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

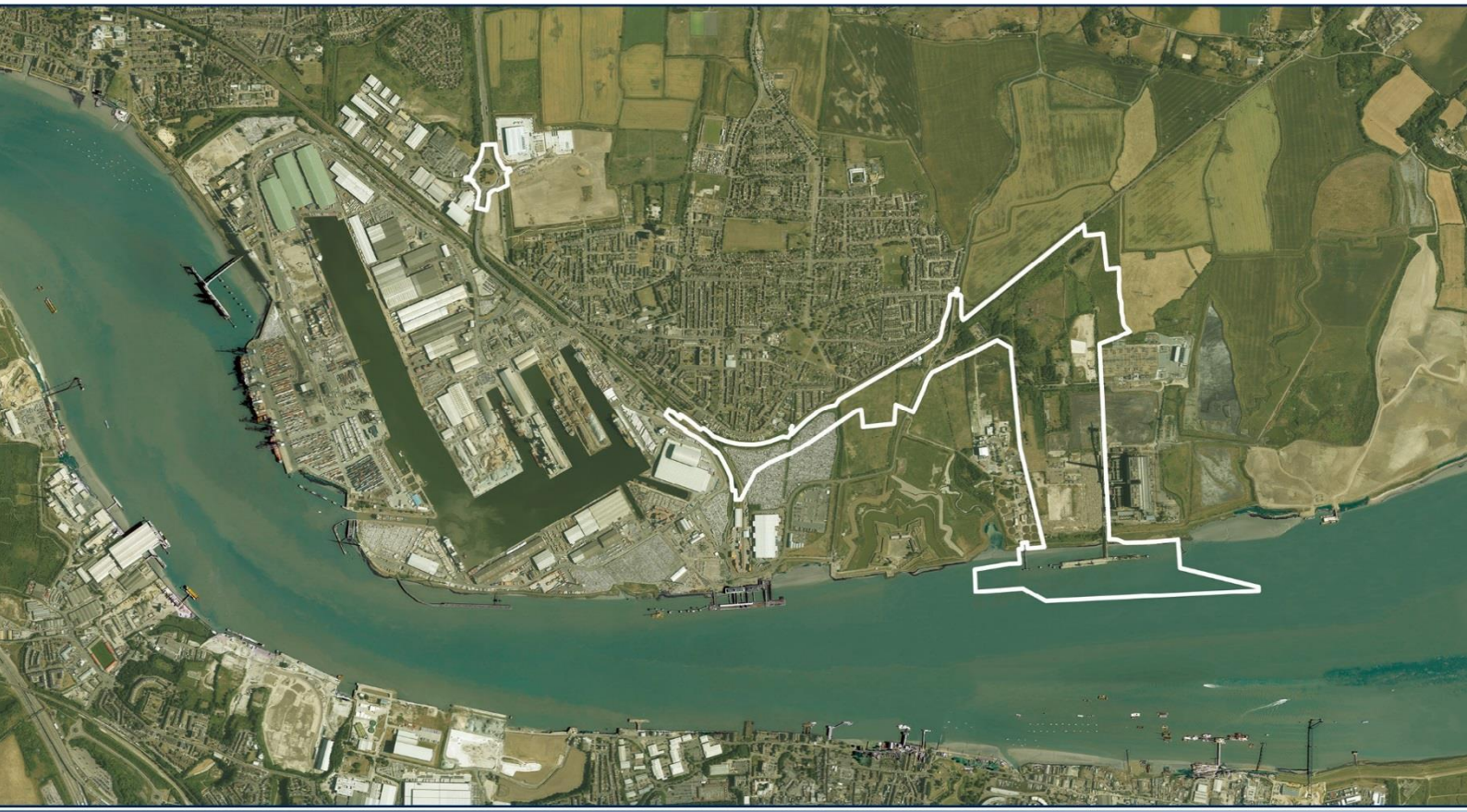
TR030003

VOLUME 6 PART A

## ENVIRONMENTAL STATEMENT - CHAPTER 5

## ERRATA SUBMISSION - CLEAN

DOCUMENT REF: PoTLL/T2/EX/10



TILBURY2

# 5.0 DESCRIPTION OF THE PROPOSALS

## INTRODUCTION

5.1 The proposals for which consent is sought, as assessed in this ES and described in this chapter have been established by a masterplanning process. The development of the proposals through this process are discussed in detail in the Masterplanning Statement (Document Reference 6.2.5.A) that is appended to this ES.

5.2 This section sets out a description of the proposals for which consent is sought and the flexibility within them that the DCO seeks. It also considers how future Permitted Development Rights would apply to the site and will be assessed.

5.3 The proposals are shown on the four General Arrangement Plans (Document Reference 2.2) which are show the infrastructure corridor, CMAT, RoRo Terminal and RoRo and CMAT Berths respectively.

5.4 The proposed works are described in detail in Schedule 1 of the DCO (Document Reference 3.1). The description below refers to this schedule.

## THE TILBURY2 SITE

5.5 The redevelopment of the Tilbury2 site itself will comprise the development of a new harbour facility in the form of an operational port. A number of key components are proposed within the port, with the two principal proposed uses being a RoRo terminal, located south of Substation Road, and a CMAT to the north of Substation Road. These are illustrated in the General Arrangement Plans noted above (Document Reference 2.2) as well as the Engineering Section Drawings and Plans (Document Reference 2.9)

### Jetty/Marine Works

5.6 To facilitate its use for both the RoRo terminal and the CMAT, the existing jetty will require modification at both its upstream and downstream arms. The RoRo jetty works are described in the DCO (Document Reference 3.1) as Work No.1. The works in relation to the downstream jetty for the CMAT are described in Work No. 2.

5.7 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.

5.8 To facilitate the RoRo activities the upstream works (Work No. 1) will comprise:

- the construction of dolphins in the river bed with associated fenders and walkways;
- the construction of a floating pontoon with associated restraint structures;
- the construction of structures and buildings on the floating pontoon;

- the construction of an approach bridge with abutments, with a roadway, footway and wind barrier on the surface of the bridge;
- the construction of a linkspan bridge between the floating pontoon and the approach bridge, with a roadway, footway and wind barrier on the surface of the bridge;
- the construction of a surface water outfall;
- the alteration, renovation and renewal of an existing jetty and its associated structures including fenders and piles;
- the alteration and renewal of an existing flood defence;
- the removal of an existing jetty and associated structures;
- related dredging works within the River Thames for the above; and
- piling works and construction operations (including piling and scour preventative and remedial works) within the River Thames.

5.9 The CMAT berth (Work No. 2) will be at the eastern (downstream) end of the existing jetty which will be extended to accommodate barges and vessels of the required size. Downstream works in association with the CMAT are envisaged to comprise:

- the construction of dolphins in the river bed with associated fenders and walkways;
- the construction of a conveyor hopper and supporting structures on the river bed;
- the installation of pipework on the jetty and connections to the silo proposed at Work No. 8A(i);
- the construction of a conveyor and supporting structures on in the river bed;
- the alteration, renovation and renewal of an existing jetty and its associated structures including fenders and piles;
- related dredging works within the River Thames for the above; and
- piling works and construction operations (including piling and scour preventative and remedial works) within the River Thames.

5.10 In order to assess the visual impact of vessels berthed at the extended jetty, it has been assumed that RoRo vessels will be 200m in length with a draft of 7.5m and aggregate vessels will be 250m in length with a draft of 15m. For RoRo vessels, the vessel size has been defined by the known fleet of RoRo operators presently using Port of Tilbury and their future plans; for the CMAT vessels, the assumption derives from identification of the largest operating aggregate vessel (the Yeoman Bridge, a self-discharging aggregate vessel[1]).

[1] http://www.marinetraffic.com/en/ais/details/ships/shipid:369364/mmsi:308919000/imo:8912302/vessel:YEOMAN_BRIDGE

**Berth pockets and approach dredging**

5.11 Dredge pockets will be created and maintained for the life of the terminal around the improved terminal jetty. These works are included in Works No.1 and 2 above for the RoRo berth and the CMAT berth respectively. In relation to the downstream (CMAT) berth, the depth of pocket will be circa 15m and cater for the largest likely bulk aggregate vessels to visit the site in the future (100,000 tonnes). A sheet pile wall will be installed to run along the northern edge of the dredge pocket. The RoRo berthing pocket (next to the western end of the existing jetty and around its westward extension) will require less dredging in order to create a depth of circa 8m. It has been calculated that this will require removal of up to 110,000 cubic metre of material. The footprint and cross section of the dredge pockets (including co-ordinates to define their extent) is shown in the Engineering and Section Drawings and Plans at Document Reference 2.9. 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.

5.12 Maintenance dredging will be needed, which has been assumed to require the removal of up to 100,000 cubic metres of material per day. The immediately adjoining approaches to the berth pockets will also need dredging and are included within the Order limits.

**Key dimensions of marine works**

5.13 The ES has been undertaken on the basis of certain assumptions as to the dimensions of the marine works; which may be subject to change dependent on the type of piling methodology used. However any such change would be controlled by the mitigation measures indicated in each chapter. These assumptions are as follows:

5.14 It is envisaged that the upstream and downstream RoRo berths (Work No. 1) will be 270m and 265m long respectively and consist of 7no. berthing/mooring dolphins. It is envisaged that the dolphins will be founded on raking piles and that the copes will be between 12m and 16m wide.

5.15 Access walkways of approximately 3m x 1.5m on piled supports will be provided between each dolphin. It is proposed that the top of the dolphins will be at the same level as the existing jetty (5.8m AOD).

5.16 The floating pontoon is approximately 45m by 50m and it is envisaged that it will be held in place by 3No. restraint dolphins.

5.17 The pontoon will be connected to the RoRo Terminal via an approach bridge with an approximately 55m span and a linkspan with an envisaged 60m span. The approach bridge deck level will be between 6.88m AOD and 5.63m AOD providing the existing footpath south of the flood wall with a minimum headroom clearance of 2.0m. The linkspan level at the north support will be at 5.63mAOD and the pontoon support level will vary with the tide. A wind protection barrier will be provided to the approach bridge and linkspan.

5.18 The CMAT berth (Work no. 2) is approximately 300m long and it is envisaged that it will consist of 8no. berthing/mooring dolphins. It is envisaged that the dolphins will be

founded on raking piles and that the copes will be between 12m and 16m wide. Access walkways of approximately 3m x 1.5m on piled supports will be provided between each dolphin and from the existing jetty. It is proposed that the top of the dolphins will be at the same level as the existing jetty (5.8m AOD). The proposed conveyor feed hopper support structure is envisaged to comprise of raking piles with a concrete cope located north of the existing jetty. A conveyor bridge will then connect the feed hopper to the existing approach bridge.

**RoRo Terminal – landside facilities**

5.19 The land south of Substation Road will be developed to accommodate associated storage areas and access to the RoRo jetty over an area of approximately 20ha. These works are described in Work No. 3 in the draft DCO (Document Reference 3.1) are will comprise:

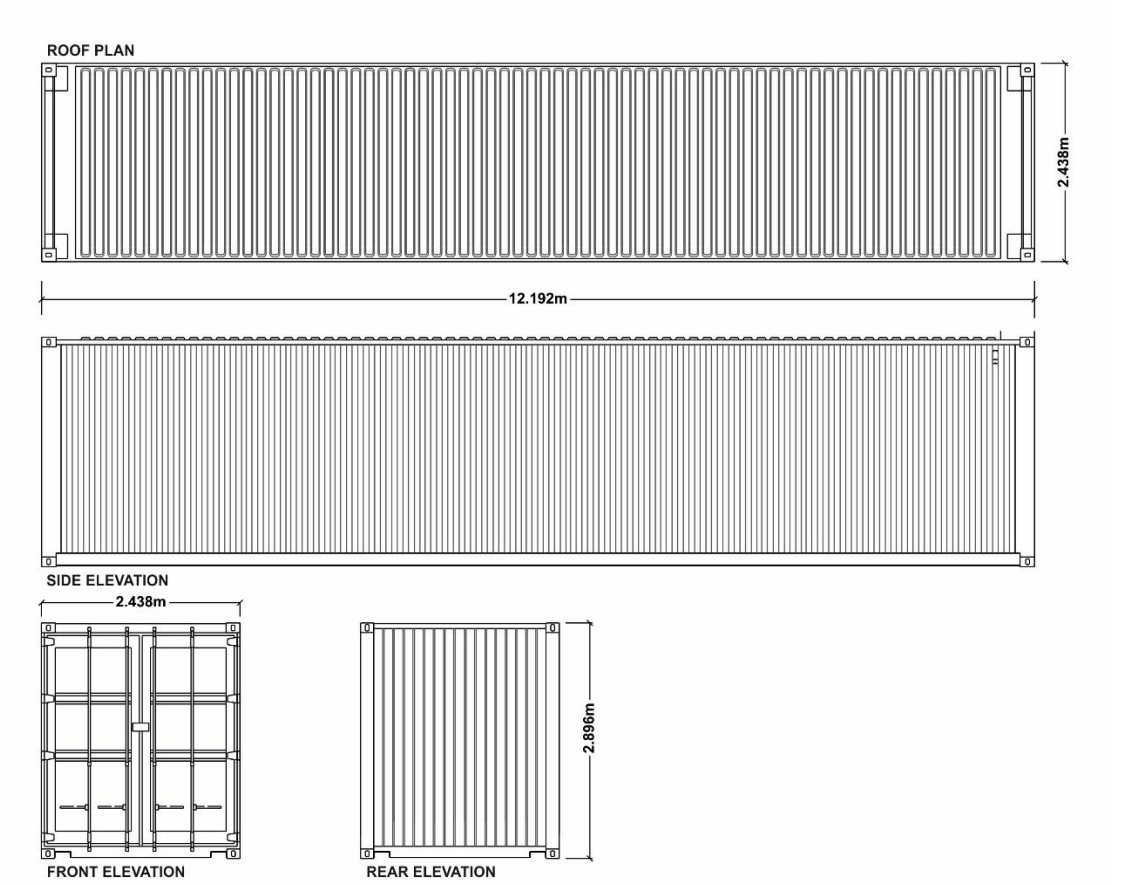
- The filling of land for port facilities including the formation of a concrete pavement for the storage of shipping containers and trailers and other port facilities with associated civil works, earth works and service works;
- infrastructure and the laying out of vehicular, cyclist and pedestrian roads routes including a roadway close to the western boundary to access the approach bridge;
- Underground and above ground surface water drainage features including a pumping station (dependent on detailed discussions with the LLFA and EA);
- Installation of site lighting infrastructure including column mounted and high mast luminaires;
- The construction of ancillary buildings including staff welfare and operational facilities;
- Construction of rail sidings (discussed further below); and
- Peripheral structural landscaping including SUDs features

5.20 No fixed landside cranes are proposed within the RoRo terminal,, with containers being moved by reach stackers. In the RoRo terminal area, containers may be stacked up to six containers high, albeit the short dwell times of containers within the RoRo terminal are such that in general, stacking will be less than this. Different areas of the RoRo terminal will perform specific functions.

5.21 The most southerly areas closest to the jetty will generally be used for storage of imported trailers and containers. For the purpose of defining a 'worst case' visual envelope, containers have been assessed at the maximum dimensions that they could be, which is based on ISO standards[2] for 'high cube' containers[3]. It has been assumed that the containers will be stacked up to 6 high (the maximum that can be reasonable expected at a RoRo terminal given handling equipment). This will represent a maximum height of 18m high (above ground level at a maximum of 4m AOD) across the whole of the RoRo terminal. A typical high cube container is shown below.

[2] ISO 6346 - Shipping Container Identification Standard

[3] High-cube containers are similar in structure to standard containers, but taller. In contrast to standard containers, which have a maximum height of 2591 mm (8'6"), high-cube containers are 2896 mm, or 9'6", tall. High-cube containers are for the most part 40' long, but are sometimes made as 45' containers.




5.22 Immediately north of Substation Road, at its eastern end, an area will be used as an operational compound for the RoRo terminal. This is described in Work No. 5 in the draft DCO (Document Reference 3.1) and will comprise the construction of surfacing, car parking, ancillary buildings including staff welfare facilities.

Maritime Warehouse

5.23 This area will also accommodate a single storey rail served warehouse on a site area of approximately 3ha. It is described in Work No 7. This will replace the existing "Maritime" terminal warehouse at the existing Port and will be used for multi-modal transhipment of steel. The building has proposed dimensions of 170m x 60m with a maximum eaves height of 20m and ridge height of 22m (above ground level of a maximum of 4m AOD) and a gross external area of 10,200 sq.m.

**Construction Materials and Aggregates Terminal – landside facilities**

5.24 The Construction Materials and Aggregates Terminal ("CMAT") will comprise a number of permanent uses and structures that are described in Work No. 8. The exact composition of uses, structures and processes is not known in detail at this stage but industry-based assumptions have been used to define the likely worst-case scenario. The works in this area will also include the construction of a railway line, rail sidings and associated rail infrastructure.

5.25 The CMAT is assumed to include the following elements.

*Aggregates Storage Yard*

5.26 This area (Work No. 8D) will comprise the storage of aggregate, pigments and cementitious materials in silos and in the open air, fed by a conveyor system from the riverside. It will also include covered aggregate storage bays with dust suppression water spray systems. A radial conveyor is proposed within the storage yard that will be used for the movement of aggregates. For the purpose of defining a reasonable worst case visual envelope it has been assumed that the highest level of stored material at this facility will be 17m high (above a ground level of a maximum of 4m AOD).

*Processing Facilities*

5.27 This area (Work No. 8D) will comprise a number of processing facilities including associated buildings and infrastructure.

5.28 It has been assumed to include:

- a block and precast manufacturing facility: this is envisaged to involve a mixing plant that will include the use of a mechanical mixer; moulding; pressure removal of water, and the robotised stacking of products once completed. Manufactured products may also be cured in a heated area of the plant;

- a cement facility: this is envisaged to include a ready-mix concrete batching plant fed from the aggregate storage yard described above; and

- an asphalt manufacturing plant: this area is envisaged to involve the processing of materials such as aggregate, sand, reclaimed asphalt pavement (RAP), bitumen and limestone. The aggregates would be heated in a heating drum and transported to the top of the plant via a bucket elevator. The aggregates would then be screened, weighed out and mixed with the other materials mentioned above. Finished material would then be stored in hot material storage bins. This material would then be collected and moved to offsite facilities where it could be reprocessed as recycled asphalt.

5.29 For the purposes of defining a likely 'worst case' visual envelope of development, it has been assumed that the structures and buildings within the CMAT processing and production area will be a maximum of 30m high above a ground level of 4m AOD. This has been based on comparators in other locations where such a facility exists.

*Silo*

5.30 A silo is proposed on land close to the river (Work No 8A). The facility will include associated piping and pumping infrastructure and road tanker loading, a weighbridge, access roads, surfacing and other works. The silo will be enclosed to approximately 100m (above a ground level of 4m AOD) in height and has been the assessed on the basis of a diameter of 15m. It will be capable of storing powdered bulk products that will be supplied by river. The exact design of the silo will be controlled by the submission of further details pursuant to a requirement in the DCO.

*CMAT Conveyor*

5.31 A conveyor and supporting structure will be constructed close to the eastern boundary of the site (Work No. 8B) linking the CMAT Berth to the area of aggregate stockpiles within the CMAT itself.

**Other uses and structures**

5.32 Remaining land in the north west corner of the Tilbury2 site (Work No. 6) will be used for external storage uses, with the use likely to be either the storage of new imported motor vehicles that is already taking place within the site, or for storage of bulk materials. Since there is uncertainty as to what this land will be used for until operation of Tilbury2 is commenced, a worst case scenario has been adopted for each relevant topic area. In these areas it has been assumed that storage would not exceed 5.0m in height (above a ground level of 4m).

**Entrance area**

5.33 The entrance to the Tilbury2 site (Work No. 4) will include construction of a security gatehouse and other security features including cameras and fencing.

**Rail infrastructure within the Tilbury2 site**

5.34 A rail spur will enter the main site in the north west corner, routing around the northern and down the eastern boundary of the site, terminating in three new sidings within the RoRo Terminal adjoining the Maritime warehouse. The rail spur within the CMAT will include a loading siding. The rail infrastructure crosses the work areas as described in the draft DCO (namely Work Nos 6 (storage area), 8C (CMAT) and 3 (RoRo Terminal).

**Landscape strategy**

5.35 As a result of the assessment of landscape and visual impacts, and the associated consideration of the impact of the proposals on the setting of Tilbury Fort, a landscape strategy is proposed that will be designed and managed pursuant to a Landscape and Ecological Management Plan (Document Reference 6.1.10.P) which will be a certified document compliance with which will be secured through a requirement of the DCO. This seeks to retain and where possible enhance strategic landscape features, largely around the perimeter of the site (based upon a tree survey which is appended to the Environmental Statement as 9.K) where this does not conflict with operational requirements and proposes significant new landscaping along the infrastructure corridor. The landscape strategy is discussed in further detail in Chapter 9 of this Environmental Statement.

**FILLING OF LAND**

5.36 The existing ground levels vary across the proposed RoRo and CMAT site from 1.5m AOD in the north rising to 3.5m AOD to the south. This gives a relatively flat site albeit with local undulations. Where these local undulations occur it is proposed that the existing ground will be levelled. The ground will then be stabilised and remediate as required. A surface finish will then be applied. In the case of the RoRo terminal this will consist of a capping layer, sub-base and concrete pavement. The resulting levels across the site will vary in order to comply with the drainage strategy (see below), however, a worst case of 4m AOD across the whole site has been assumed.

5.37

## SURFACE ACCESS STRATEGY

### Highway Provision

5.38 In order to fully utilise the new RoRo terminal and CMAT, a surface access strategy has been devised comprising new and improved road and rail links. The works are described in Work No. 9 of the draft DCO (Document Reference 3.1) and shown on plans at Document Reference 2.2.

5.39 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 Work No. 9A) to the Tilbury2 site.

5.40 The highway will be approximately 1450m in length and will comprise a single carriageway in each direction. On its southern side a shared cycleway (permitting cyclists and pedestrians) will be constructed.

5.41 The works to construct the new highway include improvement to a 150m length of St Andrew's Road itself. A simple priority junction will be formed with a length of new highway approximately 165m in length (Work no. 9B) that will connect with the existing highway that forms a route to the Cruise terminal. The main highway route will then route east through the PoTLL owned Fortland site, separated from the existing rail corridor by an existing landscaped bund.

5.42 The route will cross land currently used for the unauthorised fly grazing of horses and link directly to the new terminal. It will pass under Fort Road, but a new junction and highway will be constructed to link the new highway to Fort Road itself prior to that point.(Work no 9C)

5.43 The existing Fort Road bridge over the railway will be retained and a new independent open span bridge will be constructed south of the existing bridge (Work No.10). The new bridge will be approximately 67.5m long and provide a clearance of approximately 5.7m to the surface of the road level below, and approximately 5.3m to the surface of the rail line below.

5.44 The design of the road pavements will be carried out in accordance with the appropriate design standards and good practice. The road surface will be formed using a suitable material that meets with operational and maintenance requirements. There are no particular environmental requirements with regard to the type of road surface to be installed on this link.

### Asda Roundabout

5.45 Works to improve the ASDA roundabout are included within the Draft DCO (Document Reference 3.1) at Work No. 11. This will involve limited interventions to the existing geometry of the highway by modification to the kerb line and footways and the installation a central deflector island on the southern approach arm to the roundabout.

### Pedestrian and Cycle Facilities

5.46 The needs of pedestrians and cyclists have been integrated into the design of the infrastructure corridor (included in Work No. 9 and 10). The proposed new length of

highway will include a shared 3m wide shared footway/cycle path. This will tie in to existing pedestrian and cycle facilities at the western and eastern end of the infrastructure corridor.

**Rail provision**

5.47 Rail provision will be established by realigning the existing Tilbury Railport Junction connection track alignment and severing the existing Tilbury Riverside Sidings. The works are described in Work No. 12. 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. As explained in the Surface Access Options Report (appended to the Masterplanning Statement Document Reference 6.2 5A), the UK Freight Industry is moving towards a network of freight routes which are capable of supporting container trains of 750m. Therefore, the proposed rail link and sidings make provision for trains of this length.

5.48 It is proposed to allow for two parallel sidings (i.e. separate Arrival and Departure Sidings) within the infrastructure corridor between the main line connection at the western end of the corridor and the Fort Road rail bridge. Both sidings are shown on the GA drawings and have been assessed accordingly in this ES. Although PoTLL would only intend to lay one track in the short term, the ability to construct a second siding will help to 'future proof' the proposals by allowing for a greater proportion of materials to leave the site by rail in the future. Two sidings would, for example, allow one incoming train to wait outside the site whilst another one leaves or *vice versa*. This capacity does not affect the overall assumptions as to maximum likely operational train movements discussed below. Both tracks have been included within DCO Work No.12.

5.49 The main contracted works will install up to and including the track ballast (covering earthworks, drainage, communication/power ducts, capping, geotextiles, ballast). At a later date only the track and sleepers will need to be laid. The latter would involve a limited operation taking four shifts of 8 hours using track mounted excavators and train integrated tamper. This activity would be subject to the same controls as the rest of construction activities, as it is in the same parameters, albeit will be undertaken at a later date. PoTLL would in any event apply to Thurrock Council for a "prior consent" under Section 61 of the Control of Pollution Act 1974 to ensure no adverse noise effects arise from this operation when it takes place. This is controlled through the CEMP (Document Reference 6.9).

5.50 Once in the main site, the rail sidings route along the north eastern side of the site. An aggregates rail terminal (CMAT Siding) will be constructed at the northern end, whilst to the south, sidings will be formed adjoining the rail-enabled warehouse to serve both this facility and containers from the RoRo terminal.

**Crossing of water courses**

5.51 Both the new highway and new rail sidings will interact with and traverse a number of water courses. Where necessary these water courses will be diverted, and these diversions and the detail of the crossings will be developed in detailed design in consultation with the Environment Agency. The works are included in the Work Nos. 9 and 10.

**Environmental mitigation in infrastructure corridor**

5.52 The infrastructure corridor has been designed to take account of the need for environmental mitigation. This is also shown in the Landscape and Ecological Mitigation Plan noted above (Appendix 6.2.9.P) which will be a certified document, compliance with which will be secured through a requirement of the DCO) which . The detailed alignment of both the rail and road elements has been considered alongside :-

- The provision of a noise barrier where necessary, alongside both the rail sidings and the new highway;

- The provision of drainage ditches and other diverted water courses to provide both drainage and compensatory ecological habitat;

- The provision of structural landscaping in order to mitigate the visual impact of the proposed infrastructure on the wider area.

5.53 These elements are included in the Work Nos 9 and 12 and details of the proposed environmental mitigation are set out in topic specific chapters of the ES.

**LIGHTING PROPOSALS**

5.54 Lighting will be required across the site to facilitate the operation of the terminal. Some areas of lighting may be reduced outside of core hours however assessments have been developed and based on a worst-case scenario of full operation. Lighting conditions are broadly broken down to the following areas:

- Container and trailer yards, including rail sidings;
- Internal roadways and circulation;
- Jetty;
- Linkspan bridge and pontoon for RoRo berths;
- Construction materials and aggregates terminal (CMAT);
- Security, welfare and ancillary buildings; and
- Infrastructure corridor containing link road from Ferry Road to Fort Road alongside rail access and sidings...

5.55 A Preliminary Lighting Strategy (Document Reference 6.2.9.J) has been prepared and a lighting assessment has been prepared as part of this ES. The lighting strategy comprises targeted illumination levels within the Port at an average of 20lux across the site as a whole. Localised areas of increased luminance are proposed at security areas and control points.

5.56 The practical reality of the site conditions with stacked containers means that horizontal illumination is notably higher than the 20lux average when calculated as an open yard. Once obstructions in the form of containers and trailers are introduced then the illumination levels within the aisles are commensurate with the 20lux target illumination levels.

5.57 The primary lighting elements of the port terminal will be in the form of 'high mast' lighting. A range of lighting masts with a maximum height of 50m are proposed within the container storage yards to provide light to the circulation aisles. The mast height allows light to pass over the container stacks and reduces the overall quantity of masts across the site. Roadways, Link bridges and Pontoon and Jetty will be illuminated from approximately 12 metre columns. These are to be arranged to provide sufficient illumination to roadways without contribution from the container yard lighting such that these areas can be operated separately if required.

5.58 Localised bulkhead luminaires will be installed around buildings and structures to provide supplementary lighting where required.

5.59 Lighting within the CMAT will be a combination of high masts and localised bulkheads mounted to plant equipment.

5.60 The link road is proposed to be illuminated only at the junctions/conflict areas. At the western end, this will extend from Ferry Road for approximately 200 metres. At the eastern end lighting is proposed from 120 metres before the junction with the realigned Fort Road and through to the Port. No additional illumination is proposed on Fort Road. Illumination is proposed to CE4 class for conflict areas from 10 metre columns. Within the rail sidings driver/shunter walkways lighting is proposed from bollard illumination.

**SURFACE WATER AND FOUL DRAINAGE**

5.61 A Drainage Strategy is submitted with the application (Document Reference 6.2.16.E). This will be a certified document, compliance with which will be secured through a requirement of the DCO. It provides for a network of collector drains that will intercept surface water runoff, as well as agreed measures for dealing with attenuation, foul water and the final destination of surface water runoff.

5.62 Measures to prevent discharge to the environment of any hazardous materials stored in containers forms part of the Flood Risk Assessment recommendations, compliance with which will be secured through the DCO.

5.63 Foul water will be drained by means of a piped network with a combination of gravity and pumped systems. The network will discharge to a central pump station which will discharge to the Anglian Water Recycling Centre, directly to the west of the Tilbury2 site.

**OPERATIONAL DETAILS**

**Throughput and Vessel Movements**

5.64 The RoRo terminal is envisaged to operate 363 days per year, 24 hours per day.

5.65 The capacity of the terminal is considered to be a maximum 500,000 units (trailers or containers) per annum although short to medium term throughput will be 360,000 units per annum. Traffic assessments are based on the 500,000 capacity to ensure that a likely worst-case scenario is considered. The RoRo berth would accommodate two vessels (and thus four movements) each day once fully operational, resulting in 1,452 vessel movements per annum. The layout and throughput of the RoRo terminal has been modelled in detail in order to define the area of land required and the optimal layout to ensure operational efficiency. Vessels visiting the terminal will be on a fixed 6 hour turnaround time and the space required to service the throughput envisaged

has been considered based on the known character of the operation – i.e. a mix of unaccompanied trailers and containers being removed from RoRo vessels by port tugs. The modelling parameters embrace vessel sizes and the 'dwell times' of trailers/containers (i.e. the amount of time that the trailer/container remains on the terminal), inflated by a 'peaking factor' that accounts for variations in cargo flows and temporary on-site accumulations.

5.66 It is envisaged that the RoRo berth will accommodate vessels up to 200m in length with drafts up to 7.5m. These are the largest likely RoRo vessels used in short sea vessels.

5.67 For the purposes of environmental assessment, it has been assumed that CMAT could operate 24/7, 363 days per year.

5.68 The proposed capacity of the CMAT will be 1,600,000 tonnes of aggregates per annum brought into the site via the extended downstream jetty. This results in a 'worst case' capacity of 20 vessels per annum visiting the berth, or 40 'movements' per annum.

5.69 It is envisaged that the aggregate berth will accommodate vessels up to 250m in length with drafts up to 15m.

5.70 As a long term operator of a Port, PoTLL, and its parent company Forth Ports group are aware of the key trends and capacity gaps in the construction materials market. There is currently no large-scale aggregate facility on the North Bank of the river Thames capable of handling large deep-sea aggregate vessels. There is also a gap in the market in relation to asphalt production in the local market and ongoing significant demand in London and the South East for ready mix products and raw materials for concrete production due to shortages in the availability of blast furnace and power station bottom ash and other bulk powder raw materials. As reported by the Minerals Products Association there is ongoing strong demand for construction aggregates material processing and storage facilities. Forecasts suggest that by 2019, aggregates sales are expected to be up 16% compared to 2015. Aggregates sales are expected to grow by 3% to 4% per annum over the period 2016-2019[4].

5.71 This is reflected in the on-going discussions with potential tenants that PoTLL have been having. They have indicated, that based on the size of the CMAT areas of the Tilbury2 site and the marine infrastructure, that the CMAT Facility will handle 1,600,000 tonnes of aggregates per year. It is this figure upon which traffic movements therefore derive, as explained below.

5.72 It has been assumed that a total of 700,000 tonnes will leave the site by rail, and 750,000 tonnes will leave by road. It has been assumed that all this material will be exported on 16T vehicles in order to define a 'worse case' traffic scenario. As noted in the TA (Document Reference 6.2.13.A, para. 7.4.4) the average payload for aggregates was 22.3 tonnes in 2015 according to data from the Mineral Products Association. In addition, as a further sensitivity, the TA has assessed a scenario where all construction materials leave the site by road.

5.73 As noted above it has been assumed that a total of circa 150,000 tonnes of material per annum will leave the CMAT by barge. Depending on size of barge, this could result in an estimated 150 vessels visiting the berth, or 300 movements per annum.

[4] MPA (2016) The Minerals Products Industry at a Glance, 2016 Edition

5.74 Although details of the other operations at the CMAT will depend upon operational decisions at the time of operation, assumptions have been made in order to inform both traffic and other assessments of environmental effects. It has been assumed that a further 29,500 tonnes of other materials related to the asphalt plant (bitumen, limestone filler and reclaimed asphalt pavement) will arrive by river and that 260,000 tonnes of asphalt will leave by road. It has been assumed that the concrete batching plant will result in 50,000$m^3$ of concrete leaving by road. Some 150,000 tonnes of construction blocks will be leaving by road and a further 150,000 tonnes of pre-cast concrete. This assumes that all of these products leave by road. All these estimates have been made to define a worst case scenario.

5.75 Summary of the assumptions on traffic movements in the TA for the CMAT are provided in Table 5.1 below

**Table 5.1: Aggregates Distribution Yard Trip Generation**

| Vehicle Movements | Count |
|---|---|
| Total annual import and export of 1,600,000 tonnes of aggregates per year | 1,600,000 |
| Total annual export of aggregates per year by road[1] | 750,000 |
| Capacity of vehicles exporting aggregates (tonnes) | 16 |
| Total annual movements (two-way) for the export of aggregates[2] | **93,750** |
| **Summary** | |
| Annual Average Week Day Trips[3] | 332 |

Source: Consultant's Estimates
Notes:
Numbers may not sum due to rounding.
1: Assumes 700,000 tonnes exported by Rail, 150,000 tonnes exported by River and 750,000 tonnes by road.
2: Based upon payloads of 16T vehicles.
3: Based on 52.143 weeks, 65 working hours per week and 12 working hours per day.
E.g. ((93,750 / 52.143) / 65) *12

5.76 As highlighted above, maintenance dredging of the berthing pockets and the immediately adjoining approaches will be required. This has been assumed to require removal of up to 100,000 cubic metres of material.

**Forecast Rail Traffic**

5.77 It is assumed that one to three trains per day will remove bulk aggregates from the CMAT. The RoRo terminal could result in single rail movement per day and a further movement would be needed in association with the 'Maritime' steel product interchange. The proposals are therefore assumed to generate a maximum of five trains per day entering and leaving the site. For the purposes of the transport assessment, however, it is assumed that all materials would leave the site by road, ensuring the worst case assessment in relation to environmental issues such as highway related noise, air quality and severance. The impact of rail movements (where appropriate – for example noise) has then been considered as an additional impact to this.

## PUBLIC RIGHTS OF WAY

5.78 The scheme proposes the temporary and permanent stopping up of public rights of way. Footpath FP144 crosses the proposed infrastructure corridor to the south of the built-up area of Tilbury. It routes from Hume Avenue/The Beeches down the rear of properties on Brunel Avenue and crosses the existing railway via an unmanned pedestrian crossing. It is proposed to permanently close this section of this footpath. A public footpath (Byway 98 or FP 146) routes along the foreshore of the Thames at the southern boundary of the Tilbury2 site. This footpath forms part of the Thames path and may need to be temporarily diverted or temporarily stopped up during the construction process. The route will be retained and available once Tilbury2 is operational. As part of a package of proposals to address the effect of the proposals on the local public rights of way network, this route will be enhanced in respect of surfacing and the crossing of flood defences by Bill Melroy creek.

5.79 As mitigation for the impacts on PRoWs, an 'Active Travel Study' Document Reference 5.3.B) is proposed that will enhance other routes from the town over the railway (the two points being the 'Hairpin Bridge to the west and Fort Road Bridge to the east) and an area wide strategy for improving footpath and cycle links between the town and the river. The strategy includes a 'way marking' scheme to improve route finding and appreciation of the area. These proposals are encompassed in the proposed works in the DCO where they fall within the Order limits, and will be secured by a S106 agreement to be agreed between PoTLL and Thurrock Council (the Heads of Terms of which are provided at Document Reference 5.3) where they fall out with the Order limits.

## FLEXIBILITY AND LIMITS OF DEVIATION

5.80 The EIA is being undertaken by adopting the parameters of the masterplan for the proposals, as set out above. 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. These parameters are based around the masterplan. This parameters 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 only allows for variation to accommodate detailed design but for changes to the operation of the Port in the long term.

5.81 As a key sensitivity, the DCO codifies the key range heights of structures and operations within areas of the site, and this defines the Rochdale Envelope for assessment purposes. In each of the topic chapters, the realistic worst-case scenario given the parameters established are set out for the purposes of assessing the effect of variation on the Rochdale envelope for that topic.

5.82 Therefore, where appropriate, sensitivity testing for differing heights, uses and layouts within the constraints of that masterplan has been undertaken to demonstrate how flexible uses will be able to be introduced onto the Tilbury2 site within the parameters of the masterplan and within the terms of impact assessment undertaken. In relation to heights within the Tilbury2 site, however, these have been assessed as a *maximum*, with no increased limit of deviation. For the infrastructure corridor, a maximum of 1m lateral limit of deviation is assumed and each relevant chapter assesses this.

## PERMITTED DEVELOPMENT RIGHTS

5.83 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."*

5.84 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 use of PD rights that the flexibility referred to above will most likely be undertaken.

5.85 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.

5.86 There is therefore no specific or separate assessment or parameters in relation to the use of PD rights, as it is considered that anything out with the envelope of the masterplan that creates new significant environmental effects will not in itself be permitted development. However, we of course identify in relation to each chapter the relevant parameters of the effects assessed of the masterplan which, given what is said above, are also the parameters for the effects for any PD rights.

## CONSTRUCTION METHODOLOGY

5.87 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.

5.88 A Construction Environmental Management Plan (CEMP) has been prepared and (Document Reference 6.9) This will be a certified document, compliance with which will be secured through a requirement of the DCO. A Construction Traffic Management Plan (CTMP) is also submitted (appended to the CEMP, Document Reference 6.9). The CEMP will ensure that any construction methodologies

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

5.89 During the construction phase all activities undertaken would be subject to a health and safety and environmental risk assessment. Where works require the consent or approval of any external body or authority this approval would be obtained prior to the relevant construction works proceeding.

**Core Working Hours**

5.90 The core working hours will be as follows for works that involve the 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

5.91 For the avoidance of doubt, these hours would not apply to non-piling marine works

5.92 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.

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

5.94 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**

5.95 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 Thurrock 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.

5.96 In the case of work required in an emergency or which, if not completed, would be unsafe or harmful to workers, the public or local environment, Thurrock Council will be informed as soon as reasonably practicable of the reasons and likely duration. Examples may include: where the ground needs stabilising if unexpected ground conditions are encountered, concrete pouring taking longer than anticipated due to conditions or equipment failure.

5.97 Where work has to be rescheduled for reasons not envisaged and is expected to extend beyond the agreed or normal working hours or exceed the agreed limits and dispensation to the Section 61 consent, the Contractor will apply for a variation to the

Section 61 consent to Thurrock Council at least 14 days in advance of the start of those works (or within an appropriate timescale to be agreed with Thurrock Council).

5.98 Where rescheduling relates to work of a critical nature (such as key activities likely to delay other key activities) applications will be made, where practicable, 48 hours in advance and no fewer than 7 days in advance if the work is expected to last for a period of 5 days or more. The variation will be sought by means of an application setting out the revised construction programme or method and the relevant noise calculations.

**Access arrangements during construction**

5.99 Access to the Tilbury2 site during construction will be from the main entrance to the former Power Station site from Fort Road. This is described in Work No. 4. 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.

5.100 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 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.

5.101 Outside of the site, until the proposed road link is constructed between Fort Road and Ferry Road, 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).

5.102 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**

5.103 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.

5.104 A construction compound for the surface access infrastructure will be located within the Tilbury2 site.

**Task Lighting**

5.105 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.

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

**OVERVIEW OF CONSTRUCTION ACTIVITIES**

5.107 A variety of construction activities will be required to implement the scheme and have been split into the following descriptive areas: Marine Construction, CMAT and RoRo Terminal, Highway Construction and Rail Construction.

5.108 It is envisaged that these activities will take place concurrently.

**Marine Construction – RoRo and aggregate berths**

5.109 The most complex engineering works will be related to the marine elements of the proposals. These works are envisaged to include:

- the removal of redundant infrastructure including the Anglian Water jetty, undertaken by utilising marine plant with the existing Anglian Water Jetty support structure either cut at low level or removed depending on site constraints;
- the installation of the piles to support new pontoon;
- the construction of link span bridge and access walkways, likely to be delivered by barge in whole lengths,
- the construction of the RoRo platform pontoon;
- the installation of mooring/berthing dolphins;
- the provision of new services; and
- dredging of berthing pockets and approaches

5.110 The destination of the potential mix of dispersal and excavation dredge material will be decided once sediment sampling has been conducted. Material will be deposited at sea (in existing consented locations) or on Tilbury2 or a mix of both options. The EIA process has considered each of these alternatives assuming the worst case for each relevant topic.

5.111 The construction of the marine elements will require the delivery of pre-fabricated sections of the link span, pontoon, fenders and dolphins, and other topside infrastructure. It is envisaged that the majority of these will be delivered to the site by barge. Crane barges will be used to lift materials into position. For work in the river and the intertidal zone, it is likely that “Jackup” and “Spud Leg” barges will be used to lift components and drive piles.

**CMAT and RoRo terminal (terrestrial)**

5.112 The main construction elements of the CMAT and RoRo terminal are envisaged to include:

- Formation of the container and trailer yard pavement;
- Construction of a 10,200sqm steel framed piled warehouse;
- Installation of lighting masts on piled supports;
- Construction of amenity/welfare buildings;
- Drainage features;
- Erection of CMAT conveyor infrastructure;
- Material storage silo;
- Asphalt, block and cement plant; and
- Electrical/communication/water/foul networks

5.113 The construction of the terrestrial elements will require a variety of construction techniques in order to achieve ground stabilisation and construction of a structural pavement for the RoRo Terminal. It is envisaged that buildings will require piled foundations and a ground bearing floor slab.

5.114 The terrestrial works will require a variety of plant and equipment including, but not limited to, piling rigs, excavators, tippers, concrete pumps, rollers, mobile cranes, temporary site lighting, generators, other ancillary equipment and vehicles including generators, water pumps, road sweepers, dumpers, road haulage wagons and hand tools.

**Extent and method of piling**

5.115 Piling methods are likely to utilise both vibro and percussive techniques for different elements of the proposals. The EIA has considered each of these alternatives assuming the worst case for each relevant topic.

5.116 The extent of piling for the terrestrial works is set out in Table 5.2 below.

**Table 5.2 Schedule of Proposed Terrestrial Piles**

| Location | Assumptions | No. of piles |
|---|---|---|
| RoRo Terminal and Warehouse (Work Nos. 3 and 7) | Assume piles are spaced every 2.5m. | 2,100 |
| RoRo Terminal welfare buildings (work no. 4) | Assume piles are spaced every 2.5m. | 576 |
| Lighting Columns (throughout the site) | Assume 5 columns per 100m and 3 rows of columns within each storage area. | 240 |

| Location | Assumptions | No. of piles |
|---|---|---|
| Conveyor Support Structure (in work no. 8B) | Assume piles are spaced every 5m. | 142 |
| Stone columns to earth embankment to new approach structure to RoRo berth (in Work no. 3) | Includes Bankseat, Piled Bents and Abutment. | 52 |
| Abutment Piles | 83 piles @0.5m diameter | 83 |
| Sheet pile wall along earth embankment | 14m deep piles, 100m length | |
| Stone columns under rail track | Length of rail is 5,050m. Assume two piles every 5m under rail. | 2,020 |
| CMAT Processing area (Work No. 8D) | Three facilities each with an area of 3,500sq.m.<br><br>Assume piles are spaced every 2.5m | 1,680 |
| Fort Road Bridge (work no. 10) | Assume 24 piles, with a diameter of 0.75m. This equates to 53 piles with a diameter of 0.5m | 54 |
| Drainage Culverts | Length total length of drainage culverts assumed to be 1,500m Culvert width varies from 0.8 to 1.5m. Assume one pile every 5m. | 300 |
| Booking Gate (in Work No. 3) | Estimated to be 20 piles | 20 |
| Inspection Shed (in Work no. 3) | Estimated to be 15 piles | 15 |
| TOTAL | | 7,282 |

5.117 In respect of the marine works, the number and size of piles will be dependent upon the method employed to affix structures to the river bed. Two options exist, namely a multi-pile solution involving a number of raked piles underneath the structure being supported, and a single pile solution requiring one pile of greater size for each of above-water structure. The ES has assumed the worse-cast in relation to each topic. The schedule of marine piling is set out below.

**Table 5.3 - Schedule of Piles – Marine Works**

| Structure | No. of Structures | Multi-pile Option | | Monopile Option | |
|---|---|---|---|---|---|
| | | Diameter (m) | No. | Diameter (m) | No. |
| **Upstream RoRo Berth (Work no. 1 upstream)** | | | | | |
| Dolphin | 5 | 1.22 | 12 each 60 total | 3.5 | 1 each 5 total |
| Fenders for Dolphin | 5 | 1.22 | 3 each 15 total | 1.22 | 3 each 15 total |
| Footbridge Supports | 4 | 0.914 | 2 each 8 total | 0.914 | 2 each 8 total |
| **Downstream Berth (Work no. 1 upstream** | | | | | |
| Dolphin | 2 | 1.22 | 12 each 24 total | 3.5 | 1 each 2 total |
| Fenders for Dolphin | 2 | 1.22 | 3 each 6 total | 1.22 | 3 each 6 total |
| Fenders for | 13 | 1.22 | 3 each 39 total | 1.22 | 3 each 39 total |
| **CMAT Berth (Work no. 2)** | | | | | |
| Dolphin Type A | 8 | 1.22 | 12 each 96 total | 3.5 | 1 each 8 total |
| Fenders for Dolphin Type A | 8 | 1.22 | 3 each 24 total | 1.22 | 3 each 24 total |
| Footbridge Supports | 2 | 0.914 | 2 each 4 total | 0.914 | 2 each 4 total |
| Conveyor Hopper platform | 1 | 1.22 | 12 each 12 total | 1.22 | 12 each 12 total |
| Conveyor supports | 3 | 1.22 | 3 each 9 total | 1.22 | 3 each 9 total |
| **RoRo Pontoon and Approach Bridge (Within Work no. 1)** | | | | | |
| Restraint Dolphins | 2 | 1.22 | 14 each 28 total | 3.5 | 2 each 4 total |
| Bank Seat | 1 | 1.22 | 14 each 14 total | 1.22 | 14 each 14 total |
| Piled Bents | 6 | 1.22 | 4 each 24 total | 1.22 | 4 each 24 total |

5.118 Also within the marine works, a sheet pile cut off wall will be installed of some 330m in length.

**Highway Construction**

5.119 The main construction elements for the highway between Ferry Road and the site are envisaged to include:

- Construction of 40mph two way single carriageway road, with widening at junction locations and with associated footway/cycleway;

- Construction of about 100m of a new length of Fort road, regrading and connecting with the new infrastructure corridor over bridge, and junction with the highway corridor;
- Construction of junction connecting to Fort road south;
- Piled embankments or reinforced earth retaining walls at the high embankment locations (about 200m);
- Construction of new road over watercourse crossings;
- Drainage channels, existing channel realignments and associated mitigation works;
- Street lights and associated street furniture; and
- Utility corridors.

5.120 Construction activities of the road corridor are likely to take place in parallel and combined with the construction of the rail corridor and in parallel with the construction on the main site. It is envisaged that most of the road corridor construction will be undertaken from within the footprint of the permanent works.

5.121 The highway works will require a variety of plant and equipment including, but not limited to; dozers, wheel loaders, hydraulic excavators, vibratory compactors, rollers, road pavers, asphalt concrete plant (to be confirmed), pavement breakers; tractor trailers, trucks, tippers, and piling rigs.

**Rail Construction**

5.122 The main construction elements for the rail access between the existing PoTLL turnout and the new RoRo terminal siding are envisaged to include:

- Construction of a new road over rail bridge on Fort Road adjacent to the existing highway authority owned bridge over the Network Rail mainline;
- Construction of approximately 3200m of plain line railway sidings track, including 8 new BV8 turnouts (handpoints) and sidings; as noted above, only one track will be laid along the infrastructure corridor at this stage, although space to construct a second one has been allowed for and assessed accordingly;
- Construction of a new (private) level crossing within the Tilbury2 site; and
- Construction of new rail over watercourse bridge crossings.

5.123 Construction activities within the infrastructure corridor are likely to take place in parallel with the construction on the main site. Where possible, serviceable track material will be used.

5.124 It is envisaged that construction of Fort Road Bridge will be via conventional means, with substructure works consisting of piled reinforced concrete foundations and in situ reinforced concrete abutments and wing walls. The superstructure is likely to consist of proprietary false work systems to provide support for the in-situ deck construction to advance.

5.125 The rail construction will require a variety of plant and equipment including, but not limited to tracked excavators, dump trucks, road rollers, and wacker plates.

**CONSTRUCTION PROGRAMME**

5.126 Subject to the proposals receiving DCO consent, main construction works could commence in early 2019. It is envisaged that the primary infrastructure (i.e. road and rail links) will be constructed within 1 year, during which the key on site elements (marine works, installation of RoRo pavement, security) will also be constructed.

5.127 The Tilbury2 site will become first operational in early 2020 with the opening of the RoRo terminal. The CMAT will become first operational by mid 2020. The level of throughput will gradually increase over the ensuing 2-3 years as the remaining facilities on the site are constructed and the engineering works are completed..

**MAINTENANCE**

5.128 Routine maintenance of the proposed facilities will be required in the future. This will include repairs to any damaged infrastructure, resurfacing of worn surfaces, and routine cleaning of equipment and buildings. Maintenance may itself be an element in operational mitigation in order to ensure the satisfactory environmental performance of plant and equipment. Aside from maintenance dredging (which is specifically considered in the ES) maintenance operations would all fall within the environmental envelope related to initial construction phase, as they would involve similar activities. They would also fall to be controlled by the Operational Management Plan (OMP, Document Reference 6.10).