KEEPING BRITAIN TRADING

IMMINGHAM EASTERN RO-RO TERMINAL

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Chapter 3: Details of Project Construction and Operation
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Immingham Eastern Ro-Ro Terminal

Environmental Statement: Volume 1
Chapter 3: Details of Project Construction and Operation

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3 Details of Project Construction and Operation

3.1 Construction phase

3.1.1 This chapter provides a description of the anticipated construction methodology to be used for the principal elements of the Immingham Eastern Ro-Ro Terminal (IERRT) project in relation to both the marine works and separately the landside works. The construction methodology is based on the scheme design outlined in the Proposed Development chapter (Chapter 2) of this ES.

3.1.2 As is often the case for major infrastructure projects, the construction methodology described below may be further refined as part of the ongoing detailed design process. Where, however, specific details cannot, for whatever reason, be provided, or it is necessary to retain some degree of flexibility, the assessments undertaken have been based on parameters which are considered to result in the worst-case environmental effects (adopting the 'Rochdale Envelope' approach as noted in Chapter 2). These parameters are noted where applicable.

3.1.3 ~~A~~An outline Construction Environmental Management Plan (CEMP) has been prepared and is submitted with this ES as part of the IERRT Development Consent Order (DCO) application (Application Document Reference number 9.2). The CEMP is designed to capture site-specific construction procedures and mitigation measures, as identified and described in the topic assessment chapters that follow in this ES – the overriding purpose of the Plan being to identify the means whereby environmental impacts during construction can be controlled and mitigated where necessary.

Marine works

Dredging and disposal

3.1.4 So as to accommodate three new berths, it is estimated that it will be necessary to dredge a maximum of 190,000 m³ of material from an area in the order of 70,000 m². The majority of the material *in situ* (i.e., submerged mixture of sediment and seawater at the seabed) is likely to be firm with an average density of *circa* 1,350 kg/m³ at the surface and increasing in density with depth.

3.1.5 The final capital dredge methodology will be determined in collaboration with the dredging contractor. It is currently anticipated, however, that the majority or all of the material will be removed with a tug assisted backhoe dredger, the size of which will be determined by the specialist dredging contractor. Some material may also be removed by trailer suction hopper dredger (TSHD) depending on the sediment conditions and the availability of TSHD dredgers. The effects of both dredge methods have, however, been considered and the worst-case scenario in terms of potential

environmental effects has been assessed in the relevant topic chapters of the ES.

3.1.6 As noted in Chapter 2, it has not been possible to identify a suitable beneficial use for the dredged material, such as engineering for habitat creation purposes (see Waste Hierarchy Assessment (WHA), Appendix 2.1 in Volume 3 of the ES (Application Document Reference number 8.4)). As a consequence, the material will be deposited at sea, at two licensed disposal sites in the Humber Estuary depending on the type of material (see Figure 2.2 in Volume 2 of this ES (Application Document Reference number 8.3)).

3.1.7 Dredged material consisting of inerodible clay will be transported to the licensed disposal site HU056 (Holme Channel). Dredged material consisting of sand/silt (alluvium) will be taken to the licensed disposal site HU060 (Clay Huts) (see Proposed Development chapter (Chapter 2) of this ES, Section 2.3). It is estimated that between two to five split bottom barges will be used for the capital dredging and disposal, although the exact configuration and number of barges will be confirmed by the specialist dredging contractor.

Approach jetty

3.1.8 The approach jetty will span the existing sea defence wall and pipelines from the northern end of the North Storage Area, across the intertidal towards the pontoons and berthing infrastructure. To span above and not touch the existing sea defence - thereby providing access for inspection of the existing infrastructure and improvement works as appropriate - two abutment structures and a short bridge section will be constructed using landside plant and equipment. The abutments will be constructed either side of the pipelines and the sea defence wall that run along the frontage of this part of the port estate. Each abutment structure will be supported by up to ~~six~~three piles ~~which will either be steel tubular piles which will be hydraulically driven, or~~. The landside abutment structure will consist of three continuous flight auger (CFA)[1] piles which will be installed with a CFA rig. The landside approach ramp to the jetty will then be ~~constructed utilising sheet piling techniques or a similar earth retaining structure~~installed up on the CFA piles and consist of a reinforced concrete retaining structure with granular backfill. On the foreshore, the first set of three steel tubular piles will be hydraulically driven and positioned 15 m away from the pipelines. The bridge spanning the pipelines will be constructed as a steel structure placed up on the abutments.

3.1.9 Precast reinforced concrete slabs/beams will then be used to form the bridge deck and an *in situ* concrete pour will seal the elements together. Alternatively, steel bridging structures may be used. This will form part of the future roadway for traffic accessing the new berths. The concrete

[1] CFA piles are drilled and concreted in one continuous operation enabling much faster installation time than for bored piles.

decking will also enable access for a crane which will give the contractor the option for piles to be positioned for the rest of the approach jetty.

3.1.10 The approach jetty itself will consist of a series of multi piled ~~and two piled~~ transverse rigid frames, measuring up to ~~290~~250 m in length. A maximum of 46 steel tubular piles will be used for the jetty itself (a total of 55 piles will be used for the approach jetty when including the abutment structure on the foreshore (described above) and the linkspan bankseat (described below)). The spans between each set of piled frames will be a minimum of 12.5 m, though this may increase if detailed design reveals that fewer piles can be used. The jetty deck will be constructed from pre-cast concrete and *in situ* concrete pours.

3.1.11 Where sufficient water depth allows, the piling for the approach jetty will be from a crane barge or jack up utilising a crawler crane, a vibratory hammer (PVE 38M or equivalent as required) and percussive piling hammer (such as BSP CG300). The piles will be transported to the jetty area by flat top barges and lifted with the barge mounted crane into a piling gate located on the edge of the barge. The piling gate supports the pile during the pile driving process to ensure it maintains position. The vibro hammer will then be placed onto the top of the pile using the crane and the pile will be vibrated through the softer ground layers.

3.1.12 Once the pile has reached the level of refusal and can no longer be advanced through the ground the vibro hammer will be removed and placed on the barge using the crane. The percussive hammer will then be lifted by the crane onto the top of the pile. This percussive hammer will strike the pile head, incrementally advancing the pile into the harder ground levels until final pile toe level is achieved. Where barge access cannot be achieved due to shallow water depths, a land-based crane positioned on completed sections of the jetty will be used (known as 'end-over-end construction"). It is expected this method will need to be used for the first 60 m of the jetty. The piling equipment and process will be the same as described above. However, six temporary piles of 0.5 m diameter will be installed adjacent and prior to the permanent pile installation. These temporary piles will be used to support the construction plant for the installation of the permanent piles. These temporary piles will be removed upon completion of the construction activities.

3.1.13 Each tubular pile is anticipated to require approximately five minutes of vibro-piling and approximately 45 minutes of percussive piling. The likely maximum piling scenario is for four tubular piles to be installed each day using up to four piling rigs. The maximum pile driving scenario will, therefore, involve approximately 20 minutes of vibro-piling and 180 minutes of percussive piling per day. It should be noted, however, that in terms of potential disturbance, four piles a day is very much a worst -case scenario. Either way, there will clearly be significant periods over a 24-hour period when piles will not be driven. The actual proportion of time that piling will take place is estimated to be at worst around 14% (based on 180 minutes

of impact piling and 20 minutes of vibro piling) of each day over any given construction week.

3.1.14 Following pile installation, pre-cast pile caps will be added to receive pre-cast concrete boxes which will be lifted and lowered with a crane, either from land on completed sections of the approach jetty or from a barge. The boxes will be filled with *in situ* concrete to stitch the piles and boxes together. Once a pair of boxes have cured at each end of a span, pre-stressed pre-cast concrete beams will be placed to span the boxes and stitched together with another *in situ* concrete pour. The concrete will be supplied by either a concrete wagon or an onsite batching facility. This process will be repeated for all spans to create the complete approach jetty deck. Alternatively, steel bridging structures may be used.

Linkspan and floating pontoons

3.1.15 The activities for the approach jetty will be repeated for the construction of the linkspan bankseat. The bankseat will have up to six piles which will be driven using initial vibro-piling until refusal and then percussive piling techniques until the required depth has been achieved.

3.1.16 As noted in Chapter 2 of this ES, the marine infrastructure includes two pontoons which will be fabricated off-site and floated into place. The floating pontoons will be a maximum of 40 m x 90 m x 9.35 m and will be linked together by a short bridge, up to 20 m in length. They will be constructed of concrete and/or steel. Collectively the pontoons will service the three berths, the northernmost pontoon servicing Berth 1 and Berth 2, the southern pontoon servicing Berth 3, albeit being crossed by traffic from Berths 1 and 2. Each floating pontoon will be restrained in place by ~~two~~three reinforced concrete dolphins with maximum dimensions of 12 m x 8 m~~, each supported on up to six piles plus a guiding pile~~. The ~~constraint~~restraint dolphins will be constructed using the same approach and form as the jetty approach bankseat.

3.1.17 Once the bankseat and the pontoons are constructed the linkspan can be put in place. This linkspan section is envisioned to be a maximum of 90 m x 10 m in size which will be fixed to the bankseat but rest freely on the innermost pontoon. This will allow the end of the linkspan to move up and down with the floating pontoon as the tide rises and falls. The linkspan will be fabricated off-site and craned into place.

Finger piers

3.1.18 Two open piled finger piers will be constructed, measuring a maximum of 270 m in length. The construction of the outer finger pier, which is furthest from the shore, may be constructed first. In this case, the inner finger pier serving Berth 3 would be constructed as soon as practicable afterwards – possibly when Berth 1 and Berth 2 are already operational (see paragraph ~~3.1.61~~3.1.62 to 3.1.63 in the section headed 'Construction programme' for further detail). The assessments in the ES have considered the impact of both construction in a single stage and sequential construction.

3.1.19 When constructed, each finger pier will be supported by up to ~~54~~56 piles which will be installed in the same way as is described for the approach jetty.

3.1.20 Following completion of the piling for each finger pier, pre-cast pile caps will be installed, pre-cast concrete boxes and beams lifted into place, and the deck sealed together using *in situ* concrete pours (adopting the same approach as is described for the approach jetty).

3.1.21 Fender panels will be installed on both sides of the outer finger pier (Berths 1 and 2) and on the northern side of the inner finger pier (Berth 3) together with required mooring infrastructure (fixed bollards and/or quick-release hooks) installed.

Vessel impact protection

3.1.22 A single linear structure of a maximum 160 m in length may be constructed adjacent to the existing Immingham Oil Terminal (IOT) approach jetty, between the outer end of the jetty underpass lead-in structure (for navigation of small craft), and the end of existing impact protection structure on the south side of the IOT finger pier. If constructed, the impact protection structure will be supported by up to 20 steel tubular piles~~. The piles will be driven~~ at 8 m centres in a single line ~~and will~~. Impact protection measures may also be installed at the western end of the IOT finger pier, consisting of a maximum of 12 piles of 1,520 mm diameter spread over an overall footprint of 14 m x 30 m, plus four fender piles of 1,422 mm diameter. The piles would be installed as described for the approach jetty above.

3.1.23 Construction of the capping beam will follow a similar form to the finger piers above, with use of precast concrete pile caps, and boxes lifted into place. Additional reinforcement will be installed on the inside of these and then the structure will be tied together *with in situ* concrete pours.

3.1.24 Finally, fender units and panels ~~will~~may, if deemed necessary, be installed on the outward face ~~at 8 m centres~~of the impact protection structures to provide impact protection.

Material delivery

3.1.25 As much of the construction materials as possible will be delivered to site by sea for the marine works. The steel piles and related construction materials will be delivered to a common user berth in the Inner Dock at the Port of Immingham and unloaded onto the quay. Piles and related construction materials will then be loaded onto a barge and transported to the required location within the marine works area. Some marine construction materials will also be delivered to site via road transport.

Construction vessels and plant

3.1.26 As noted above, the dredging operation is expected to consist of a tug assisted backhoe dredger and two to five split bottom barges. The exact

configuration will be determined by the specialist dredging contractor once appointed. A TSHD might also be deployed depending on plant availability and at the discretion of the dredging contractor.

3.1.27 The piling and construction activities are likely to be undertaken by up to four jack-up/floating crane barges (known as 'marine spreads') supported by up to five flat top barges to supply the marine spreads with piles, precast concrete elements, and other equipment and materials as necessary. The jack-up/floating crane barges and flat top barges will be supported by up to two tugs or multicats in order to service the marine spreads with materials and equipment and to position the jack-ups and floating crane barges in the right location in order to execute the works.

3.1.28 A further dedicated safety vessel will be deployed to patrol the waters adjacent to the barges with a view to being on hand and assisting should any emergencies arise. The multicats/tugs and safety vessel will also act as the crew transfer vessels to take personnel to and from the location of the marine works.

Landside works

Site clearance and land preparation

3.1.29 The landside works consist of four main areas, namely the Central Storage Area, the North Storage Area, the South Storage Area and the West Storage Area (shown on Figure 1.3 in Volume 2 of this ES (Application Document Reference number 8.3) superseded by Figure 2.2 of the ES Addendum (Application Document Reference number 10.3.8)). In preparation for the construction works within these areas, all four areas will be cleared. This will include, in order to make room for the new internal link bridge, the demolition of four buildings, and an extension to a further building and a welding shop, a workshop~~/shed~~, and a temporary structure (see Figure 3.1 to the ES (superseded by Figure 3.1 of the ES Addendum (Application Document Reference number 10.3.8))) which shows the location and dimensions of the existing buildings that will be demolished). All of these buildings lie within the development site boundary but to the south of the North Storage Area.

3.1.30 The facilities provided by two of these buildings together with the extension, all of which are currently used by ~~Drurys~~Drury Engineering Services Limited, will be moved to another existing adjacent building. ~~Two buildings~~One building and one workshop, which are used by Malcolm West Fork Lifts, will be replaced with new ~~buildings~~structures to the east of their current location. The facilities provided by the existing building extension and welding shop used by Drury Engineering Services Limited will be replaced with two new structures to the north of their current location.

3.1.31 It should in addition be noted that as part of the improvements to be undertaken to the Port's East Gate entrance, the existing gatehouse at East Gate will be demolished and replaced. For further details, see the Traffic and Transport chapter (Chapter 17) of this ES (as supplemented by

Chapter 17 of the ES Addendum (Application Document Reference number 10.3.8)).

3.1.32 The demolition of buildings will be sequenced so as to minimise disruption to existing tenants. ~~Drurys~~Drury Engineering Services Limited will move out of their current buildings into the existing adjacent building before demolition works begin and the ground prepared for the bridge construction. The construction of the new Malcolm West Fork Lifts (Immingham) Limited's buildings will also be completed and in use in advance of the demolition of their current buildings.

3.1.33 A combination of excavators and dump trucks will be used to clear these areas. Any material that is suitable for incorporation within the permanent works will be segregated and processed ready for use (e.g., brick buildings, existing paving areas, as dug material).

Soil stabilisation

3.1.34 Once the areas have been cleared, soil stabilisation – likely to be in the form of soil mixed with cement and water – will commence where required, working from one section to the next as appropriate. Once complete, the ground will be prepared for drainage, services and pavement construction.

Drainage and services installation

3.1.35 In terms of the installation of drainage and services, the South Storage Area and Central Storage Area are likely to be developed as one area and the North Storage Area and West Storage Area are likely to be developed as separate areas.

3.1.36 Surface water run-off, after attenuation, will be discharged in existing drainage structures to the Habrough Marsh Drain and an existing piped outfall into the Humber Estuary. A small amount of surface water will also be directed into an existing pipe to the dock basin. Further information is set out in the Drainage Strategy provided at Annex B of the Flood Risk Assessment (Appendix 11.1 to this ES).

3.1.37 The location of the drainage system to be installed and the services to be laid will be set out on site and then the areas will be excavated to the required depths. The trenches will be dug using excavators, with as dug material set aside for processing and future use where possible. The drainage will be installed into the excavated trenches and, once complete, the area will be backfilled using site won material as a priority.

3.1.38 Installation of the services networks will follow the drainage installation, with, to an extent, a degree of overlap. The same process as that adopted for the drainage installations will be followed. Ducting will be put in place ready to receive mechanical and electrical infrastructure later in the programme (described below). Excavators and dump trucks will be used to complete this task.

3.1.39 The water main will be installed utilising high-density polyethylene (HDPE) pipes, cast iron valves and connection points. The pipes will be installed into trenches, fusion welded and backfilled appropriately utilising plant such as dump trucks and excavators. Valve pits will be installed in relevant locations to facilitate a change in direction and draw down points. The valve pits will contain mechanical instrumentation to facilitate the usage of the system. The system will go through a cleansing and commissioning phase prior to first use.

3.1.40 The development has very few buildings, and the flows are not anticipated to be significant. The waste water infrastructure to support the buildings will be provided locally to the building via a package treatment plant and then the treated effluent conveyed to one of the existing pumping stations via a rising main.

Paving/hardstanding installation

3.1.41 Following soil stabilisation as described above (where required), cement bound granular material (CBGM) will be laid and levelled. Either a sand layer together with concrete paving blocks, or roller compacted concrete, or joint reinforced concrete, or asphalt will be installed depending on the operational location. For all paving types a specialist paver will be employed to lay the required sub-base accurately so that it is able to receive the subsequent finishing layers. Block paving uses an automatic machine laying block paver fed by forklift trucks from specially arranged pallets ready for the machine to receive. Roller compacted concrete will be laid by the same paving machine used to install the sub-base and will be fed by road going cement mixers or dump trucks. Asphalt will use the same equipment as for roller compacted concrete but will likely be fed by eight wheeled trucks.

3.1.42 Line markings will then be applied to demarcate trailer parking bays, stacking areas, marshalling lanes, parking areas and terminal roads.

Building construction

3.1.43 The main terminal building will be located on the South Storage Area (see Figure 1.3 to this ES, superseded by Figure 2.2 of the ES Addendum (Application Document Reference number 10.3.8)) and will be constructed in parallel to the paving works. This building will be 10.5 m (i.e., double storey) in height and a maximum of 40 m x 15 m in size as noted in Chapter 2.

3.1.44 A welfare building will be constructed (maximum footprint 16 m x 8 m, and maximum height of 4.5 m) for the convenience of drivers and passengers awaiting embarkation. In addition, the Terminal facility will require the provision of a small workshop (maximum footprint 15 m x 10 m, and maximum height of 8 m), a substation (maximum footprint 12 m x 5 m, and maximum height of 5 m) and an area for the siting of frequency converter housing (maximum footprint 12 m x 5 m, and maximum height of 5 m). A customs ~~building (maximum dimensions of 20 m x 15 m x 10.5 m), a~~and holding facility building (maximum dimensions of ~~55~~22.5 m x ~~25~~79 m x 10.5

m) ~~and an examination~~, customs car search bays (41 m x 10.5 m), vehicle X-ray scanner building (38 m x 8.5 m), Cyclamen secondary exam building (~~maximum dimensions of~~ 20 m x 10 m), Cyclamen monitoring office building (12 m x ~~8~~4 m), Cyclamen portals, and passport control booths will be provided for use by the UK Border Force in the South Storage Area as well as the facility's 'in and out' gates.

3.1.45 The current gatehouse at the Port's East Gate entrance will be demolished and replaced to enable the construction of an additional inbound lane at the gate. This will assist the processing of vehicles arriving at the Port (see Chapter 17 of this ES, supplemented by Chapter 17 of the ES Addendum (Application Document Reference number 10.3.8)).

3.1.46 Finally, as noted above, two further buildings will be constructed to the south of the North Storage Area to replace the Malcom West Fork Lifts (Immingham) Limited's buildings that will be demolished in the area adjacent to the proposed new bridge, and two further buildings will be provided to replace the existing Drury Engineering Services Limited building canopy and welding bays. Further ancillary buildings will also be constructed as noted in the Building Schedule at Appendix 2.3 to the ES (Application Document Reference number 8.4.2(c), superseded by Annex B to the ES Addendum (Application Document Reference number 10.3.8)).

3.1.47 The construction methodology for the buildings is likely to comprise shallow foundations (strip/pad) or concrete pile foundations or similar, reinforced concrete paving slab, followed by installation of portal frame structures or modular steel structures. The plant envisaged to complete the works includes CFA or piling rig for the foundations and cranes and excavators for the slab works and to install the portal frame or modular steel structures.

Bridge construction

3.1.48 The vehicle access bridge linking the North and Central Storage Areas will be made of two single span structures supported by ~~a central pier~~piers. The maximum deck length will be ~~120~~86 m, with the deck formed from structural steel or composite (steel and concrete) sections at a maximum height of 11 m above the surrounding ground~~, providing a minimum headroom of 6.53 m~~. It is envisaged that the majority of the deck will be fabricated off site and installed in place using a heavy lift crane.

3.1.49 The bridge will be supported on two reinforced concrete abutments and ~~a centralised~~intermediate pier ~~structure~~structures, splitting the spans accordingly. The foundations of the abutments will be CFA piles, followed by ~~form work~~ reinforced concrete supporting structures creating the bearing points for the bridge deck. Typical plant used to complete these sections of the bridge will be excavators, cranes, and concrete pumps.

3.1.50 Following installation of the bridge deck, the approach ramps will be installed utilising sheet piled walls or similar earth retained structures infilled with

engineered fill material. Typical plant used will include piling equipment, cranes, excavators, and concrete pumps.

3.1.51 Lastly the surfacing works including pavements will be completed, and the traffic collision system, comprising parapet walls with barriers, installed. It is envisaged that the bridge will have an asphalt surface utilising specialist paving equipment as described for the paving/hardstanding installation above.

Mechanical and electrical works

3.1.52 Site wide electrical distribution and associated services will be provided.

3.1.53 These works will include the installation of low voltage/high voltage (LV/HV) cables, shore power systems, frequency converters, transformers, switch gear and LV/HV panels. The installation of Light Emitting Diode (LED) high mast lights of a maximum 30 m in height (similar to those existing on the port estate) will also be provided, as well as exterior lighting on buildings.

3.1.54 The works will make use of the pre-installed ducting system as discussed above for drainage and services installation. The cabling and mechanical and electrical equipment will be delivered to site on cable drums and bespoke housings and stored in designated areas. The cable drums will then be distributed to the required installation areas. The drums will be set up adjacent to the relevant pulling pit and placed on special rollers to ease the installation of the cable. A pulling sock will be attached to the end of the cable and tied to the preinstalled draw chord within the ducting and the cable will then be slowly pulled with a winch through the ducting, taking care to not induce too much stress on the cable. This will be repeated until all cabling is installed in the relevant ducts.

3.1.55 The mechanical and electrical equipment will be taken to the relevant substation via lorry and installed by a specialist installation team using winches and skids to slide the equipment into its final installation position. Once all cables and equipment are installed, and before going “live”, all equipment will be connected into the correct control systems (switchgear, transformers, convertors etc.). It will then be cold commissioned to ensure there are no faults in the system before becoming “live”.

Fencing

3.1.56 The fencing of IERRT will be International Ship and Port Facility Security (ISPS) Code compliant. In combination with the electrical works, gate works, closed-circuit television (CCTV) and any other security systems will be installed to the required standards.

Material delivery

3.1.57 As with the marine works, for the land side works construction materials may be delivered to site by either land or sea. Deliveries by sea will be to the Inner Dock at the Port of Immingham where the materials will then be transported to the site. The land deliveries will be transported direct to site

and unloaded in pre-designated storage areas ready for distribution to the appropriate work fronts when required.

Construction waste

3.1.58 Construction waste will be produced as a result of the construction of the proposed IERRT development. The materials used or handled during construction and the estimated quantities of waste are outlined in Table 3.1.

Table 3.1. Estimate of landside waste associated with the materials used or handled during construction of the proposed development

Material	Estimated Quantity	Estimated Waste
Steel piles	~~7,700~~8,600 tonnes	2%
Concrete (Redi mix)	~~30,000 m³~~23,500 m³	8%
Concrete (Precast)	~~7,500~~7,800 m³	5%
Reinforcement	~~25,000~~20,200 tonnes	5%
Steel pontoons	8,000 tonnes	2%
Steel buildings	6,000 tonnes	2%
Aggregates	60,000 m³	10%
Cement stabilised subgrade and sands	150,000 m³	8%
Asphalt	81,000 tonnes	8%
Demolition material	7,000 m³	75%
Waste or spoil	94,000 m³	50%

3.1.59 It is anticipated that the majority of the landside waste produced during construction will be from the removal of waste or spoil from the construction site although the demolition of unused structures within the port estate will also create waste. As much of these materials as possible will, however, be re-used as infill for the proposed IERRT development, thereby minimising the amount of waste that needs to be removed from site.

3.1.60 A site waste management plan, appended to the CEMP, has been prepared and is submitted as part of the IERRT DCO application (Application Document Reference number 9.2). It sets out the proposed waste recovery and disposal system for all land-based waste generated by the proposed development. It also includes an assessment of the impact of the waste arising from the proposed IERRT development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation.

Construction programme

3.1.61 The construction programme will be taken forward on the basis of one of two principal scenarios. The first scenario – which is the preferred option – is to construct all of the marine and landside infrastructure at the same time. Under this scenario, it is envisaged that construction works will start in ~~early~~ mid-2024 and will then be complete by ~~mid-~~late 2025. Capital dredging

works would necessarily be undertaken 24 hours a day, 7 days a week, and would take around 80 days ~~in early to mid-2024~~. It is estimated that piling works would be undertaken for approximately 24 weeks in total. ~~These would be scheduled to commence in early 2024 on the northern (outer) finger pier.~~

3.1.62 The second and alternative construction programme scenario would involve a sequenced construction period. Under this scenario, construction ~~of the northern finger pier~~ would commence in ~~early~~ mid-2024, as well as construction of the ~~North~~Northern, Central and ~~South~~Southern Storage Areas. The northern finger pier, with two berths, would then be complete along with the approach jetty and become operational around ~~mid~~ late 2025. Following this, and at the same time as operation of the northern finger pier, the innermost southern finger pier (accommodating the third berth) would be constructed at the same time as the construction of the ~~West~~Western Storage Area~~. Under this scenario, the southern finger would be completed in late 2026 when the third berth would become operational~~.

3.1.63 The timing of the capital dredging works outlined above for the first construction scenario will not be changed under the second scenario as this will still be undertaken in a single stage in ~~early~~mid to ~~mid~~-late 2024. Under the second scenario piling works for the northern finger pier, approach jetty, and pontoons would be scheduled to be carried out for the approximate 24-week period starting in ~~early~~ mid-2024, followed by a second approximate 13-week period in ~~mid~~late-2025 to construct the southern finger pier.

3.1.64 For landside construction, working hours will be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays, with no works taking place on Sundays.

3.1.65 Marine works may be undertaken 24 hours a day, Monday to Sunday, subject to the adherence to environmental restrictions during certain months. This is detailed further in the Nature Conservation and Marine Ecology chapter (Chapter 9) of this ES.

3.2 Operational phase

3.2.1 This section provides details of the expected operation of IERRT once the project has been constructed.

3.2.2 The IERRT DCO does not make provision for the decommissioning or demolition of the proposed IERRT development. This is because the IERRT infrastructure will, once constructed, become part of the fabric of the Port of Immingham and will continue to be maintained so that it can be used for port related activities to meet long-term commercial needs. In the unlikely event that the IERRT should one day require decommissioning and demolition, the relevant statutory process at that time, including Environmental Impact Assessment (EIA) as appropriate, would be followed.

3.2.3 As a consequence of the above, decommissioning or demolition of the IERRT is not assessed further in this ES although it should be noted that the question of decommissioning in the context of Associated British Ports' (ABP's) extant statutory powers is discussed further below at paragraph 3.2.19 *et seq*. in the section headed 'Ongoing maintenance'.

Terminal operations

3.2.4 The IERRT will operate 24 hours a day, seven days a week, closing for Christmas Day. However, in the future – subject to market demand – the IERRT may operate for 365 days a year. It is envisaged that – having regard to the current nature of existing roll-on/roll-off (Ro-Ro) activities that occur on the Humber – it will generally be the case that three vessels will be handled at the IERRT per day, one per berth, with the vessels likely to arrive in the morning and depart in the evening.

3.2.5 The berthing facilities have been designed to handle vessels with a length overall (LOA) of 240 m, a breadth of 35 m, and a draught of up to 8 m. Tug vessels will help to manoeuvre vessels onto the berth when required based on operational requirements (e.g., during adverse weather and/or tidal conditions). Ship to shore power will also be made available and used where practicable. This will enable berthed vessels to connect to the port electricity grid allowing them to shut down the onboard power generation units while at berth.

Throughput

3.2.6 The annual throughput of the IERRT has been capped at 660,000 Ro-Ro cargo units per year. It is anticipated that of that number, approximately 72% of the embarking or disembarked units will be unaccompanied (cargo carried on the vessel without an accompanying heavy goods vehicle (HGV) and driver) with 28% of units will be accompanied (cargo which is accompanied by an HGV and driver on the crossing).

Outbound cargo – access arrangements

3.2.7 ***Unaccompanied*** - Outbound unaccompanied Ro-Ro cargo will arrive at the terminal over a period of time prior to the sailing. This period of time could extend to a small number of days prior to the sailing. Upon arrival at the IERRT, the drivers of the unaccompanied cargo will be directed to a single trailer bay to drop off their trailers – most likely in the North or Central Storage Area. When due to be embarked, the trailers will be manoeuvred onto the vessel by tug units (small tractor like units designed to move wheeled trailers) ready for departure.

3.2.8 ***Accompanied -*** Outbound accompanied Ro-Ro cargo will arrive at the IERRT over a much shorter period of time – at most a number of hours before sailing – as the driver delivering the cargo to the terminal also drives it onto the vessel, stays with it and drives it off at the destination port. Accompanied HGVs arriving at the Terminal will park in one of the pre-gate designated trailer and container parking areas. The driver will then need to

report to the main terminal building on foot where paperwork will be checked and processed. The HGVs will then wait in holdings lanes before they load on to the vessel ready for departure.

Inbound cargo

3.2.9 ***Unaccompanied -*** Inbound unaccompanied cargo that disembarks at the IERRT could remain there for a small number of days before it is picked up for inland delivery. Unaccompanied trailers will be removed from the vessel by tug units and dropped off in single trailer bays – most likely in the Southern and Western Storage Areas – until they are collected.

3.2.10 ***Accompanied -*** Inbound accompanied cargo arriving at the terminal will drive off the vessel and leave the IERRT as soon as it can, following any necessary security/customs checks.

Terminal entrance and exit

3.2.11 Both unaccompanied and accompanied cargo will arrive at the IERRT or depart by road transport, with the primary means of access to the IERRT being via the Port's East Gate.

Passengers

3.2.12 Passengers will be allowed to use services operating from the IERRT during those periods when the demands of the Ro-Ro cargo operations permit – servicing the needs of the commercial sector taking priority.

3.2.13 Passenger use of the IERRT will be limited to 100 members of the public embarking on any one day, as discussed in the Land Use Planning chapter (Chapter 18) of this ES, and all passengers will only be allowed to travel by vehicle – there will be no foot passengers.

3.2.14 ***Disembarking passengers*** – will, on arrival at the Port in the morning, following the checking of passports, immediately leave the Terminal – and the Port.

3.2.15 ***Embarking passengers –*** will, after arriving at the Port in the afternoon, following paperwork and passport checks, drive into the secure area and will park in the parking area allocated for boarding passengers.

Workforce

3.2.16 Excluding lorry drivers embarking or dropping off cargo trailers at the IERRT, the operational workforce for the IERRT is expected to consist of up to:

- 33 tractor/tug drivers;
- Two reach stackers;
- Four assistant operations managers;
- Eight administrative staff;

- Three management staff; and
- A small number of UK Border Force staff.

3.2.17 It is anticipated that the operational workforce will work in three working shifts each day, approximately between the hours of 06:00 to 14:00, 13:30 to 21:30, and 21:00 to 06:00.

Operational waste

3.2.18 Operational waste will comprise general waste from the main terminal building, the welfare building, the operations team on the ground, the workshop and the UK Border Force ~~building~~buildings. An operational waste management plan will be put in place to manage waste produced within the IERRT during operation. Ship waste will be handled outside of the UK given facilities to handle this waste are already in existence for the intended ferry routes.

Maintenance dredging and disposal

3.2.19 During the operation of the IERRT, maintenance dredging will be required in the same way as currently occurs elsewhere at the Port of Immingham. The overall volumes of the maintenance dredging associated with the proposed IERRT development will be smaller compared to that of the capital dredge. The total future maintenance dredge volume is estimated to be 120,000 m³ annually (see the Physical Processes chapter (Chapter 7) of this ES). This volume is considered to be a conservative estimate as it assumes that the modelled siltation rate is maintained throughout the year and assumes also that any accretion occurs entirely within the berth pockets themselves. In reality, this siltation rate would be expected to reduce as the berth pocket shallows and as the side slopes adjust to the new layout. Furthermore, part of the accretion is predicted to occur beneath the proposed piers and jetties (between the support piles), in areas where it will not directly affect depths within the vessel berths. The density of the newly settled material will be less than that from the consolidated bed dredged during the capital dredge campaign.

3.2.20 The estimated annual maintenance dredge of some 120,000 m³ will not be removed in a single campaign. Maintenance dredge campaigns will be undertaken throughout the year during operation of the IERRT (with smaller volumes of material removed) as required to maintain safe access to the berths. The actual requirements for the level and frequency of potential future maintenance dredging of the Ro-Ro berth will be dependent on a number of commercial factors (including vessel type, size and berthing requirements). Based on the predicted rates of infill from the numerical modelling and the level of maintenance afforded to other berths at the Port of Immingham, it is anticipated that a maintenance dredge campaign within the IERRT berths may be required around three to four times per year (although, as noted above, this will be dependent on a range of factors).

3.2.21 The maintenance dredge arisings will be transported by barge to the Clay Huts (HU060) licensed marine disposal site within the Humber Estuary as per current operations under the existing maintenance dredge licence that exists for the Port of Immingham (L/2014/00429/1). The existing maintenance dredge licence has sufficient head room within the licensed disposal limits to accommodate the maintenance dredging required for this proposed IERRT development.

Ongoing maintenance

3.2.22 ABP's ports have evolved over time as a result of iterative and ongoing development, redevelopment and extension. Ports inevitably reflect the constant changes in and evolution of the global economy. The need to be able to alter and grow their infrastructure in response to these pressures and changes in order to stay relevant and competitive in a relentlessly shifting marketplace.

3.2.23 The Port of Immingham's originating statutory powers authorising the construction of the enclosed dock in the early 1900s derived from the Humber Commercial Railway and Dock Act 1904. This enabling legislation gave ABP's predecessor the powers to 'make and maintain' the port infrastructure – a power that appears in most authorising port legislation. At the Port of Immingham, the lock and all quaysides comprise masonry structures, so have specifically been designed to last for considerable periods of time, but even for jetties of similar construction to the IERRT, there is evidence of these structures outlasting a nominal design life with careful and targeted maintenance and renewal projects.

3.2.24 For example, the Immingham Bulk Jetty dates back to 1970, the statutory powers for which are provided within the South Killingholme Jetty Empowerment Order 1968 – which contains powers to 'make and maintain, extend, enlarge, alter and replace the works'. Using these powers, the facility has been maintained and updated over the years. Similarly, the Immingham Oil Terminal (IOT) was built in 1969 and authorised through the Immingham Dock Revision Order 1966. This statutory instrument grants ABP the powers to 'make and maintain' the infrastructure, as well as giving ABP the ability to 'extend, enlarge, alter and replace the works'. Again, careful maintenance of this structure has ensured that it will continue to be in operational use beyond any nominal design life.

3.2.25 It is normal for ports to retain and maintain legacy infrastructure with a view to ensuring that, via a process of maintenance and renewal, it can continue to facilitate the modal shift movement of cargo between land and sea. It is the applicant's intention that the IERRT infrastructure will be maintained and renewed and will continue to be used beyond its engineering design standard of 50 years.

3.3 Environmental management best practice procedures

3.3.1 Best practice environmental management techniques will be implemented by contractors during construction. Techniques and measures will follow appropriate industry guidelines for the activity, such as:

- British Standards Institute (BSI) (BSI, 2021), for example BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites (BSI, 2008);
- Eurocodes The EN Eurocodes (Eurocodes, 2021);
- Construction Industry Research and Information Association (CIRIA) Environmental good practice on site guide (CIRIA, 2015);
- CIRIA Coastal and marine environmental site guide (CIRIA, 2016);
- Office of Government Commerce (OGC) Construction Excellence Guidelines (OGC, 2021);
- Pollution Prevention Guidance (PPG), or Guidance for Pollution Prevention (GPP) (NetRegs, 2021), including:
- Works and maintenance in or near water (GPP5);
  - Working at construction and demolition sites (PPG6);
  - Safe storage and disposal of used oils (GPP8);
- Regulatory guidance (UK Government, 2021); and
- The Construction (Design and Management) (CDM) Regulations 2015.

3.3.2 Adherence to environmental management best practice will be controlled through a CEMP. ~~The~~An outline CEMP is provided as part of the DCO application (Application Document Reference number 9.2) and sets out the mitigation measures needed to manage environmental effects during construction of the proposed IERRT development.

3.4 References

BSI (2021). British Standards Online. Available at: https://www.bsigroup.com/en-GB/standards/british-standards-online-database/ (accessed January 2021).

BSI (2008). BS 5228-1:2009+A1:2014. Code of practice for noise and vibration control on construction and open sites. Noise.

CIRIA (2015). Environmental good practice on site guide (fourth edition) (C741).

CIRIA (2016). Coastal and marine environmental site guide (second edition) (C744).

Eurocodes (2021). The EN Eurocodes. Available at: https://eurocodes.jrc.ec.europa.eu/ (accessed January 2021).

NetRegs (2021). Guidance for Pollution Prevention (GPPs). Available at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/ (accessed January 2021).

OGC (2021). Construction Excellence Guidelines. Available at: https://www.designingbuildings.co.uk/wiki/Achieving_Excellence (accessed January 2021).

UK Government (2021). Pollution prevention guidance (PPG). Available at: https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg (accessed January 2021).

3.5 Abbreviations/Acronyms

Acronym	Definition
ABP	Associated British Ports
BS	British Standard
BSI	British Standards Institute
CBGM	Cement bound granular material
CCTV	Closed-circuit television
CDM	Construction (Design and Management
CEMP	Construction Environmental Management Plan
CFA	Continuous Flight Auger
CIRIA	Construction Industry Research and Information Association
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
GPP	Guidance for Pollution Prevention
HDPE	High-Density Polyethylene
HGV	Heavy Goods Vehicle
HV	High Voltage
IERRT	Immingham Eastern Ro-Ro Terminal
IOT	Immingham Oil Terminal
ISPS	International Ship and Port Facility Security
LED	Light Emitting Diode
LOA	Length Overall
LV	Low Voltage
OGC	Office of Government Commerce
PPG	Planning Practice Guidance
Ro-Ro	Roll on-Roll off
TSHD	Trailer Suction Hopper Dredger
UK	United Kingdom
WHA	Waste Hierarchy Assessment

Cardinal points/directions are used unless otherwise stated.

SI units are used unless otherwise stated.

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