, maintenance and general preparation works.

Additional hours of working

2.13 Certain specific construction activities will require extended working hours for reasons of engineering practicability, season and weather and safety such as major concrete pours and piling, surveys and lifting/fitting of infrastructure, abnormal deliveries and rail possessions. The nature and timing of these works and the associated extended working hours will be agreed with Thurrock Borough Council through the Section 61 process and notified to relevant stakeholders. The Contractor will be required to liaise and consult with Thurrock Borough Council prior to applying for Section 61 consent and will be required to maintain regular consultation with the Thurrock Borough Council throughout the duration of the construction works to help facilitate the Section 61 process with regards to additional working hours.

Access arrangements during construction

2.14 Access to the Tilbury2 site during construction will be from the main entrance to the former Power Station site from Fort Road. The main entrance gate will benefit from fully manned 24-hour security which will control the movements of all personnel and vehicles into and out of the terminal site. This arrangement will follow the practice already employed by PoTLL at the main entrance for the existing port.

2.15 Once in the site, traffic associated with the movement of construction materials and waste materials will make use of existing access roads within the site to and from a construction compound(s) that is proposed to be created centrally within the Tilbury2 site. Construction workers will also use the existing site access. An

existing area of hardstanding near a temporary site office will be used to park construction workers' vehicles. Construction workers employed to undertake the construction of the new length of highway and rail siding outside of the main site will be transported (with dedicated site transport) from the main parking area to that construction site.

2.16 Outside of the Tilbury2 site, HGV construction traffic and, where practicable, construction worker traffic to and from the site will be routed via Fort Road, St. Andrews Road and hence to the A1089 north of the ASDA roundabout. The routing arrangements will be formalised through a CTMP agreed as part of the requirements of the CEMP (and seen preliminarily in the application CTMP which is attached as an appendix to the CEMP (Document Reference 6.9).

2.17 Sufficient parking and vehicle waiting areas will be available within the Tilbury2 site to ensure that no HGVs or other vehicles associated with the construction will need to park outside of the main site unless they need to do so as part of the construction of the surface access infrastructure.

Construction compounds and storage

2.18 The primary construction compound for the works will be located on the Tilbury2 site with temporary welfare buildings being delivered constructed to service the compound. These buildings will be used as the site office for the works and will include welfare and mess facilities. Additional temporary portacabin type buildings will be required at various locations within the area of the works.

Task Lighting

2.19 During construction, mobile task lighting will be used to illuminate areas under construction during the hours of darkness. This lighting has been assumed generally to be less than 10m high. Directional luminaires will be used to limit unwanted light spill. These will be directed away from sensitive residential and ecological receptors. Vessel lighting will be required including localised task lighting after dark.

2.20 Construction site lighting outside normal working hours will be restricted to the minimum required for safety and security.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT

SCOPE OF THE EIA

3.1 Scoping is the process of determining the content and extent of the topics which should be covered in the EIA. An EIA Scoping Report for the Scheme was submitted to PINS in March 2017. PINS reviewed and consulted on the Scoping Report and issued a Scoping Opinion in May 2017. The scoping process confirmed the environmental topics relevant for the proposals and informed the structure and scope of the PEIR, published for consultation in June 2017. Continued surveys, information collection and the consultation on that PEIR has informed the finalisation of this Environmental Statement.

3.2 EIA is a process for identifying the likely environmental effects (positive and negative) of proposed developments, and their significance, before development consent is granted.

3.3 The aim of EIA is to ensure a thorough assessment of likely effects and that consideration of mitigation and alternatives in light of these potential effects has been undertaken. Through this process, the development should include measures to prevent, reduce or offset any significant, adverse environmental effects of the proposals, and enhance the positive ones.

3.4 The findings of the assessment are presented in this Environmental Statement (ES). The purpose of the ES is to help the decision maker, statutory consultees, other stakeholders and the public to properly understand the predicted effects and the scope for reducing them, before a decision is made as to whether to permit development.

3.5 The EIA is being undertaken by adopting the proposal parameters set out by PoTLL and its tenants, as will be further developed for the application. However, some flexibility may be needed within the parameters in order to allow for variation in detailed design and in the operation of the port in the long term.

3.6 The port terminal development as described above and as assessed in this ES adopts a series of parameters related to location and heights of buildings and operations within approximate areas ~~based on the masterplan~~. The EIA is being undertaken by reference to those the parameters as set out above. This parameter based approach is to provide the flexibility that will be needed in recognition of the fact that the primary aim is to authorise a new operational port terminal. Each topic chapter explains the parameters of this flexibility (for example air quality considers stockpiles being located across the whole of the CMAT area. The DCO accordingly allows for variation to accommodate detailed design and for changes to the operation of the Port in the long term.

3.7 The Port is a statutory undertaker and benefits from Permitted Development rights under Part 8 Class B of the Town and Country Planning (Permitted Development) Order 2015. This allows development on operational land by the Port and its lessees in respect of dock, pier, harbour, water transport, required:

"(a) for the purposes of shipping, or

(b) in connection with the embarking, disembarking, loading, discharging or transport of passengers, livestock or goods at a dock, pier or harbour, or with the movement of traffic by canal or inland navigation or by any railway forming part of the undertaking."

3.8 As part of the DCO, PoTLL seek to ensure that such rights will apply equally to Tilbury2 when that land becomes operational port land. As such, the exact nature of uses on the site may change over time, as indicated above. Indeed, it is through the usage of PD rights that the flexibility referred to above will most likely be undertaken.

3.9 However, nothing could in any event be permitted under PD rights as applied to Tilbury2 that has a likely significant effect on the environment beyond that of the 'envelope' of the assessed effects of the development permitted in, and subject to the constraints of the DCO. Proposals for development beyond that envelope of effects would fail to meet the test of article 3(10) of the Town and Country Planning (General Permitted Development) Order 2015, which states that development which is EIA development cannot be permitted development unless, at the very least, a screening opinion from the local planning authority or Secretary of State has been received confirming that the development is not EIA development, that is to say that it is not likely to have significant effects on the environment. Accordingly, there would be no PD rights for proposals for development with a likely significant effect beyond that of the envelope assessed.

3.10 The DCO application for Tilbury2 is supported by an ES produced in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) ('the EIA Regulations'). The EIA Regulations and the NPS set out a number of environmental matters that a promoter must deal with as part of their DCO application, through their ES. The ES explicitly deals with these matters for each topic area.

Mitigation Measures

3.11 Table 1.1 sets out the mitigation measures, to be implemented during the construction and operation stages of the proposals.

ENVIRONMENTAL IMPACTS

3.12 The following sections provide a summary of the environmental topics addressed, the issues raised, the mitigation measures proposed to reduce any impacts and a description of the significance of the effects of the proposals.

Socio-Economics

3.13 An assessment of the likely socio-economic effects of Tilbury2 on characteristics and receptors during the construction and operational phases has been undertaken. This assessment has gathered data from a number of sources to inform the socio-economic baseline and assessment. For the ES, a variety of desk-based sources have been used including national and local development plan documents and guidance, and official labour market statistics.

3.14 Predicted significant socio-economic effects during the construction period are likely to be associated with employment impacts and associated Gross Value Added (GVA) impacts on the regional economy, and local skills, training and employment

programmes. Tilbury Fort is a specific tourism receptor expected to be affected by the construction phase, most likely by indirect amenity impacts.

3.15 The assessment has used 'snapshots' to enable the impact assessment to compare the proposed development to both current levels of employment and GVA, but also crucially to an estimate of future levels of employment and GVA that might otherwise occur in the absence of the Tilbury2 scheme.

3.16 It is expected that in a regional snapshot 218 Full Time construction jobs will be created and on a wider UK-plc scale 266 Full Time construction jobs will be created. In both scenarios 57 local jobs will be created during the construction phase. The construction effects in the form of GVA contributions to the regional and UK-wide economy will approximately contribute £18.3 and £22.4 million respectively.

3.17 During operation, it is expected that the operation phase could support 527 net additional jobs in the regional economy. In the Tilbury2 UK plc scenario, it is expected that the operation phase could support 868 net additional jobs in the economy. In both scenarios, it is predicted that 138 local jobs will be generated due to the proposals. The operation effects in the form of GVA contributions to the regional and UK-wide economy will approximately contribute £35.8 and £58.9 million respectively. The development is predicted to have an additional impact of 1.8 million tonnes in the operation phase, delivering more goods to the UK and generating economic activity locally and beyond the study area.

3.18 The proposals will be an additional element to existing industrial and port-related activity in the local area. Uses are expected to intensify over a wider area, and the socio-economic characteristics, which are influenced by the port's activity and historical influence, could be affected. These effects are expected to be indirect and are expected to occur due to increased employment (especially local employment) and economic activity from the development.

3.19 The riverside supports recreational activity associated with the River Thames such as Gravesend Sailing Club. There are a number of predicted indirect amenity effects for these types of receptors. Business and community facility receptors in Tilbury, such as shops, restaurants, cafes, hair salons, pharmacies and places of religious worship are expected to benefit from increased economic activity in the operation phase.

3.20 Mitigation measures for the impacts identified above are outlined in Table 1.1. With the adoption of the mitigation measures identified, residual impacts would reduce further over time as mitigation planting matures to soften or screen the proposal and residual impacts for the Sailing and Rowing Clubs would also reduce over time as the businesses adapt to changing levels of shipping movements on the River Thames.

Health

3.21 This topic describes the likely health impacts of Tilbury2 on receptors during the construction and operational phases. Consideration of health is an important aspect of any major policy programme or project within the UK. The aim of the Health Assessment is to identify any impacts of the proposed new port on residents' health and wellbeing, to consider health inequalities and to identify opportunities for mitigation and enhancement measures to improve health outcomes.

3.22 The area considered for the assessment has been designed to correspond with study areas identified in other assessment topic areas, for example incorporating areas used to identify air quality or noise effects. The timescale of the assessment covers both the construction and operation phases of the proposals.

3.23 Baseline conditions have been gathered from a range of sources including national and local health policies and statistics as well as information from other topic assessments.

3.24 In addition to statutory consultation activities undertaken by PoTLL as part of the DCO application, engagement has been undertaken with health stakeholder groups in the local area, to ensure that the assessment addresses health issues and concerns they want to see included. Potential health determinants that were assessed include construction and operation noise and air emissions, the provision of open space and active travel routes and education and training opportunities during construction and operation.

3.25 The health impact of Tilbury2 has been considered within the following two scenarios:

- Tilbury1 current: the scenario presents a snapshot of the Port of Tilbury in 2017, outlining the current impact of the Port on the health determinants identified.

- Tilbury2: this scenario comprises the Tilbury1 scenario with additional proposed construction and operational activity at Tilbury2 in 2020, outlining the impact of the expanded Port on the health determinants identified.

3.26 The assessment indicates that there are likely to be direct health impacts from the noise associated with the construction of the infrastructure corridor, due to the separation distance between the works and the nearest noise sensitive receptors, which are considered moderate. Measures are outlined within the CEMP that will mitigate this impact. There are unlikely to be health effects of noise from the operation of the main site, due to the separation distance between the works (CMAT & RoRo terminal) and the nearest residents.

3.27 During construction, it is considered that there could be health effects of vibration from the construction of the rail line during compaction works and health effects of noise from increased construction traffic to and from the Tilbury2 site, however these negative health effects are considered minor.

3.28 In relation to lighting, there will be visual impacts arising from the lighting of the site and the CMAT however it is considered that the negative health effect is minor.

3.29 In relation to air quality construction impacts, it is expected that there are likely to be small impacts of construction dust during construction of the new infrastructure corridor (road and rail). Given the small number of residents located within 20m of the Scheme Boundary, the health effect is considered negligible. There are unlikely to be impacts of emissions from increased vehicle emissions during construction from vehicles travelling to and from the construction site as the assessment shows that the construction traffic flow and emissions will have a negligible effect on the annual mean pollutant concentrations.

3.30 During operation, there are likely to be noise and vibration impacts associated with the new link road between Fort Road and Ferry Road and due to increased traffic on the wider highway network. This will be mitigated through the use of noise barriers.

3.31 There are unlikely to be impacts from the operation of the new transport corridor (railway) due to the separation distance between the works and the nearest noise sensitive receptors and the low number of train movements per day.

3.32 There will be direct and moderate impacts of noise and vibration on the nearest residents from the operation of the main Tilbury2 site, due to the separation distance between the works and the nearest noise sensitive receptors, are considered direct and moderate. However, these impacts will be mitigated by a package of at receptor monitoring and mitigation measures (such as noise insulation or improved glazing where it is proven necessary).

3.33 In relation to air quality impacts during operation, there are likely to be impacts of increased emissions from HGV and LGV which impact on traffic flow, vehicle emission rates and road-receptor distances near the development (new public highway linking Ferry Road to Fort Road, reconfiguration of existing junctions) and within the wider area. These negative impacts are considered negligible to minor and not significant and therefore will not influence respiratory health.

3.34 There are unlikely to be impacts related to dust and particulate matter from the aggregates processing facility, as the closest receptors are 200-400m away, representing a negligible risk for small to medium residual sources of emissions.

3.35 There are unlikely to be impacts related to rail emissions from increases in rail operation from the Tilbury2 site or along the infrastructure corridor. While there are sensitive receptors within 30m of the Tilbury 2 railway access corridor, the expected increase in rail movements is considered to be low.

3.36 There are unlikely to be impacts related to shipping emissions (either in transit or at berth). While there are sensitive receptors within 1km of the Tilbury 2 port/shipping area, the increases in shipping movements associated with the scheme are considered marginal and unlikely to be significant.

3.37 Regarding transport, traffic and connectivity impacts during construction, there are unlikely to be any impacts on factors such as driver delay, pedestrian amenity and road safety and therefore stress responses or active travel in the local population will not be affected, the effect is therefore considered negligible.

3.38 During operation, little impact is expected on driver delay and pedestrian delay associated with the Tilbury2 site and the link road and traffic flows on Fort Road and A1089 Ferry Road are expected to decrease significantly, which could positively influence health by increasing opportunities for active travel in the local population. In addition, there is expected to be a minor beneficial impact on road safety on Fort Road and no likely impacts on other nearby roads showing the proposals could have positive road safety impacts within the local area.

3.39 In terms of Neighbourhood quality, construction of the main Tilbury2 site will lead to visual impacts for both the residents of Tilbury and Gravesend and users of recreational/tourist facilities, local roads and the Thames. However, views further afield in Gravesend are less likely to be significantly affected. Health effects may

also be associated with Footpath 146 as well as development of the infrastructure corridor that will affect views from residential properties in Tilbury, users of Fort Road, nearby public rights of way and Tilbury Fort. Overall the direct health effect is considered negligible to minor.

3.40 In relation to visual impacts during operation, the assessment shows potential minor negative direct impacts on the operation of nearby footpaths and public rights of way as well as residential areas in Tilbury, Gravesend and users of local roads and the Thames.

3.41 For open land and active travel incorporating physical activity, small impacts are predicted during construction on walking and cycling amenity, however these direct impacts are considered negligible and not likely to affect health. During operation, most of the roads in the area will experience an increase in total traffic flow which could discourage active travel, physical activity and the use of open space. These impacts could have minor to moderate health effects and consequently influence health in the local population.

3.42 In terms of direct employment and other economic impacts; education and training opportunities, the construction of the road and railway corridors and the main Tilbury2 sits is estimated to lead to 218 construction jobs in the regional economy which could create a positive moderate effect on health and wellbeing in the regional population.

3.43 During operation of the Tilbury2 site it is estimated that 527 net additional jobs will be supported in the regional economy which could have a moderate positive effect on health and wellbeing in the regional population. In addition, if employment is sourced locally this could therefore have a minor positive impact on health and wellbeing in the local population. Impacts are also likely to reinforce existing educational and employment trends which could have a negligible positive effect on health and wellbeing in the regional and local populations.

3.44 Housing will not be impacted during construction and therefore housing in the local population is not likely to be influenced by the proposals and there will be no effect on the health of residents. During operation, the arrival of additional employment and economic activity to the area as a direct effect of the development may impact the housing market and housing conditions generally. The development could cause pressure on housing in Tilbury town however housing nearer the port may become more attractive to employees and drive new housing development. It is considered overall there will be little impact on the local housing and housing as a health determinant will not be affected.

3.45 Construction of the development is unlikely to impacts factors such as traffic congestion, road closures or journey times and health effects via severance effects on community interactions are unlikely. In addition, no impacts on access to community facilities are expected during construction.

3.46 During operation, there will be increased severance impacts associated with the proposals which may influence health, however the extent of the local population affected by this will be minor and there may be beneficial health effects owing to the increased safety for pedestrians using nearby footpaths. In addition, business and community facilities in Tilbury are expected to benefit from increased economic activity in the local area which could have positive influence on health and wellbeing in the local population and is considered a negligible to minor positive health effect.

3.47 Also, during operation it is considered that there will be no strain placed on the local healthcare system or access to community facilities resulting in no impacts on social capital and consequently no effects on health.

3.48 A range of mitigation measures have been identified to avoid, reduce or offset potential adverse impacts across the individual topic areas – all of these contribute to the mitigation of health impacts during both the construction and operation phases. It is considered that the health effects identified in relation to severance impacts will in part be mitigated by the embedded mitigation and therefore residual effects are not expected.

Landscape Character and Visual Amenity

3.49 This topic considers the effects of the proposals on landscape character and visual amenity.

3.50 The character of the wider area is the generally flat landscape of the greater Thames estuary, which extends beyond to the west and east/north east and includes much of the marshland landscape in the locality. To the north-west land rises sharply, forming part of the Chadwell gravel escarpment. To the south, the rolling chalk hills of the North Kent Plain rise above the Thames at Gravesend. Attractive features in the wider landscape are associated with a church spire in the village of West Tilbury, a series of small woodland copses set on the rising slopes of the Chadwell escarpment, the hilltop Shorne woodlands and Windmill Hill, Gravesend. At the time of field survey, the Tilbury 2 site and near adjoining landscape in the vicinity of Tilbury, Tilbury Fort and the West Tilbury Marshes was generally dark.

3.51 The study area covers an area of approximately 53 square kilometres and represents the maximum predicted potential extent of significant landscape and visual effects brought about by the proposals.

3.52 Where practicable given operational requirements, mitigation has been proposed to offset the effects of construction activity on visual amenity. The most significant effects would be generated by close views of construction activity, including at the waterfront and at the higher elevations of development where screening would be impracticable.

3.53 It is anticipated that there will be no significant permanent effects relating to landscape character, landscape value, visual amenity and artificial lighting. The capacity of the local landscape to accommodate proposed development is assessed as moderate with an emphasis on the appropriate siting of individual elements within the application site, particularly in relation to the setting of Tilbury Fort.

3.54 There may be direct impacts on nature conservation value. These primarily relate to the designated non-statutory sites and protected species within the site for which appropriate mitigation has been devised.

3.55 A range of landscape mitigation measures have been identified and are set out at Table 1.1. The aim of these is to reduce predicted substantial-moderate levels of significance to moderate or less. Residual landscape and visual impacts would reduce over time as mitigation planting develops.

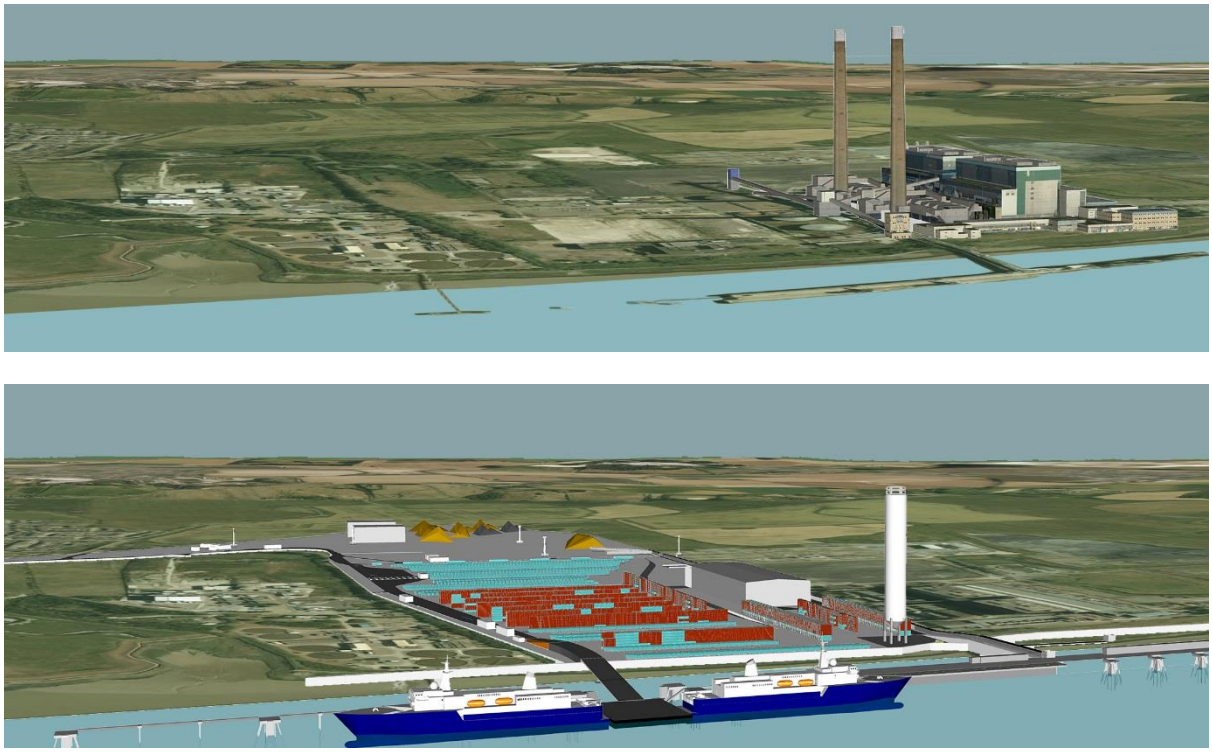


Figure ~~2~~3: Illustrative depiction of what Tilbury2 could look like - this recognises that RWE plans to demolish the existing power station

Terrestrial Ecology

3.56 This topic assesses the likely significant impacts of the proposals on terrestrial ecology. The assessment drew upon a substantial base of extant information gained from desk based assessment, a field ecology survey programme has been undertaken. The site encompasses land that has historically been grazing marsh, and the nature and character of the vegetation present today reflects the varying degree to which this former character has been changed by the superimposition of later uses.

3.57 The closest designations to the site relate to the Thames Estuary & Marshes. This Special Area of Conservation (SPA) and Ramsar site extends for about 15km along the south side of the Thames estuary, where it is also designated as the South Thames Estuary and Site of Special Scientific Interest (SSSI). On the north side of the estuary, the SPA/Ramsar site includes a smaller area of intertidal habitat which forms the Mucking Flats and Marshes SSSI.

3.58 There is likely to be a negative residual effect on the local and wider ecological resource during construction as there will not be suitably mature habitats to act in compensation for some of the key features that will be removed, in particular 'open mosaic' brownfield habitats with an equivalent suite of rare plants, lichens and invertebrates to those currently resident in the Lytag Brownfield LoWS and the Tilbury Centre LoWS (and to a greater or lesser extent, also elsewhere within the Site).

3.59 During operation, it is anticipated that the magnitude and significance of residual adverse effects will gradually diminish as the on- and off-site compensation measures mature and become of enhanced value for target species. In an

optimistic scenario, this may lead to something close to a net neutral effect on local and regional biodiversity in approximately ten or fifteen years from the commencement of construction. Mitigation measures are outlined in Table 1.1.

Marine Ecology

3.60 This topic assesses the likely significant impacts of the proposals on marine ecology. The marine elements of the proposals include construction, removal and dredging within the marine environment. Once operational there will be an ongoing requirement for maintenance dredging and the development will result in an increase in vessel traffic. These elements of the scheme could have effects on marine habitats and species. Impacts on the following groups of species have been assessed:

- benthic ecology (i.e. species and habitat associated with the bed of the River Thames);
- fish and shellfish;
- plankton; and
- marine mammals.

3.61 It should be noted that the fate of the dredged material is yet to be determined. PoTLL is investigating options to use dispersive dredging techniques or re-use the dredged material within the Tilbury2 development. If the material is not suitable for this purpose it may require disposal at sea. On land reuse, disposal at sea, or a combination of both options is being considered.

3.62 Desk based review of existing data has been undertaken to determine the baseline environment of the Thames Estuary at Tilbury. Where necessary, desk based sources of information have been supplemented with site specific surveys to fill gaps and validate information. The need for additional surveys and the methodologies for these surveys have been agreed with the relevant consultees.

3.63 The potential effects of the proposals on marine ecology (when compared to the baseline conditions) for the construction and operation phases are likely to arise from:

- changes in water quality from sediment disturbance due to dredging, piling and removal of obsolete structures, and run-off/discharges from land;
- increased levels of contamination in the water column from sediment disturbance due to dredging, piling and removal of obsolete structures, and accidental spillages;
- piling and vessel movements causing increased underwater noise and vibration; direct loss of non-mobile benthic species due to dredging;
- increased vessel movements causing a collision risk for marine mammals;
- vessels and equipment transporting Invasive Non-Native species (INNS); increased lighting causing disturbance to fish and marine mammals;
- changes in hydrodynamics influencing patterns of erosion and accretion due to changes in the footprint of the structure; and
- shading of intertidal area causing a net loss of intertidal habitat.

3.64 Mitigation measures are set out in Table 1.1. Subject to the embedded mitigation and further mitigation being implemented, it is considered that the construction and operation of Tilbury2 will not result in any significant residual effects on marine ecology.

Archaeology and Cultural Heritage

3.65 This topic assesses the potential effects on archaeology and cultural heritage. The assessment has looked at the effects on assets such as second world war defences, potential for Roman occupation and potential for prehistoric isolated artefacts. Several baseline desk-based assessments have been undertaken (Archaeological Desk Based Assessment, Geoarchaeological Deposit Model, Marine Desk Based Assessment and Built Heritage Assessment).

3.66 Works which could damage and destroy the known or potential archaeological resource within the site including ground related construction activities such as soil stabilisation works beneath the RoRo pavement and attenuation works. These effects will be limited to the site and will be permanent and irreversible. Works that could damage or destroy the archaeological resource in the intertidal and marine zones of the site include activities such as piling along the northern edge of the eastern dredge box and dredging within the berth and approach. In addition, differential scour regimes caused by piling and dredging could have a secondary impact on the sediments protecting any archaeological receptors outside the site boundary.

3.67 There are no designated or non-designated built heritage assets within the site. The construction phase of Tilbury2 will, however, have likely potential temporary, direct impacts on the setting of designated and non-designated built heritage assets within the wider Study Area. Likely potential effects on built heritage during the construction phase are likely to be associated with activities such as site preparation and development. As a result, during the construction phase there are likely to be levels of noise, dust, lighting, traffic and visibility of construction activities, which are likely to have an impact upon the settings of surrounding

heritage assets. There will be no direct or indirect effects on buried archaeological assets during the operational phase.

3.68 The operational phase of the proposals will likely have potential permanent, direct impacts to the setting of built heritage assets surrounding the site. The proposals will likely result in an increase in industrial character and activity in proximity to Tilbury Fort, however, this will be experienced as an extension of the existing industrial activity between Tilbury Fort and the site provided by Stobart's aggregates/storage facility and the sewage works. The operation of the proposals is likely to have a potential impact upon the settings of the Scheduled Monuments of Coalhouse Fort, Cliffe Fort, New Tavern Fort and Gravesend Blockhouse, and the non-designated but nationally important Shornemead Fort. This will principally be likely through the visual effects of buildings, structures and aggregate stockpiles on site and the docking of large vessels at the extended jetty, as well as a significant increase in lighting effects at night. The operational phase of the proposals is likely to have a potential impact upon the setting of a number of listed buildings, including the Grade II* Listed Officers Barracks situated within Tilbury Fort, through a likely increase in noise and light pollution and visual effects of new structures.

3.69 The proposals during operational phase will likely be particularly visible from the southern side of the River Thames and, as such, will be visible from a number of built heritage assets. The proposals are likely to have a potential negligible to medium adverse magnitude of impact upon the settings of various built heritage assets in Gravesend prior to further mitigation, resulting in neutral to moderate significance of effects.

3.70 Mitigation measures that are proposed are outlined in Table 1.1. Any residual archaeology effects are expected to be negligible following use of mitigation measures. Residual effects relate to those effects which remain following the implementation of mitigation measures.

Land-side Transport

3.71 The assessment identifies the potential effects of the proposals in terms of transport and access. The scope, extent of study area, assessment parameters and methodology of the effects of changes in traffic flow and the predicted extent of potential impacts have been agreed with the local and strategic highway authorities.

3.72 The assessment has been divided into two phases and undertaken for both the operational and construction stage of the proposals in accordance with best practice, with the assessment of HGV effects assessed for both phases.

3.73 The proposals have developed to include embedded mitigation measures to limit the environmental impacts caused by the development in both the construction and operation phases. Following the assessment, further mitigation measures have been identified and implemented. Mitigation measures proposed are outlined in Table 1.1.

3.74 In terms of construction traffic, after the initial Two-way traffic flow assessment, only Fort Road (south of Site) required further assessment, as it resulted in an increase in traffic greater than 10%, in accordance with the IEA Guidelines for the Environmental Assessment of Road Traffic. For all other links within the study area, increases in traffic are considered negligible and no further assessment was required.

3.75 In terms of severance, driver delay, pedestrian delay, pedestrian amenity and accidents and safety, negligible effects are predicted to Fort Road (south of Site). In addition, the development is not expected to generate any hazardous loads and any abnormal loads will be managed through the Construction Traffic Management Plan (CTMP).

3.76 During operation, in terms of severance caused by the proposed link road, a direct moderate adverse impact will be experienced by pedestrians because of the closure of Footpath 144, however this will be experienced by a relatively small number of pedestrians.

3.77 The operation of the proposed link road will result in a moderate beneficial impact to driver delay as it reduces the distance driven by 50% and consequently results in a 50% reduction in driver delay. In addition, the closure of Footpath 144 will increase the time taken to walk between Tilbury and the riverside and is considered to have a negligible to minor adverse effect on pedestrian delay.

3.78 The proposed link road is expected to have a negligible effect on public amenity as only a small number of pedestrians currently use the Footpath 144 and could be expected to use the proposed footway along the Link Road. It is also considered there will be a negligible effect on road safety on the Link Road as it will comply with relevant design guidance and the relevant safety standards.

3.79 In terms of traffic flow during operation, the impact of increased vehicle movements on most roads within the study area will be negligible owing to an increase in total traffic flow of less than 10% when compared against 2020 baseline flows. The A1089(T) St Andrews Road link is considered to experience a negligible effect in terms of traffic flow and requires no further assessment.

3.80 The link road will benefit the nearby roads by causing up to 100% reduction of traffic on the Fort Road (south of site) and 34% reduction on A1089 Ferry Road (south of Link Road).

3.81 In terms of severance, the proposed link road will have a negligible effect on the Tilbury area and nearby Fort Road and A1089 Ferry Road.

3.82 Driver delay is only currently experienced at the ASDA roundabout on a regular basis and in the operational phase this junction is predicted to experience a modest increase in delay with the effect likely to be negligible to moderate adverse.

3.83 The decrease in traffic flow on Fort Road (south of Site) will result in a moderate beneficial impact on pedestrian delay and pedestrian amenity along the road. The effect on pedestrian delay and pedestrian amenity on the A1089 will be negligible both south and north of the Link Road.

3.84 In terms of accidents and safety, a negligible effect is predicted to A1089 Ferry Road both north and south of Link Road as there are no recorded injury accidents and no significant alterations to traffic flow on these roads. The decrease in traffic flow predicted on Fort Road (south of Site) is considered to have a moderate beneficial effect on accidents and safety.

3.85 There is potential for an increase in hazardous loads during the operation of the proposals however the overall effect to the A1089 Ferry Road and the study

network is considered to be negligible. In relation to dust and dirt arising from traffic, this would be dependent on the management practices adopted on site.

3.86 Mitigation measures proposed are outlined in Table 1.1. During construction, activities would be controlled with mitigation measures, such as a Construction Traffic Management Plan, so that any residual effects would remain negligible. During operation, it is expected that with the improved pedestrian and cycling links as part of the proposals in place, there will be a slight adverse residual impact upon severance. Further mitigation measures will have a positive effect particularly upon severance, driver delay, pedestrian delay, and safety. However, it is considered that there may be a negligible impact on driver delay.

Navigation

3.87 This topic identifies the likely significant effects with respect to marine navigation as a result of the construction and operation of the proposed Tilbury2 development. The Tilbury2 works are located outside the main navigational channel on the northern shore of the river Thames. As such, the assessment of impacts to marine navigation in respect of the Tilbury2 development is limited to that on the navigable River Thames, in the immediate vicinity of the proposed works.

3.88 Navigation to the Tilbury2 works will be via the Thames Estuary using existing navigational aids and river pilot knowledge and expertise as appropriate. A Navigation Risk Assessment (NRA) has been produced in cooperation and liaison with the Port of London Authority (PLA) for the operation of Tilbury2. The NRA supports the assessment of impacts of marine navigation and sets out the mitigation measures required.

3.89 As part of the construction of Tilbury2 spud load barges and jack-up barges will be required to install the piles and for the general marine works. Barges will be used to transport material to the site such as the piles, link bridge and pontoon. No impacts from the movement and positioning of vessels associated with the construction works to navigation are anticipated given the marine construction methodology and timing will be prepared and agreed in advance with the PLA. In the event any impacts do occur, they are likely to be minor, in the immediate vicinity of the Tilbury2 development and temporary.

3.90 The Gravesend ferry is located approximately 1km upstream of Tilbury2. During operation of Tilbury2, the approaching RoRo and aggregate vessels will turn downstream and adjacent to the berth, subsequently there will be no interface with the Gravesend ferry brought about by berthing or unberthing operations. When maintenance dredging is required, timing of works will be coordinated to minimise impacts with other port operations as well as other river users.

3.91 It is anticipated that some aggregate export barges will transit upstream from Tilbury2 and will pass the Gravesend ferry. However, these barge movements can be expected to be within an upper limit of 300 movements per annum. This figure assumes that a 150,000-ton load per 1000-metric ton capacity barge will result in 150 loaded export movements and 150 empty return movements. Based on 2016/2017 data the average movements of vessels passing the ferry route might therefore be expected to rise from around 47 to 48 movements per day which should pose no problem for the management of marine operations of the ferry or any other existing operations in the upstream of the Tilbury2 development, including the ferries using the Bexley wharves. With the proposed mitigation actions put in

place, no residual effects are predicted in relation to navigation and vessel movements.

Hydrogeology and Ground Conditions

3.92 This topic assesses the likely impact with respect to hydrogeology and ground conditions as a result of the construction and operation of the proposals. It has been undertaken including consideration of the effects of the development on the hydrogeology and ground conditions in relation to physical effects, effect on geology as a valuable resource and effects associated with ground contamination and waste.

3.93 The existing baseline assessment has relied on existing data from previous desk studies and ground investigations, and historical records. A topographical survey of the site and a site walkover have also been conducted. Detailed ground investigation will be undertaken at a later stage as part of detailed design and will be controlled through protective provisions for the benefit of the Environment Agency in the DCO.

3.94 Surveys have been undertaken to identify any potentially unexploded ordnance (UXO) within the Order Limits. The results of this survey will be used to inform the detailed design of the Scheme, as required by the CEMP. It is considered that a medium risk will be present during the ground stabilisation, earthworks and piling works. In the event that a bomb strike was to be realised there would potentially be a major adverse impact on ground stability. However, this impact would be restricted in area and temporary in nature and therefore has been classed as a minor effect and not significant.

3.95 During construction works, the impacts on the geology underlying the site are considered likely to be temporary and short term in nature and will be limited in area for the permanent works in the form of piles. It is also unlikely that the Seaford Chalk Formation and Newhaven Chalk Formation that underlays the Site would be extracted in the future in this location given the current land use of the site and surrounding area. Consequently, the effect on geology as a valuable resource is assessed to be negligible and therefore not significant.

3.96 Impacts related to the operation of the site may include soil erosion, changes in the current topography and impacts on the underlying geology. However, suitable design and subsequent construction works will minimise soil erosion and it is assumed that the Site will be operated in accordance with the relevant regulations and best practice guidance in applying Best Available Techniques. This will therefore further reduce soil erosion, and any further physical effects and effects on geology. Consequently, the impacts on physical effects and geology as a valuable resource during operation are assessed to be negligible and therefore not significant.

3.97 With appropriate mitigation in place (as set out in Table 1.1), negligible effects are generally predicted during the construction phase of the development. The effect on ground stability and compaction during construction is considered to be a significant permanent beneficial effect. With mitigation incorporated within design, negligible or minor beneficial effects associated with the removal/mitigation of on-site contamination sources are anticipated. The effect on ground stability and ground compaction during both the construction and operational phase is considered to be

permanent and moderately beneficial and is classed as significant. Therefore, no residual impacts are anticipated with the primary mitigation in place.

Water Resources and Flood Risk

3.98 This topic assesses the impact of the construction and operation of the proposals on water resources and water quality. In addition, flood risk associated with the development is also discussed in this topic.

3.99 The assessment is based on the detailed review of the relevant baseline data which includes any existing surface water features, surface and groundwater quality data, surface and groundwater abstractions, groundwater sensitivity and vulnerability. This has been supplemented by the results of a topographical survey and a number of technical assessments including flood risk assessments and a hydrodynamic and sediment study of the River Thames. Information of groundwater levels will be investigated in detailed design through ground investigation surveys (controlled through the DCO).

3.100 Level 2 and Level 3 Flood Risk Assessments (FRA) have been undertaken. A Level 2 FRA is a scoping study that is undertaken if the site lies within an area that is at risk of flooding, or if the site may increase flood risk due to increased run-off. A Level 3 FRA is undertaken when the Level 2 FRA identifies risks that, in order to be fully understood, require a site specific quantitative assessment (modelling exercise). The Level 2 FRA identified that tidal flooding is considered to be high therefore necessitating the need for a Level 3 FRA. Although the proposals are protected by tidal defences for events of up to 1:1,000 years probability of occurrence, a breach and/or overtop of the defence walls might still occur (residual risk). A level 3 FRA has therefore been undertaken in order to assess the flood risk in the event of a breach and/or overtop of the flood defences. The Level 3 FRA compared the existing baseline to a post development breach model and identified a residual risk to the site. Therefore, a Flood Emergency Plan will be developed for the whole site to establish a procedure to reduce the potential for future users of the site being exposed to the flood hazard as a result of a potential breach on the site. Mitigation measures are therefore not considered necessary for any off-site areas.

3.101 In addition, a Drainage Strategy has been developed and explains how Sustainable Urban Drainage Systems (SuDs) for water attenuation and storage will be implemented as part of the proposals.

3.102 Construction activities have the potential to impact the water environment through the addition of new contaminant sources and the creation of new pathways and as such the implications of the proposals on the water environment during the construction phase have been assessed.

3.103 A key impact of concern is associated with the dredging and piling works that are proposed to be undertaken in the River Thames as a requirement for the installation and operation of the new ro-ro berth. This might cause deterioration of the water quality by increasing sedimentation and turbidity of the River Thames and mobilising contaminants if present. However, the impact on River Thames' sediment concentration and tidal hydrodynamics is likely to be minor adverse as dredging will not change the fine sediment budget of the Thames budget outside natural variability. Given that the River Thames is a sensitive receptor, a full WFD

compliance assessment has been undertaken to determine whether the dredging activities would cause a deterioration of the river water quality.

3.104 In the southern part of the site, the existing slab will either be replaced or retained. Resultantly, in this area it is likely that there will be negligible change (and thus impact) on the groundwater recharge during the construction works. Within the northern portion of the Tilbury2 site and at the infrastructure corridor, where no or only minimal hardcover is currently present, compaction caused by vehicles used during the construction phase may reduce the infiltration ability of the natural ground materials and cause a reduction in the recharge to groundwater. However, given the significant extent of both the Secondary Undifferentiated and Principal aquifers, compared with the site footprint, it is likely that the construction works will cause negligible impact on the recharge.

3.105 A number of drains/streams are present in the land surrounding the proposals. No information on the connection between the on-site and off-site drains is available, however, it is likely that a proportion of the on-site drains discharge into the off-site drainage network. This could therefore potentially increase the flow in those drains/streams which are downstream of the proposals. However, given the proximity of the drainage network to the River Thames, in which the network drains to, any additional flow generated from the construction works, upon reaching the downstream off-site drainage system, will likely discharge into the River Thames. Therefore, additional flows are likely to cause only a Minor Adverse impact on the off-site drainage network flow.

3.106 A number of mitigation measures will be implemented to reduce the potential impacts of the proposals. These are set out in Table 1.1. With these measures in place, it is considered that the implementation of these mitigation measures should reduce the potential residual impacts of the development on the water environment to either a minor or negligible level.

Noise and Vibration

3.107 The topic describes and presents the likely noise and vibration effects of the proposals. An assessment has been undertaken of airborne noise and vibration for the proposals considering residential and other noise sensitive receptors. Underwater noise modelling has also been undertaken to estimate the noise levels that are likely to arise from the proposals to develop the jetty at Tilbury power station and determine the possible impact on marine fauna.

3.108 Piling and dredging works associated with the jetty construction are predicted to be the noisiest construction stage activity. However, this activity is not predicted to give rise to potential impacts due to the location of the works.

3.109 There is potential for significant impacts to occur whilst the rail line and road link are being constructed, as well as elements of the bridge construction. These activities have the potential to give rise to temporary, moderate adverse effects at the nearest noise sensitive receptor, which is a residential property. Noise sensitive receptors are people or operations (e.g. schools, hospitals, care homes, residences) considered to be located near to a noise source and to be particularly susceptible to noise.

3.110 In addition to onsite activities, construction traffic represents a potential source of noise to offsite receptors once it joins the local road network. During peak activity,

construction deliveries are estimated at worst case to be up to 177 movements per day, being an increase in the proportion of (Heavy Goods Vehicle) HGV of around 11%. This equates to an increase in road traffic noise levels of less than 1dB, which is negligible and therefore not significant.

3.111 There is potential for significant impacts to occur whilst the rail line compaction works are being carried out due to the proximity of residential homes to the north. The vibration levels associated with other construction activities are not predicted to give rise to significant impacts. The rail line compaction works have the potential to give rise to temporary, direct, moderate adverse effects at the nearest sensitive receptors.

3.112 Predicted operational noise impacts on nearby residential receptors from the operation of plant onsite would result in moderate or major significant effects, particularly in the night time. Once further mitigation is included i.e glazing and/or mechanical ventilation for dwellings with high sensitivity to noise, a residual minor significant effect is predicted which is not considered significant. Impacts from the permanent movement of operational traffic would remain negligible to minor for nearby residential receptors and therefore it is not considered significant. The proposal transport corridor noise impacts on nearby residential receptors from the road and rail link will result in negligible significance and therefore it is considered to be not significant.

3.113 A range of mitigation measures have been developed and are outlined in Table 1.1. During road and rail construction, those dwellings with high sensitivity to noise, are predicted to experience minor residual impacts once mitigation such as noise barriers are put in place. Mitigation is likely to offer a greater reduction in noise for some activities compared to others, but overall it would be reasonable to expect the total noise predicted for each of the sequences to reduce by between 5 dB and 10 dB. In relation to operational noise, the application of further mitigation, such as glazing and/or mechanical ventilation, for dwellings with high sensitivity to noise, is predicted to reduce the impact to a residual minor effect which is considered to be insignificant.

Air Quality

3.114 This topic considers the potential effects of the proposals on air quality. The assessment covers air quality impacts during construction and operational phase. The topic focuses on analysis of baseline conditions, assessments of construction dust and traffic, and assessments of operational dust, traffic, rail, odour and shipping.

3.115 The pollutants affecting local air quality that are of primary concern to human health are nitrogen dioxide (NO2), particulate matter (the size categories PM10 and PM2.5) and sulphur dioxide (SO2); they derive from exhaust emissions from fuel combustion in transport. The pollutants of relevance to sensitive ecosystems are oxides of nitrogen (NOx) and SO2, as well as deposited dust, nitrogen and sulphur; they derive from exhaust emissions from fuel combustion in transport and in the case of dust, the handling of dusty materials. Dust is also associated with loss of amenity.

3.116 Following the application of appropriate mitigation, the residual effects of construction dust on receptors will not be significant. Construction traffic emissions

have been shown to have a negligible impact on local air quality at receptors. Residual effects are therefore deemed not to be significant.

3.117 The operational impact of the proposals on local air quality has been assessed by undertaking air quality modelling which used updated traffic data provided by the project transport planners for a worst-case scenario (based on conservative estimates of the volumes of materials handled by the port and transported off-site by road as opposed to rail and shipping).

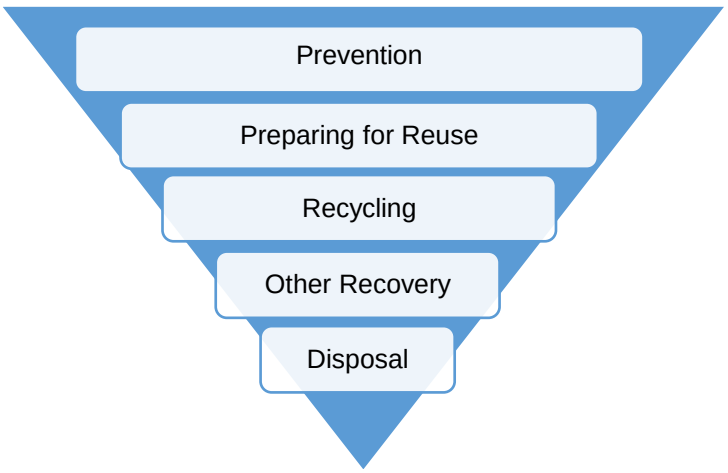
3.118 The assessment of operational traffic and rail emissions has shown that the effects will not be significant. Furthermore, the replacement over time of the road and rail fleets with more modern, cleaner engines will provide air quality improvements at all receptors over the longer term. With effective mitigation to be secured through the DCO application and through the environmental permitting regime, the residual effects of operational dust and odour emissions will not be significant. Operational shipping emissions have been screened out as not significant therefore the effects of residual emissions will not be significant.

3.119 Mitigation measures to reduce the operational impact of the proposals on air quality are embedded in the scheme design and are outlined in Table 1.1. With the implementation of appropriate mitigation through the CEMP, the residual effects of construction dust and traffic emissions are not considered significant. In addition, during operation no significant residual effects are predicted.

Waste and Materials

3.120 This topic assesses and identifies the likely impacts of solid waste and materials associated with the development of the proposals during construction, demolition and excavation (CD&E) and operation. The proposals will apply the principles of the Waste Hierarchy to manage waste (as shown in Figure ~~XX~~4). Waste arisings and the use of materials are important in relation to; reducing or preventing waste requiring offsite disposal, minimising the use of key construction materials; minimising the use of materials with hazardous content, promoting the use of sustainably sourced materials and minimising vehicle movements.

Figure 4~~3~~: Waste Hierarchy



3.121 The CD&E materials baseline has been established from data published by the Mineral Products Association and UK Steel. The CD&E and operational waste

arisings and waste infrastructure baselines these have been established from data published by both Essex County Council (in collaboration with Southend on Sea Borough Council) and the Environment Agency. It is acknowledged that Tilbury2 sits within the Unitary Authority of Thurrock, however, due to the lack of readily available waste arisings and infrastructure capacity data, Essex has been considered the most appropriate proxy baseline study area. The use of this proxy is supported by an assessment of data published by the Environment Agency which indicates that approximately 65% of the CD&E waste arisings from Thurrock generated in 2016 were exported to Essex for treatment/disposal.

3.122 Initial estimates of construction, demolition and excavation (CD&E) waste arisings have been assessed at this stage of the process. When assessed against the criteria for classifying the environmental impacts associated with the construction phases, the proposals are shown to have a moderate impact in terms of CD&E impact and a negligible effect in relation to hazardous waste.

3.123 During operation, the proposals are shown to have a negligible impact on commercial and industrial waste and hazardous waste. In addition to the impact of the waste arisings during operation, it is important to note that, once operational, the proposals will have a positive impact on the availability of key construction materials and positively contribute to the demand for key construction materials nationally.

3.124 Mitigation measures embedded within the proposals for both the construction and operational phases are outlined in Table 1.1. Following the assessment, no further mitigation measures are considered necessary and the residual impact is considered to be the same as the potential impact. There is however potential to minimise the predicted effect in terms of CD&E waste once appropriate geotechnical and chemical data is available.

Cumulative and Synergistic Impacts

3.125 This topic considers the synergistic (in-combination) and cumulative effects of Tilbury2.

3.126 In-combination and cumulative effects are defined as:

- Intra-projects effects or ‘in-combination effects (synergistic): These effects occur between different environmental topics within the same proposal and as a result of the development’s direct effects.

- Inter-project effects or ‘cumulative effects’ (additive): These effects occur as a result of the combined action of a number of different projects cumulatively with the project being assessed and on a single resource or receptor.

3.127 The study area for synergistic effects is defined by the study areas for each of the individual environmental topic assessments, which are described in each topic chapter.

3.128 The study area for cumulative effects is defined on a topic-by-topic basis taking into account the nature of the proposals and the area over which significant effects can reasonably be thought to have the potential to occur from both the proposals and in combination with other schemes. Consideration has then been given to whether these developments would lead to changes in the existing baseline situation and result in cumulative effects during the construction and/or operation of the proposals. Study areas are defined in each topic chapter.

3.129 The relevant local planning authorities were contacted to request the list of projects to be considered in the assessment of cumulative effects. Where responses were received they have been incorporated into the ES. During consultation on the PEIR, undertaken from 19th June to 28th July 2017, consultation responses highlighted an additional project (West Thurrock Biomass CHP Plant) proposed by stakeholders and this was included in the list of developments to be considered in the ES.

3.130 The following projects have been considered for cumulative impacts; Thames Enterprise Park, Oikos Storage Proposals, Goshems Farm Jetty, Land Adjacent Tilbury Power Station Fort Road and West Thurrock Biomass CHP. In addition to these developments, various River Thames dredging and river maintenance works within a 15km radius of Tilbury2 have also been considered in the cumulative assessments for the Terrestrial Ecology, Marine Ecology, Navigation and Water Resources assessments.

3.131 It is considered that there is potential for cumulative impacts to occur during the construction phase in relation to landscape and visual amenities, terrestrial and marine ecology and water resource and flood risk. It is predicted that there will be positive regional cumulative effects for employment and GVA. There is also likely to be a beneficial residual effect in relation to archaeology and cultural heritage during construction due to implementation of the proposed mitigation measures.

3.132 Positive cumulative effects may arise during operation for employment and GVA for socio-economic receptors. The adoption and compliance of SuDS which will require that surface water drainage systems are designed to achieve betterment, assumes that the proposals will result in a cumulative beneficial impact in terms of decreasing inflows to the existing sewer network, improving water quality and reducing surface water flood risk.

3.133 For Land-side transport no cumulative effects are considered likely taking both nearby developments and Tilbury2 into consideration.

3.134 In relation to synergistic effects on residential receptors, landscape and visual effects at specific receptor points are considered to be of moderate adverse significance however, the assessments of noise and air quality have determined there will be some effects from construction dust and noise on specific receptors but these will not be significant. Therefore, there are no predicted significant synergistic effects during the construction of the properties on residential receptors.

3.135 It is considered that during the operational phase, synergistic effects of noise and loss of visual amenity to properties closest to the entrance to the site and adjoining the infrastructure corridor would result and could be of moderate significance. This may result in some adverse health and well-being effects; however, air quality is unlikely to contribute to these synergistic impacts.

3.136 For waste and materials there may be synergistic impacts arising from hydrology and ground conditions, air quality, noise and water resources and flood risk during construction and operation, however given the mitigation measures for each of the assessment topics the overall effects predicted these synergistic impacts will be negligible.

4.0 SUMMARY OF ENVIRONMENTAL IMPACTS

4.1 A summary of the results of these initial assessments and the mitigation measures currently being considered both as part of the scheme design ('embedded') or as 'further' mitigation measures for each environmental topic is provided in Table 1.1 below. Mitigation measures, and how they are proposed to be secured, will be confirmed at ES stage.

Table 1.1: Summary Table

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
Socio-economics	Construction: Construction traffic impacts by restricted access to business, community receptors and tourism receptors and delays in journey times.	Implementation of the Construction Traffic Management Plan (CTMP). Appropriate screening of construction activity through the Construction Environmental Management Plan (CEMP).	Indirect, Negative, Temporary, but Negligible
	Operation: Reduce potential residual visual effects of development on nearby receptors to the west including Tilbury Fort. Interface between PoTLL and the sailing and rowing clubs.	Proposed further mitigation includes the retention of a strip of existing vegetation along the western boundary and PoTLL, secured through the Landscape and Ecological Management Plan. Engagement with Gravesham sailing and rowing clubs, secured through the Operational Community Engagement Plan.	Indirect, Negative, Temporary, but Negligible

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
Health	Construction: Noise and vibration, lighting, air quality and traffic impacts of the infrastructure corridor and the site.	Implementation of the CEMP including: • Implementation of the CTMP; • Adoption of best practicable means as defined by the Control of Pollution Act 1974; • Development of a Dust Management Plan; and Development of the final Lighting Strategy in general accordance with the Preliminary Lighting Strategy and Impact Assessment	Direct, Negative Permanent, Negligible
	Operation: Noise and vibration, air quality and traffic impacts of the infrastructure corridor and the site	Noise reassessment upon finalisation of detailed design - offer to be made of noise insulation or improved glazing at receptors if significant effects identified. Ongoing monitoring and mitigation scheme to be agreed with Thurrock and Gravesham Councils (secured by DCO requirement) Operational dust emissions will be addressed through the Operational Management Plan. The Framework Travel Plan and Sustainable Distribution Plan set out and encourage	Direct, Negative Permanent, Negligible

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
		sustainable travel modes.	
Landscape Character and Visual Amenity	Construction: Impacts on visual amenity	Implementation of the CEMP including appropriate screening and retention of exiting vegetation.	Moderate to slight
	Operation: Impacts on landscape characteristics; landscape features and elements; landscape value; and visual amenity	Implementation of Landscape and Ecological Management Plan Restrictions on building heights and locations as set out in the DCO Works Plans and DCO Requirements. Approval of Thurrock Borough Council in relation to surface details of key structures and final lighting strategy.	Moderate to slight
Terrestrial Ecology	Construction: Impact on important ecological receptors including capture and translocation programmes for protected water voles and reptiles. Prevention of the spread of	Implementation of the CEMP will include: • Pre-constructions surveys. • Translocation of species and habitats required Appropriate isolation, removal and post-	Negative residual effect

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
	invasive non-native species (INNS).	construction control measures will be drawn up and implemented in conjunction with prevailing best practice protocols.	
	Operation: Lack of suitably mature alternative habitats for some key features that will be removed.	Mitigation measures are provided within the CEMP, OMP and LEMP. Offsite compensation that is required to fully mitigate impacts is secured by a DCO requirement.	Negative residual effect will diminish
Marine Ecology	Construction: changes in water quality, removal and dredging within the marine environment.	Implementation of the CEMP to include: • Best practice and OSPAR, IMO and MARPOL guidance for vessel use and operation • Implementation of the Materials Management Plan, Drainage Strategy • Biodiversity risk assessment and biosecurity plan in relation to management of INNS.	No significant effects
	Operation: ongoing requirement for maintenance dredging and associated increase in vessel traffic.	Mitigation measures are to be prescribed through approvals under conditions of the deemed marine license within the DCO and Deemed Marine License (DML).	No significant effects

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
Archaeology and Cultural Heritage	Pre-construction: Impacts to archaeological resources.	Measures identified in terrestrial and marine written schemes of investigation which include: • a programme of archaeological trial trenching in the first instance to determine the presence or absence of archaeological remains; and • a terrestrial and off shore geo-archaeological watching brief will be undertaken during proposed geotechnical investigation.	n/a
	Construction: Noise and dust levels near heritage assets.	Implementation of the Construction Traffic Management Plan (CTMP) and Construction Environmental Management Plan (CEMP).	Minor to moderate
	Operation: Adverse impact on setting of built heritage assets.	Implementation of Landscape and Ecological Management Plan Restrictions on building heights and locations as set out in the DCO Works Plans and DCO Requirements. Approval of Thurrock Borough Council, in consultation with Historic England, in relation to surface details of key structures and final lighting strategy.	Negligible to medium

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
Land-Side Transport	Construction: Impacts from construction traffic	Implementation of the CEMP and the CTMP including: • Limits on Hours of construction working; • Use of appropriate and approved routes; • Covering loads; • Onsite wheel washing.	Negligible
	Operation: Impacts on transport.	Sustainable staff travel measures are set out in the Framework Travel Plan (FTP) and the promotion of sustainable transport modes is set out in the Sustainable Distribution Plan (SDP).	Negligible to moderate adverse, moderate beneficial.
Navigation	Construction: Use of spud load of barges and jack up barges.	The measures set out in the Navigation Risk Assessment (NRA) will be implemented.	Temporary minor impacts
	Operation: Increase in vessel movements.		No significant impacts
Hydrogeology and Ground Conditions	Construction: Impact on ground conditions.	Implementation of the CEMP including: • A Generic Quantitative Risk Assessment (GQRA); • Implementation of the Materials	Not significant

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
		Management Plan; and • Asbestos mitigation measures.	
	Operation: Impacts on ground conditions	The site will be operated using Best Available Techniques and pollution prevention measures which will be implemented as part of the Operational Management Plan.	Not significant
Water Resources and Flood Risk	Construction: Impacts to groundwater and surface water	Implementation of the recommendations in the Level 2 and Level 3 FRAs; and Implementation of the CEMP.	Negligible to minor adverse
	Operation: Impacts to groundwater and surface water	Implementation of the Drainage Strategy; Implementation of the recommendations in the Level 2 and Level 3FRA Control of dredging through the Deemed Marine Licence; and Obtaining appropriate permits for issues relating to surface water and groundwater.	Minor adverse
Noise and Vibration	Construction: Construction phase airborne, local road network and underwater noise impacts; and Construction phase vibration	Measures set out in the CEMP including: Limiting noisy construction activities to daytime hours only; Adoption of low noise or vibration techniques	Negligible to temporary, direct, moderate adverse effects.

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
	impacts.	at all times; and Locating plant away from sensitive receptors where feasible (including haul routes). Introduction of temporary noise screening.	
	Operation: residual noise impacts from operation of plant onsite and operational traffic to nearby sensitive receptors.	Operational Management Plan and Operational Community Engagement Plan to minimise noise impacts including through use of low noise plant and equipment where practicable. Installation of noise barriers for the new road and rail link and the site access road (secured by DCO requirement) Reassessment upon finalisation of detailed design - offer to be made of noise insulation or improved glazing at receptors if significant effects identified. Ongoing monitoring and mitigation scheme to be agreed with Thurrock and Gravesham Councils (secured by DCO requirement)	Negligible to moderate or major significant effects.
Air Quality	Construction: Construction dust emissions (from demolition, earthworks, construction, demolition, dust soiling and human health);	Implementation of the CEMP including: • Implementation of Dust Management Plan based on the final construction methods, works programme and	Not significant

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
	Impacts on air quality during construction operations, earthworks, trackout, construction traffic and NMRM emissions; Operational plant emissions; and Construction traffic emissions	extent of works; • Dust monitoring during construction; • Preparation and maintenance of the site to include measures such as location dust causing activities away from receptors; • Measures specific to trackout, such as water-assisted sweeping and covering vehicles entering and leaving the site.	
	Operation: Operational dust emissions; Operational plant emissions; Operational traffic emissions.	Implementation of Best Available Techniques under Environment Agency guidance through the OMP including: • Water suppression; • Wheel washing of vehicles prior to site exit; • Implementation of procedure to mitigate dust on roadways such as permanent or hired-in sweepers. • Obtaining permits as required.	Not significant

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
Waste and Materials	Construction, demolition and excavation (CD&E) waste arising from the proposals	The Construction Environmental Management Plan (CEMP) includes the following measures: • Segregation and management of Electrical and Electronic Equipment and all batteries; and • Minimising use of materials and achieve a high reuse, recycling and recovery rate. • Onsite Management of Construction, Demolition and Excavation to include: o Designing out waste as early as possible; o implementation of best practice onsite waste management; and o treatment and disposal of waste to be carried out by Environment Agency registered companies.	Temporary, Moderate (CD&E)/Negligible (hazardous)
	Operational commercial and industrial waste arisings and waste infrastructure within	Measures include: • Implementation of Operational	Permanent, Negligible (overall)

Topic	Environmental Issues	Mitigation to reduce the impacts	Residual Significance of effect following mitigation
	Essex and hazardous waste arisings and waste infrastructure nationally.	Management Plan, which includes: ○ source segregation of residual, recyclable waste and hazardous waste; ○ provision of regular training for staff/sub-contractors focusing on waste minimisation.	

5.0 WHAT HAPPENS NEXT?

5.1 PoTLL have submitted the ES as part of an application for a DCO. PINS have been appointed by the SoS to examine the application. Granting the DCO would give PoTLL the legal power to proceed with the implementation and operation of the proposals.

5.2 At the time of publication of this NTS, the application has just entered the acceptance period, which has a maximum period of 28 days. On receipt of the application, the PINS will upload documents to its website and will contact local authorities for confirmation of the adequacy of pre-application consultation. If satisfactory responses are received and all the necessary documents have been provided, PINS will accept the application as adequate and the pre-examination stage will begin.

5.3 At this point PoTLL will publish a notice saying where the application documents can be viewed. During the registration period of the pre-examination stage, members of the public can register as interested parties. This will entitle them to make written representations to PINS. Information on how to resister can be found on the PINS website: https://infrastructure.planninginspectorate.gov.uk/application-process/the-process/

5.4 The pre-examination period ends with the preliminary meeting, which registered interested parties are invited to attend. At the preliminary meeting, PINS will decide the key issues to take into account when examining the application and take representations on a proposed timetable for the Examination.

5.5 The preliminary meeting marks the start of the examination period during which any necessary hearings will be held to address key issues identified at the preliminary meeting and a number of deadlines will be set for written submissions.

5.6 Registered interested parties can send written comments to PINS and can ask to speak at a public hearing. The examination will last a maximum of six months.

5.7 PINS then have three months to consider its recommendation. This recommendation and a supporting report are passed to the SoS, who will have three months to decide whether to grant a DCO.

5.8 Finally, when the SoS's decision is published, there is a six-week High Court challenge period. If there are no High Court challenges, the decision is final.