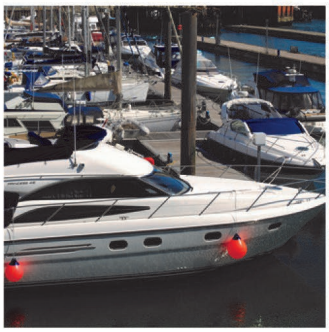
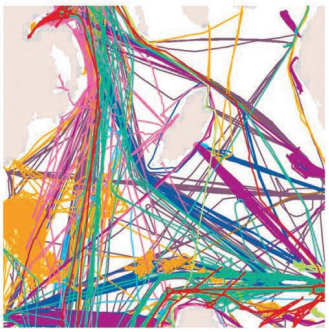
Associated British Ports

Immingham Eastern Ro-Ro Terminal

Preliminary Environmental Information:
Chapter 3: Details of Project Construction and Operation

January 2022





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Authors

ABPmer, Adams Hendry Consulting Ltd, AECOM Ltd, David Tucker Associates, Kent PLC, Wessex Archaeology Ltd.

ABPmer
Quayside Suite, Medina Chambers, Town Quay, Southampton, Hampshire SO14 2AQ
T: +44 (0) 2380 711844 W: http://www.abpmer.co.uk/

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3.1 Construction phase

3.1.1 An outline description of the anticipated construction methodology that is likely to be used for the key elements of the Project in relation to both the marine works and separately the landside works is provided below. The construction methodology is based on the scheme design outlined in Chapter 2 although it should be emphasised that, at this stage, the description below should be viewed as only a preliminary description. The methodology will be further refined following ongoing detailed design and assessment work taking account also of any comments received during the statutory consultation process.

Marine works

Site clearance

3.1.2 During the initial mobilisation of marine plant, the land-based works on the approach ramp and approach jetty will commence. This will involve clearing an area in preparation for the construction of the approach ramp.

Dredging

3.1.3 To accommodate up to four new berths, it is currently anticipated that this will require dredging approximately 330,000 m³ of material – although this may change as the scheme evolves. The majority of the material *in situ* is likely to be firm with an average density of *circa* 1,350 kg/m³ at the surface and increasing in density with depth.

3.1.4 The precise capital dredge methodology has not yet been settled for this project and further work will be undertaken in order to determine the most suitable method. It is currently anticipated, however, that the majority or all of the material will be removed with a backhoe dredger, the size of which will need to 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. Both dredge methods have been considered and the worst case scenario in terms of potential environmental effects has been assessed in the relevant topic chapters of the Preliminary Environmental Information Report (PEIR).

3.1.5 As noted above, current indications are that the dredged material will not be suitable for beneficial use elsewhere, such as for reclamation purposes – although the position will be kept under continuous review. If no beneficial use is identified, the dredged material will most likely be transported to licensed disposal site HU056 or HU060 (depending on the type of material) by barge (see Chapter 2 Proposed Development, Section 2.3). The exact configuration and number of barges will be confirmed by the specialist dredging contractor.

Approach ramp

3.1.6 The approach ramp will be the first structure constructed using land based plant and equipment. It will consist of a two abutment structures and a short bridge section that will span between them. The abutment structures will be constructed either side of the existing pipelines and sea defence wall that run along the frontage in this part of the port estate.

3.1.7 Each abutment structure will be supported by an estimated six steel tubular piles which will be hydraulically driven.

3.1.8 Precast reinforced concrete slabs/beams will then be used to form the bridge and a section final *in situ* concrete pour will seal the elements together. This will form the future roadway for traffic accessing the new berths.

3.1.9 The concrete decking will enable access for a crane to be positioned which will then pile the first of the six traverse rigid frames of the approach jetty (see 'Approach jetty' section below).

Approach jetty

3.1.10 Following the completion of the approach ramp, the approach jetty will be constructed. It is currently estimated that the jetty will be approximately 105 m in length and will consist of six piled traverse rigid frames and concrete decks with 12.5 m span between each frame.

3.1.11 Temporary works using portal gates will be set up for piling and then two piles will be installed to a depth of approximately 26.5 m, initially using vibro-piling to refusal and then percussive piling techniques to reach the final design level.

3.1.12 Following completion of the piling, the piles will be prepared for the installation of the headstocks and precast decking, which as with the rear abutment above, will be sealed *in situ* with concrete to complete the carriageway and link between the approach ramp and the first traverse rigid frame.

3.1.13 After curing of the section, the process will be repeated to construct each traverse rigid frame sequentially until the sixth and last frame is complete.

Linkspan and pontoons

3.1.14 The activities for the approach jetty will be repeated in order to construct the linkspan bankseat which at this stage it is anticipated will be approximately 21.5 m from the sixth traverse rigid frame. This bankseat has six piles which will be driven to a depth of approximately 26.5 m using initial vibro-piling until refusal and then percussive piling techniques until the required depth has been achieved.

3.1.15 The design includes two approximately 40 m x 90 m concrete/steel pontoons with an overall depth of 7 m which will service up to four berths. Each pontoon will be restrained by two reinforced concrete dolphins of approximate dimensions 12 m x 8 m, each supported on six piles each.

Finger piers

3.1.16 The two approximately 260 m long open piled finger piers will be constructed sequentially.

3.1.17 At this stage, the preliminary design contemplates that each finger pier will be supported by 54 piles.

3.1.18 Following completion of the piling for each finger pier, the precast headstocks will be installed, reinforcing fixed and then the *in situ* concrete beams will be cast. Precast beams/ slabs will then be installed and sealed *in situ* with concrete to complete the deck structure.

3.1.19 Fender panels will be installed on both sides of each finger pier and mooring infrastructure (fixed bollards and/or quick-release hooks) installed.

Landside works

Site clearance and land preparation

3.1.20 The landside works consist of five areas: Central Trailer Park, North Trailer Park, East Trailer Park, South Trailer Park and West Trailer Park (see Figure 1.3 in Volume 2 of the PEIR). In preparation for the new construction works, the sites will be cleared and grubbed and unused structures will be demolished.

Soil stabilisation

3.1.21 Once the sites have been cleared, soil stabilisation – likely to be in the form of mixing soil with cement and water - will commence were required, working from one section to the next. Once complete, the foundation will be prepared for drainage, services and pavement construction.

Drainage and services installation

3.1.22 The South Trailer Park and Central Trailer Park will likely be developed as one area and the North Trailer Park, East Trailer Park, and West Trailer Parks will likely be developed as separate areas.

3.1.23 The location of the drainage and services will be set out on site and then excavated to the required depths. Once this has progressed sufficiently, installation of the surface water drainage infrastructure will commence.

Services installation

3.1.24 Installation of the services networks will follow the drainage installation, with, to an extent, a degree of overlap.

Paving/hardstanding installation

3.1.25 Once the cement bound granular material (CBGM) has been installed and levelled, either a sand layer and concrete paving blocks will be placed, roller compacted concrete, joint reinforced concrete, or asphalt will be installed

depending on the operational location. Paving blocks will be manufactured off site.

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

Building construction

3.1.27 The terminal building will be located on the south terminal area (see Figure 1.3 in Volume 2 of the PEIR) and will be constructed in parallel to the paving works. This building is anticipated to be double storey in height and as noted above, covering an area of approximately 1,200 m^2.

3.1.28 A small welfare building will also be constructed. Depending on project needs, the Immingham Eastern Ro-Ro Terminal (IERRT) development may also require the provision of a small workshop, a UK Border Force building and gatehouse.

Bridge construction

3.1.29 The bridge is likely to be a single span of approximate length 41 m, with the deck formed from structural steel. The deck would be fabricated off site, brought to site and installed in place using a heavy lift crane.

3.1.30 The bridge will be supported on two reinforced concrete abutments. At this preliminary stage, it is anticipated that the foundations of the abutments will be Continuous Flight Auger (CFA) piles.

3.1.31 Following installation of the bridge deck, the approach ramps will be installed utilising sheet piled walls infilled with engineered fill material.

3.1.32 Lastly the surfacing works will be completed and the traffic collision system installed.

Mechanical and electrical works

3.1.33 Site wide electrical distribution and associated services will be provided following the paving installation.

3.1.34 These works will involve the commissioning of pre-installed water and foul water systems, the installation of low voltage/high voltage (LV/HV) cables, shore power systems, frequency converters, transformers, switch gear and LV/HV panels etc., and the installation of Light Emitting Diode (LED) high mast lights of a height to those provided on the existing port estate.

Security and systems

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

installed to the required standards. These systems will be commissioned after the electrical commissioning is completed.

Construction waste

3.1.36 Waste will be produced as a result of the construction of the proposed development. The materials used or handled during construction and estimated quantities of waste are outlined in Table 3.1. The types and quantities of waste produced during construction will be updated as further design work is undertaken.

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

Material	Estimated quantity	Estimated waste
Steel piles	6,267 tonnes	2 %
Concrete (Redi mix)	54,925 m³	8 %
Concrete (Precast)	29,349 m³	5 %
Reinforcement	40,500 tonnes	5 %
Steel buildings	6,000 tonnes	2 %
Aggregates	164,253 tonnes	8 %
Sand	15,000 tonnes	10 %
Blocks	131,410 m³	5 %
Asphalt	55,675 tonnes	8 %
Demolition material	24,160 m³	50 %
Waste or spoil	5,000 m³	75 %

3.1.37 The waste associated with the materials used or handled during the construction of the proposed development has been estimated, albeit based on the preliminary concept design at this stage (Table 3.1). The majority of the landside waste produced during construction is anticipated to 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 development, thereby minimising the amount of waste that needs to be removed from site.

3.1.38 A site waste management plan will be prepared and submitted with the Environmental Statement (ES) and Development Consent Order (DCO) application. It will set out the proposed waste recovery and disposal system for all waste generated by the proposed development. It will also include an assessment of the impact of the waste arising from the proposed 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

3.1.39 It is envisaged that construction works will start in Quarter 3 2023 and will have been largely completed by mid-2025.

3.2 Operational phase

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

Terminal operations

3.2.2 The Terminal will operate 24 hours a day, seven days a week and 364 days a year (though with lower activity at night compared to the day). Up to four vessels (i.e. one per berth) will arrive at the Terminal per day. At this stage it is considered likely that each of these vessels will arrive at around 07:00am each day and depart around 19:00pm for overnight sailing. Tug vessels will help to manoeuvre the arriving vessel onto the berth. Whilst berthed at the Terminal, vessels will be on Ship to Shore power.

3.2.3 Accompanied heavy goods vehicles (HGVs) will roll straight off the vessel and leave the Terminal. Unaccompanied trailers will be unloaded from the vessels and then stored within the Terminal until they are ready to be collected.

3.2.4 Accompanied HGVs arriving at the Terminal will park in one of the designated trailer and container parking areas. They will then need to report to the Terminal building/gatehouse on foot where paperwork will be checked and processed, after which they will load on to the vessel ready for departure.

Operational waste

3.2.5 Operational waste will comprise general waste from the Terminal building, the welfare building, the operations team on the ground, the workshop and the UK Border Force building and gatehouse. A waste management plan will be put in place to manage waste produced within the Terminal during operation. All ship waste will be handled outside of the UK.

Maintenance dredging and disposal

3.2.6 During operation of IERRT, maintenance dredging will be required in exactly the same way as currently occurs at the Port of Immingham. The overall volumes of the maintenance dredging associated with the proposed development will be smaller compared to that of the capital dredge. At present, the total future maintenance dredge volume is estimated to be 220,000 m³ annually (see Chapter 7 Physical Processes). This volume is considered to be a conservative estimate as it assumes that the modelled siltation rate is maintained throughout the year. 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. The density of the newly settled material will be less than that from the consolidated bed dredged during the capital dredge campaign.

3.2.7 The estimated annual maintenance dredge volume (220,000 m³) will not be removed in a single maintenance dredge campaign. Maintenance dredge campaigns will be undertaken throughout the year during operation of the Terminal (with smaller volumes of material removed) as required for safe access to the berths.

3.2.8 The maintenance dredge arisings would 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.

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 the following:

- 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);
- The Construction (Design and Management) (CDM) Regulations 2015.

3.3.2 Adherence to environmental management best practice will be controlled through a Construction Environmental Management Plan (CEMP) in accordance with guidance (IEMA, 2016). The CEMP will be provided as part of the DCO application prior to works commencing and will set out the mitigation measures needed to manage environmental effects.

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.

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

IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development

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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
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
ES	Environmental Statement
GPP	Guidance for Pollution Prevention
IEMA	Institute of Environmental Management and Assessment
IERRT	Immingham Eastern Ro-Ro Terminal
ISPS	International Ship and Port Facility Security
LED	Light Emitting Diode
LV/HV	low voltage/high voltage
OGC	Office of Government Commerce
PEIR	Preliminary Environmental Information Report
PLC	Public Limited Company
PPG	Planning Practice Guidance
TSHD	Trailer Suction Hopper Dredger

Cardinal points/directions are used unless otherwise stated.

SI units are used unless otherwise stated.

Contact Us

ABPmer

Quayside Suite,
Medina Chambers
Town Quay, Southampton
SO14 2AQ

T +44 (0) 23 8071 1840
F +44 (0) 23 8071 1841
E enquiries@abpmer.co.uk

www.abpmer.co.uk