



## **The London Resort Development Consent Order**

BC080001

### **Environmental Statement Volume 2: Appendices**

#### **Appendix 3.1 – Outline Construction Method Statement**

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Planning Act 2008  
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009  
Regulation 5(2)(a)  
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017  
Regulation 12(1)

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## Revisions

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<u>01</u>	<u>General updates</u>	<u>GE</u>	<u>14/03/2022</u>	<u>LRCH</u>

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## Acronyms

ANPR	Automatic Number Plate Recognition
ArcMS	Archaeological Method Statement
ArbMS	Arboricultural Method Statement
CCP	Code of Construction Practice
CCTV	Closed Circuit Television
CDM Regulations	Construction (Design and Management) Regulations 2015
CEMP	Construction Environmental Management Plan
CEP	Community Engagement Plan
CES	Construction Electrical Supply
CKD	Cement Kiln Dust
CLS	Contaminated Land Strategy
CMS	Construction Method Statement
CTMP	Construction Traffic Management Plan
CWTP	Construction Worker Travel Plan
DCO	Development Consent Order
DNO	Distribution Network Operator
ECMS	Ecological Construction Method Statement
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EMMF	Ecological Mitigation and Management Framework
EPS	European Protected Species
EPZ	Ecological Protection Zone
ES	Environmental Statement
FRA	Flood Risk Assessment
GPR	Ground Penetrating Radar
HE	Highways England
HS1	High Speed 1 railway
IGEM	Institution of Gas Engineers & Managers
INNS	Invasive Non-Native Species
KCC	Kent County Council
LA	Local Authority
LEMP	Landscape and Ecological Management Plan
LHA	Local Highway Authority
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
M&E	Mechanical & Electrical
MMO	Marine Management Organisation
MNO	Mobile Network Operators
MWMS	Marine Works Method Statement
NJUG	National Joint Utilities Group
PINS	Planning Inspectorate

PLA	Port of London Authority
PPG	Pollution Prevention Guidelines
PRoW	Public Right of Way
RPA	Root Protection Areas
RPC	Remediation Processing Compound
SIA	Security Industry Authority
SPC	Site Preparation and Clearance
SSSI	Site of Special Scientific Interest
STP	Sewage Treatment Plant
CWAS	Temporary Workers Accommodation Strategy
UKPN	UK Power Network
UXO	Unexploded Ordnance
VL	Volume Loss



## Chapter One ◆ Introduction

### BACKGROUND

- 1.1 London Resort Company Holdings (LRCH or ‘the Applicant’) is proposing to construct and operate a major visitor attraction and leisure resort, built largely on brownfield land on the Swanscombe Peninsula in Kent on the south bank of the River Thames and with supporting transport and visitor reception facilities on the northern side of the river in Essex. The Resort is intended to have a global profile and will add a new dimension to the UK’s leisure and tourism offering.
- 1.2 On 9 May 2014 the Secretary of State for Communities and Local Government issued a Section 35 Direction under the Planning Act 2008, confirming that the proposed development qualifies as a nationally significant business or commercial project for which a Development Consent Order (DCO) is required.
- 1.3 A detailed description of the Project Site can be found in Chapter 2: *Site description* of the Environmental Statement (ES) (document reference 6.1.2) that accompanies LRCH’s DCO application. In summary the Project Site lies approximately 30 km east-south-east of central London and includes land on the south and north banks of the River Thames. On the south side of the Thames the Project Site occupies much of the Swanscombe Peninsula, formed by a meander in the river, and includes a corridor for transport connections extending generally southwards to the A2(T) trunk road. On the northern side of the river the Project Site includes areas of land east of the A1089 Ferry Road and the Tilbury Ferry Terminal, which currently provides passenger services across the river to Gravesend and incorporates the London International Cruise Terminal.
- 1.4 For clarity the area of the Project Site to the south of the River Thames is referred to in this document as the ‘Kent Project Site’ and that to the north of the River Thames is identified as the ‘Essex Project Site’. They are not contiguous.
- 1.5 Chapter 3: *Project description* of the ES (document reference 6.1.3) provides a detailed description of the proposed development. The focus of the Resort will be a Leisure Core on the Swanscombe Peninsula, comprising a range of events spaces, themed rides and attractions, entertainment venues, theatres and cinemas, developed in landscaped settings in two phases known as Gate One and Gate Two. The Gates will have entrance plazas offering ancillary retail, dining and entertainment facilities. The Resort will also include hotels, a water park connected to one of the hotels, a conference and convention centre (known as a ‘conferention’ centre), an eSports venue, creative spaces, a transport interchange including car parking and ‘back of house’ service buildings.
- 1.6 Substantial improvements are proposed to transport infrastructure. This will include a dedicated transport link between Ebbsfleet International Station, the Resort and a passenger ferry terminal beyond; a new direct road connection from the A2(T), a coach

station and passenger ferry facilities serving visitors arriving by ferry on the River Thames from central London and Tilbury. On the northern side of the Thames to the east of the Port of Tilbury, additional coach and car parking and a passenger ferry terminal are proposed to serve the Resort.

- 1.7 The Proposed Development will involve an extensive restoration of land used in the past for mineral extraction, waste disposal and industrial activities including cement and paper production, with a comprehensive landscape strategy proposed, incorporating wildlife habitats.

## THE PURPOSE OF THIS DOCUMENT

### Construction Method Statements

- 1.8 A Construction Method Statement sets out the indicative construction methodologies, works, machinery and procedures required to build a development. It helps decision makers, local communities and other interested parties to understand what the proposed construction work will entail, including the construction programme. A CMS also informs the environmental impact assessment (EIA) of those works and helps to identify the need for mitigation and controls where potential adverse effects are identified.
- 1.9 This *outline Construction Method Statement* (oCMS) is submitted alongside the DCO application for the London Resort. It is submitted in outline because some details of how the Resort will be constructed have yet to be confirmed and will require the input of contactors appointed subject to a DCO being made. Requirement 5 of the *draft DCO* (document reference 3.1) that forms a part of LRCH’s application makes provision for the submission of a final version of a Construction and Environmental Management Plan (CEMP) to the relevant planning authorities for approval, prior to construction works commencing.

### Supporting documents

- 1.10 The oCMS is an overarching document that establishes the framework for construction activities associated with the London Resort. It describes at a high level how the London Resort will be constructed and will set out the overall programme and phasing of works. Beneath the oCMS sits a series of project implementation documents that address how the construction process will be rendered acceptable in environmental, transport and amenity terms. These additional documents are identified in Table 1.1 below.

**Table 1.1: Other project implementation documents presented in outline or proposed by LRCH**

<b>Document</b>	<b>Purpose</b>
Archaeological Method Statement (ArcMS)	The ArcMS will set out how archaeological survey and investigation will be integrated with the construction programme.
Construction Environmental Management Plan (CEMP) (document reference 6.2.3.2)	The CEMP describes the measures proposed to protect the environment and local amenity during construction, covering both land based and marine operations.
Community Engagement Plan (CEP) (Appendix 10.0 to this document)	The CEP explains how dialogue with the local communities who may be affected by the construction activities of the London Resort and procedures for managing and responding to complaints will work.
Contaminated Land Management Strategy (CLMS) (document reference 6.2.18.9)	The CLMS describes the specialist measures that will be employed for works affecting contaminated land and landfill sites.
Construction Transport Management Plan (CTMP) (document reference 6.2.10.1)	The CTMP establishes the indicative principles to be adopted with regards to managing construction traffic, both via road and river.
Construction Waste Management Plan (CWMP) (document reference 6.2.19.2)	The CWMP identifies the principles of waste handling across the Project Site.
Landscape and Ecology Management Plan (LEMP) (document reference 6.2.11.8)	The LEMP identifies management considerations in respect of flora and fauna species and habitat protection, relocation, recovery and enhancement during the construction process. It also considers arboriculture measures.
Construction Workforce Accommodation Strategy (CWAS) (document reference 6.2.7.9)	The CWAS identifies how the temporary workforce associated with the Project Site will be accommodated.

### Structure of this oCMS

1.11 This document is structured as follows:

- **Chapter 2** sets out the indicative construction programme in respect of the London Resort and the principal works phases, including site preparation and clearance works, main construction works, removal of temporary structures and landscape restoration works;

- **Chapter 3** describes the indicative construction methods used in respect of the site preparation and clearance works;
- **Chapter 4** identifies the indicative construction methods used in respect of the main construction process;
- **Chapter 5** describes the indicative construction methods used in respect of the final stage of construction works, including the dismantling of temporary structures and landscape restoration works;
- **Chapter 6** describes the indicative measures to be adopted towards asset protection;
- **Chapter 7** describes the indicative health and safety strategy for the construction of the London Resort.

## LIMITATIONS

- 1.12 The London Resort is a significant project both in terms of ambition and scale. The planned programme for delivery of the first phase is in the order of 28 to 32 months. The DCO application seeks consent for development parameters, with detailed design being subject to approval by the relevant planning authorities in accordance with proposed DCO Requirements. For these reasons the construction methods described in this oCMS are necessarily indicative but based upon reasonable assumptions.
- 1.13 LRCH recognises the importance of effective management and control of the construction phase and will proceed with early contractor engagement to ensure that safety, security, and construction logistics and general local amenity impacts are responsibly addressed. An Outline Community Engagement Plan (Construction) is provided at Appendix 10.0 of this document. LRCH will appoint a Principal Contractor for the Project to control construction activities involving more than one contractor. The Principal Contractors will have an important role in managing health and safety risks during the construction phase. In accordance with the Health and Safety Executive’s Construction (Design and Management) Regulations 2015 it will be the responsibility of Principal Contractor to:
- plan, manage, monitor and coordinate the entire construction phase;
  - take account of the health and safety risks to everyone affected by the work (including members of the public), in planning and managing the measures needed to control them;
  - liaise with the client and principal designer for the duration of the project to ensure that all risks are effectively managed;

- prepare a written construction phase plan (PDF)- Portable Document Format before the construction phase begins, implement, and then regularly review and revise it to make sure it remains fit for purpose;
- have ongoing arrangements in place for managing health and safety throughout the construction phase;
- consult and engage with workers about their health, safety and welfare;
- ensure suitable welfare facilities are provided from the start and maintained throughout the construction phase;
- check that anyone they appoint has the skills, knowledge, experience and, where relevant, the organisational capability to carry out their work safely and without risk to health;
- ensure all workers have site-specific inductions, and any further information and training they need;
- take steps to prevent unauthorised access to the site; and
- liaise with the principal designer to share any information relevant to the planning, management, monitoring and coordination of the pre-construction phase.

1.14 As an interim position, the consultant team for the project has undertaken outline analysis to help support a worst-case position for the potential scale of movement of construction materials and construction personnel. Once confirmed, construction methods will be described in a final draft version of the CMS and the other implementation documents identified in Table 1.1 above. In accordance with the relevant Requirements of the draft DCO, these documents would be submitted for approval by the relevant planning authorities once the DCO is made by the Secretary of State.

1.15 The methodologies identified in the oCMS have informed the assessment of construction and site restoration impacts in the Environmental Statement that forms a part of LRCH's DCO application. They have also informed the drafting of Requirements and Protective Provisions in the *draft DCO* (document reference 3.1).

## Chapter Two ◆ Work phasing and construction programme

### INTRODUCTION

2.1 This chapter presents in outline LRCH's anticipated phasing and construction programme.

### PHASING

2.2 For each area of the Project Site the main construction phases are as follows:

- Phase I: site preparation and clearance (SPC) works including enabling works and land remediation;
- Phase II: main construction works;
- Phase III: dismantling of temporary structures and landscape restoration works.

2.3 The main activities proposed in each phase are summarised below and considered in more detail in subsequent chapters of this oCMS.

#### Site preparation and clearance works

2.4 SPC works are anticipated to consist of the following principal activities.

- **Contractor mobilisation**, including the establishment of contractors' compounds (Appendix 3.0), induction training and security checks for the workforce, erection of temporary buildings providing office space and workforce welfare facilities, the creation of a site compound and satellite temporary construction facilities.
- **Site access and security**, including the establishment of a secure construction site with security controls for people, equipment and materials entering and leaving the site (Appendix 3.0).
- **Site establishment**, including demolition, enabling works, temporary construction site compound and car parking, security buildings, control room, access, egress and gatehouse, material storage areas, temporary construction fencing around the perimeter of the site, security fencing for the SPC works site compound and satellite compound, and fencing to protect features of landscape and ecological interest
- **Management of roads and accesses**, including management of footpath users to ensure their safety near site works; temporary closures of roads to enable boundary

wall/fence removal, plant and traffic crossing arrangements and access roads and haul routes to the construction sites.

- **Vegetation clearance and excavations**, including targeted removal of most above ground vegetation to ground level. This work will be subject to mitigation and controls proposed in the CEMP and LEMP (see Table 1.1. above).
- **Clearance of other features**, including targeted removal of above ground features e.g. gates and poles and demolition of walls and buildings to ground level.
- **Remediation and land management**, including the establishment of a remediation processing compound (RPC) for contaminated land remediation, the installation of temporary haul routes for dedicated access between contaminated sites; remediation of land that is known to be contaminated, waste management and material storage/management, management of vegetation including eradication/removal of identified invasive non-native species (INNS) and INNS impacted soils, and the protection or translocation of flora and fauna of ecological value.

## Main construction works

2.5 Main construction works are anticipated to include the following.

- **Earthworks**, including topsoil and subsoil stripping and storage, bulk earthworks and deep excavations:
- **Marine works**, including shore protection works, drainage outfalls, navigation aids, a temporary access ramp, temporary outfalls and a temporary barge berth;
- **Establishment of a site campus** comprising modular type accommodation blocks and associated buildings and services, including changing rooms, showers, briefing rooms and canteens;
- **Erection of the principal buildings** inside and outside the leisure core, including the conferention centre, eSports building, hotels, events spaces, retail, commercial, dining and entertainment facilities;
- **Erection of rides and attractions**, including themed rides, attractions, entertainment venues and support features;
- **Ancillary buildings**, structures and features, including office buildings, waste and recycling facilities (conventional waste storage compound), site infrastructure (roads, parking, fencing and lighting) and advance landscape and planting works. Some elements would be permanent, whilst others would only be provided during construction;

- **Utilities provision**, including temporary and permanent water, drainage, electricity, gas and telecoms infrastructure.

**Dismantling of temporary structures and landscape restoration works**

2.6 These are expected to include the following activities.

- Dismantling of temporary structures and the removal of infrastructure used for construction.
- Completion of landscape and planting works and ecological habitat restoration following the removal of the temporary construction facilities.

2.7 Indicative construction phasing plans or ‘time slices’ are provided in Appendix 9.0 and represent a high-level view of the Project’s construction timeline. Table 2.1 outlines the main works phasing.

**Table 2.1: Outline of construction phasing for the London Resort**

Month	Construction Phase/Stage
-9/-1	Pre-contract planning
-5/-1	Licences
1	Enabling Works
1	Start on Site – Gate 1
3/6	Demolition – Site Grading – Remediation
6/9	Utilities – Internal road network
9/12	Construction of building structures
12/15	Construction of building structures
15/18	Start on Site – Gate 1
18/21	Construction ongoing structures – Gate 1
21/24	Gate 1 – construction ongoing and building structures progressing
24-27	Final fitting out and commissioning to all buildings
27-30	Completion of all buildings and landscaping and external works
30	Gate 1 and complex open
	Start on Site – Gate 2
	Gate 2 – Complete and operational

**INDICATIVE CONSTRUCTION PROGRAMME**

2.8 The indicative construction programme for the works is included in Appendix 1.0 and an indicative construction programme for the Resort Access Road is provided in Appendix 2.0. The construction programme will continue to be developed as detailed design work progresses and once Requirements and other obligations arising from the DCO are



confirmed. Construction would only commence once a DCO is made. The Secretary of State's decision on whether to make a DCO for the London Resort is anticipated in the second quarter of 2022. Locally approved planning permissions are being contemplated by LRCH for any advance works required.

2.9 The main period for construction works is anticipated to extend over approximately seven years, with Gate 1 of the Resort becoming operational approximately 30 months after the DCO is made, and Gate 2 operational approximately seven years after the same start-date:

- The London Resort would undertake a soft opening of its initial phase (known as Gate One) in 2025, with Gate One fully open during 2026 followed by a second phase (Gate Two) in 2029 and estimated to reach maturity in 2038 (indicative dates).
- ~~Gate 1 — start on site anticipated to be Q3 2023<sup>2</sup>, with Gate 1 completion and open to visiting members of the public in July/August 2025<sup>4</sup>;~~
- ~~Gate 2 — start on site anticipated during 2027, with Gate 2 completion and open to visiting members of the public during 2029.~~

### Programme sequence

2.10 Within the indicative construction programme, it is anticipated the following sequence will be followed:

- Following completion of the site preparation and clearance works, groundworks will be commenced in parallel with internal access road construction on the Swanscombe Peninsula.
- It is anticipated that groundworks at the Kent Project Site will progress from the River Thames (west) site frontage across the site to the new Access Road entrance (east).
- The internal road construction will incorporate utilities infrastructure where appropriate.
- Where possible, landscape and planting works will be progressed in parallel to enable plants and wildlife habitats to establish.
- Once the works are commenced on the Swanscombe Peninsula, construction of the Resort Access Road from the A2(T) will commence in line with land acquisition/possession with a targeted completion in month 24 from start on site. An outline programme for the construction of the Resort Access Road is provided in Appendix 2.0.
- Material handling will adopt the one-way system, with bulk materials such as construction aggregates being delivered to Bell Wharf on the western side of the Swanscombe Peninsula on barges originating from the port of Tilbury or further afield. Bell Wharf will be upgraded at an early stage to facilitate materials imports.

- It is anticipated that Seacon's existing freight handling facilities at Tower Wharf, on the eastern side of the Swanscombe peninsula, will be used for the delivery of palletised building materials.
- Each building and structure in the Resort will be allocated via zones, colours and a numerical code to facilitate the efficient delivery of construction materials.
- Upon completion of groundworks and construction haul routes the building structures will be progressed.
- Each building will have an individual construction programme. In general these programmes will follow a 'traditional' sequence as follows:
  - foundations;
  - superstructure;
  - cladding and roof trades; and
  - internal services and finishes.
- The complexity of each building and the ultimate design will enable a detailed programme to be created for each within the overall anticipated programmes for the Resort.

## Chapter Three ◆ Site preparation and clearance works

### INTRODUCTION

3.1 This chapter describes the site preparation and clearance or 'SPC' works that will form the first main phase of development. The process begins with a range of site investigations to update and supplement site surveys undertaken to inform the EIA.

### SURVEYS

3.2 The following further site surveys are likely to be required to support the infrastructure elements of the proposed scheme:

- combined geo-environmental and geotechnical site survey;
- archaeological site survey;
- closed-circuit television (CCTV) inspection of drainage;
- on-site utility ground penetrating radar (GPR) surveys to confirm desktop understanding of existing infrastructure;
- marine infrastructure condition surveys;
- supplementary marine ecological and geotechnical surveys;
- unexploded ordnance (UXO) ground investigation.

3.3 This is not an exhaustive list and additional surveys may well be identified during the next stage of design.

### PRELIMINARY WORKS

3.4 During the construction phase of the Project a range of temporary buildings, structures and supporting infrastructure is required to support the construction works, including:

- site compounds (site compound, material and satellite compounds and the main contractor compound);
- concrete batching plant;

- other temporary buildings such as the provision of site welfare and security facilities;
- refurbishment of Bell Wharf and potential construction of new roll-on / roll-off facility;
- site access, security and fencing;
- haul roads and crossings;
- temporary and permanent stopping-up and diversion of public rights of way;
- utility removal and diversions;
- land drainage;
- temporary foul water drainage network connections to existing facilities.

### **Construction compounds and temporary buildings/structures**

- 3.5 Site compounds including a main compound and materials and satellite compounds would provide office space and workforce welfare facilities at the Kent and Essex Project Sites. Materials compounds would be provided for the safe and secure storage of construction materials, and satellite compounds for the secure storage of plant and equipment. The locations of these are indicated in Appendix 6.0.
- 3.6 Temporary office and welfare facilities in the site compounds would be constructed using modular buildings transported to site by road and assembled on concrete foundations using mobile cranes and elevated working platforms.
- 3.7 Materials and satellite compounds would be constructed using mechanical earthmoving equipment such as excavators, bulldozers and graders to provide suitable surfaces for the storage and movement of material and vehicles.
- 3.8 The number, sizing and location of temporary facilities/buildings will be developed with the Principal Contractor. Temporary electricity, water and IT connections will be required at these locations. The principal areas are indicated on Appendix 6.0.

### **Temporary workforce accommodation**

- 3.9 Detailed arrangements for temporary workforce accommodation are under development. However, there is strong indication the solution will be a combination of mobile homes located at the Kent Project Site within a 'Site Campus' (Appendix 6.0) together with the potential to hire / procure a cruise ship docked at the Port of Tilbury to facilitate larger numbers of construction workers. Both options individually and cumulatively provide significant opportunities for temporary workforce accommodation in proximity to the Project Sites. This will be evaluated as a part of the *Construction Workforce Accommodation Strategy (CWAS)* and *Outline Construction Worker Travel Plan (CWTP)*.

## Marine infrastructure

3.10 It is proposed to use the River Thames to support the import of construction materials and export of construction waste as much as possible to reduce the impacts on the local road network and community. This will involve the construction / upgrade of facilities both on the Swanscombe Peninsula and at the Port of Tilbury.

### *Swanscombe Peninsula*

3.11 At this stage, three design options are being progressed for Swanscombe Peninsula, with a view to confirming a preferred option upon completion of further studies to be undertaken in parallel with the DCO process. This approach has been discussed and agreed with the Port of London Authority (PLA) and Marine Management Organisation (MMO) as well as other local stakeholders. The three options (A, B and C) are summarised below in Table 3.1 and depicted in Figures 3.1, 3.2 and 3.3 respectively.

**Table 3.1: Illustrative design options at Swanscombe Peninsula**

Option	Works packages			Figure
A	New ferry pontoon with linkspan (not required as part of enabling works)	Refurbishment of Bell Wharf – an open-piled quay deck	Construction of a new floating roll-on / roll-off platform and linkspan	3.1
B	New ferry pontoon with linkspan (not required as part of enabling works)	Refurbishment of Bell Wharf – an open-piled quay deck	Refurbishment/reinforcement of White Jetty – an open-piled deck structure in an uncertain state of repair	3.2
C	New ferry pontoon with linkspan (not required as part of enabling works)	Refurbishment of Bell Wharf – an open-piled quay deck	Dredging to deepen access to Bell Wharf	3.3

Figure 3.1: Swanscombe Peninsula marine infrastructure Option A

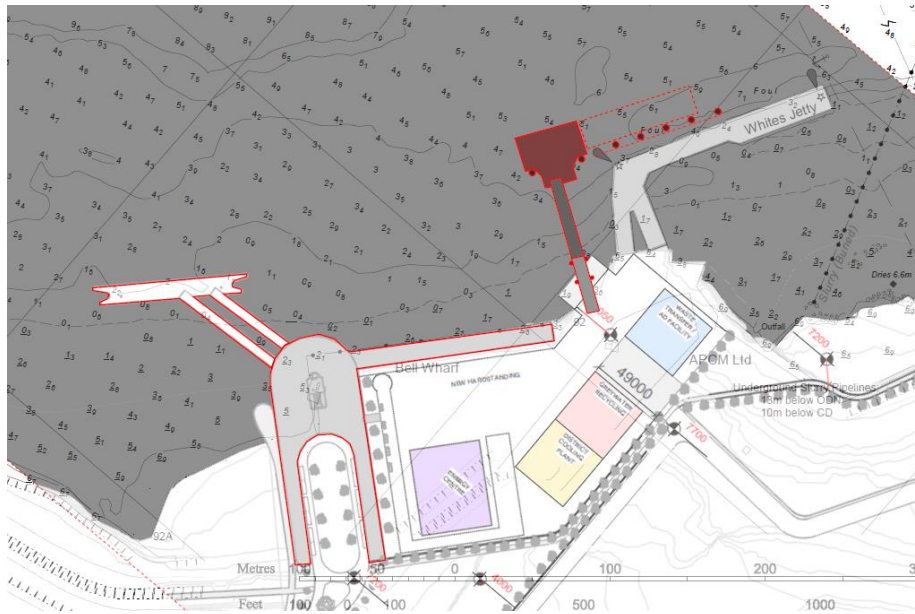


Figure 3.2: Swanscombe Peninsula marine infrastructure Option B

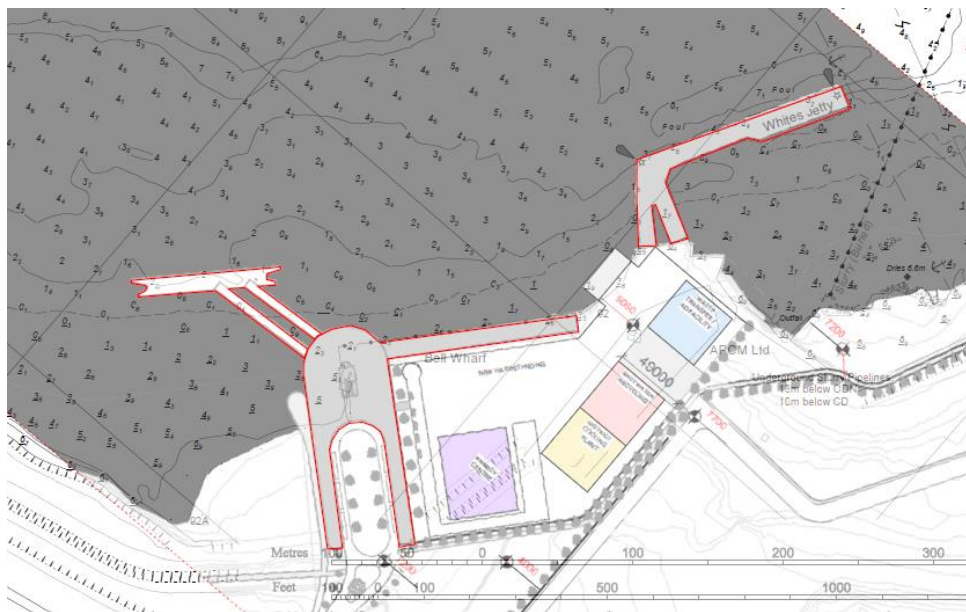
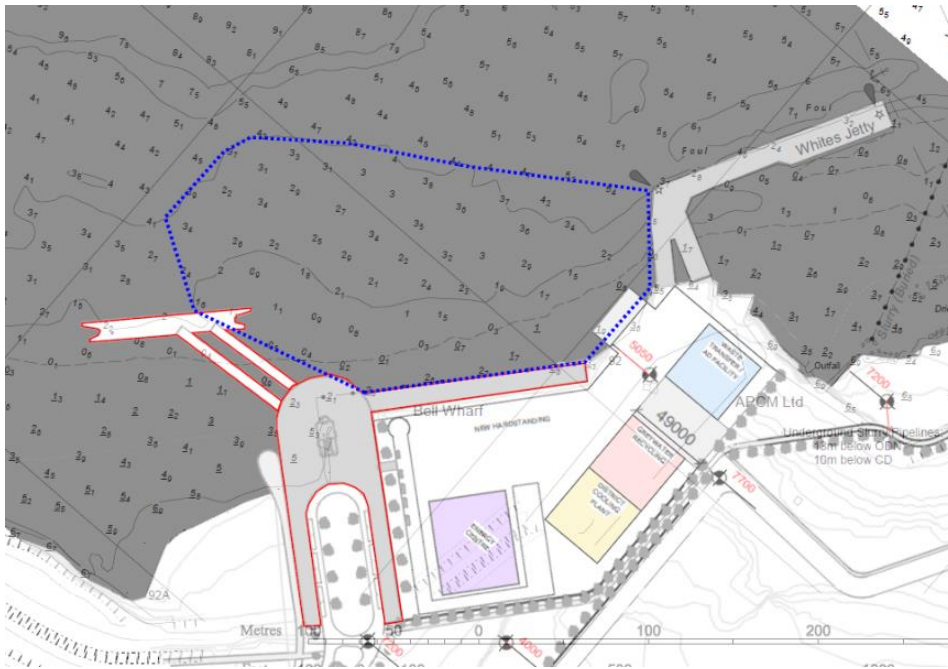


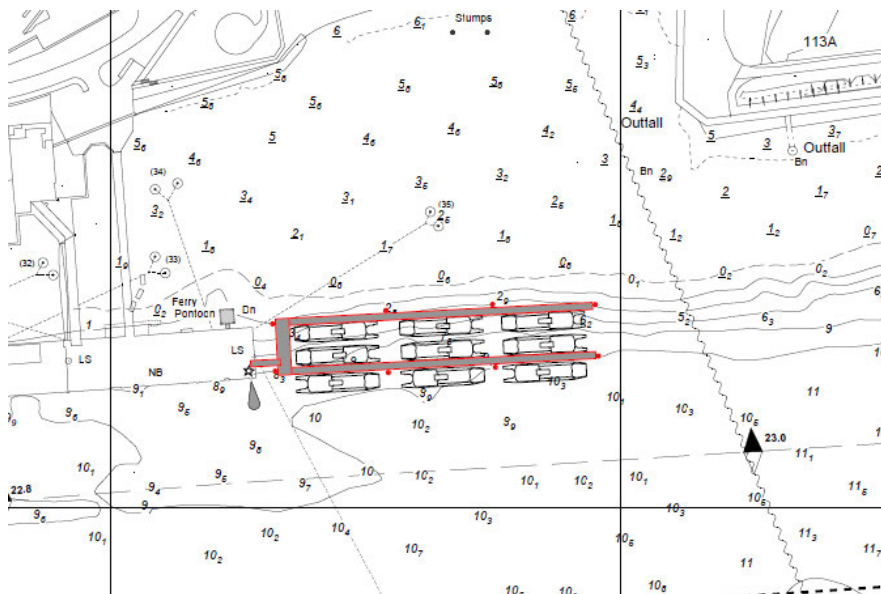
Figure 3.3: Swanscombe Peninsula marine infrastructure Option C



**Port of Tilbury**

3.12 At the Port of Tilbury, it is proposed to provide a new ferry pontoon with a linkspan or similar structure. This is shown in Figure 3.4 below.

Figure 3.4: Illustrative Linkspan ferry pontoon at Port of Tilbury



### **Construction methodologies**

3.13 The construction methodology required for the formation of these options would include:

- **Floating pontoons and guide piles** – for passenger ferry access through all tidal levels, a floating pontoon with linkspan ramps would be required. This would require a series of ‘guide piles’ to be driven or bored. It is most likely this piling would be undertaken using an anchored or ‘spud’ barge. The type of piles would be determined through future ground investigation works. Floating pontoons would then be attached to the piles. The pontoons would likely be constructed off-site, and installed from a floating or anchored barge. Some final finishing such as surfacing, balustrades and signage may be installed *in-situ*.
- **Linkspan installation** – Linkspans are a ramp linking the floating pontoons to a fixed structure or the shoreline. They adjust in gradient according to the state of the tide. These elements would be constructed off-site and delivered either by barge or lorry (in sections) to the Project Site. They would then be craned into position from either the land or the River Thames depending on access requirements. Crane capacity would be determined for each of the options, with Option A requiring very significant crane capacity.
- **Works to existing open-piled structures** – such works to existing structures would depend on the option pursued and the outcome of structural surveys. Typical works for refurbishment of steel structures would be shot-blasting, possibly plating, and repainting. Reinforced concrete structures might require new casting to increase cover depths to steel. Such works must be undertaken in the dry, and so dewatering of the structures and their immediate environment would be required combined with encasement of the underneath of the structures. This could be through temporary sheetpiling or the installation of a bund with a diaphragm wall.
- **Strengthening of the structures** – this would likely include the installation of additional piles and superstructure. This would require anchored barge access to provide the working platform.
- **Dredging** – excavation of the riverbed could be achieved by a number of techniques which would depend on the ground conditions to be confirmed by further investigations. The task can be undertaken using floating vessels, either anchored barges with mounted excavators or specialised dredging vessels, or by dewatering the area through use of a bund of sheetpiling, and excavation undertaken using standard land-based equipment. The excavated material would either be disposed of in a licensed offshore spoil area, or, if possible, used beneficially in either the works for this site or others. It has been assumed that dredging will be undertaken using backhoe dredgers and associated hopper barges.



## Identification of construction material movements

3.14 The main materials movements have been identified as follows:

- **Bulk earthworks** – Excavation of general areas of cut and placement of areas of fill within the overall project boundaries, with works divided between volumes for Gate 1 and later supporting development, and Gate 2. The works will include the general site strip, flood bunds, adjustments to the surrounding landscape and wetland areas, hard standings, building base plates, capping and management required for licenced waste tips, and main access road. There will also be arisings from piling, excavations, from utility trenches and sustainable drainage features, plus material backfill to trenches, etc. For the landscape strategy there will also be some topsoil requirements for marshland areas and other areas of ecological enhancement. There will be an opportunity to re-use a significant quantity of the materials excavated from the site, although some will require improvement (probably by treating materials in on-site soil ‘hospitals’ in a similar manner to the operation undertaken for the London Olympic Park).
- **Building materials** – Each of the proposed buildings will require a mixture of bulk, component and modular construction materials. These will range from concrete, steel and glass components for the major structural aspects to pipework, duct work, cabling, HVAC, other fixtures and fittings, etc.
- **Utility infrastructure** – This component of the project will include a wide array of materials from on-site transformer sets and pumping stations to pipes, ducts, cables and the manholes, draw-pits and inspection chambers that allow for future maintenance.
- **Foundations** – The nature of the underlying ground conditions on the Peninsula dictates that the higher-rise buildings and assets will require piled foundations. In some areas, operations such as dynamic compaction or vibro-compaction and the use of stone columns may be appropriate. In addition, there will be a range of different foundation bases from pile caps to suspended or floating slabs, etc.
- **Civil engineering infrastructure (bridges and tunnels, etc.)** – The main access route in particular will require retaining walls in some places to support ground profiles in restricted boundary conditions. There is also a series of tunnels to be constructed through the two chalk spines supporting the North Kent Rail line and the London Road.
- **Demolition materials site enabling** – There are a number of existing buildings and hard standings, etc., that will need demolition during site enabling works. There may be potential to re-use some of the demolition materials within the new construction and efforts will be made to maximise this opportunity.

- **Theme park rides and other structures** – much of the construction elements for the theme park Gates will be manufactured off-site and delivered in modular form for rigging on the site of Gate 1 (in the initial phase of work).
- **General items for construction operations** – Provisioning for site personnel welfare and general site operations will be required.

**Overall access and egress strategy for materials and components on and off the Peninsula**

- 3.15 LRCH is committed to reducing the impact of not just the operational aspects of the London Resort but also the impact during construction and where possible the River Thames is viewed as the obvious means of delivery for construction materials.
- 3.16 The overall strategy will be to utilise the River Thames for delivery and removal of as much material as possible. The Principal Contractor will seek to maximise this percentage to ensure the minimum use of the existing road network. In progressing along this route, the aim will be to deliver at least 80% of construction materials using the River Thames.
- 3.17 To achieve this, a strategic partnership has been established with the Port of Tilbury, which will provide warehousing for delivery of materials for onward delivery to the Project Site, car parking for operatives accessing the site via ferry crossings, berths for barges and, as required, a cruise ship berth for temporary workers' accommodation.
- 3.18 The existing landing on Swanscombe Peninsula, known as Bell Wharf, will be utilised (see the site plan in Appendix 3.0). Bell Wharf will eventually be part of the completed Project providing access to the London Resort for visitors and staff from central London or the Port of Tilbury from the River Thames when operational. Bell Wharf will be refurbished to enable its utilisation for the first phase of construction. For in the order of the first 24 months of construction it is anticipated that Bell Wharf will be the primary point for materials delivery, receiving approximately 40 to 50% of all incoming components and materials. Bell Wharf has limited operating windows due to the river's tidal cycles. However, it will provide a landing point both from and to the Project. Tower Wharf at Seacon (see paragraph 3.21) will accommodate the difference to achieve the 80% of construction materials using the River Thames.
- 3.19 The Port of Tilbury will provide an interim staging location for deliveries to the Project Site, including internal and external storage facilities, lorry offloading and car parking.
- 3.20 It is anticipated that the testing and approval of pre-manufactured engineered components will be undertaken at the Port of Tilbury, prior to delivery. Large components required for construction will be delivered to the Port of Tilbury where, if required, they can be reduced in size to enable ease of delivery via barges to Bell Wharf.
- 3.21 It is anticipated that Tower Wharf (Seacon, Northfleet, on the eastern edge of the Kent Project Site) will also be used for the import of construction materials given its convenient location adjacent to the Port of Tilbury. Tower Wharf is equipped for cargo handling,

storage and distribution and incorporates a covered berth and deep water loading, with easy access to the Project Site. Seacon offers extensive storage facilities and the capacity to handle 33m long loads with crane capacity of 40 tonnes, which will provide ease of early access to the Project Site.

- 3.22 Waste and material management will be managed and co-ordinated carefully. Waste materials being moved off-site will predominantly utilise Bell Wharf, with container and palletised waste exported via both Bell Wharf and Tower Wharf.
- 3.23 The impact of movement of materials for a construction programme of this scale is complex and will require contractor experience and input to ensure that it is undertaken in the most efficient way possible. The key parameters for determining the means and route of delivery to the Project Site will include the volumes/tonnages of materials, types of materials, overall duration of construction, requirements at different phases of construction, and access to site entry points.
- 3.24 Initial analysis of the overall construction logistics operation based on the worst case scenario has generated the following outline set of data, as set out in Table 3.2 below.

**Table 3.2: Construction logistics operations**

Topic	Quantum/value
Construction materials <sup>1</sup> (of which bulk earthworks form 30% of overall quantum)	3.5-4 million tonnes
Duration of construction operations <sup>2</sup> (minimum period considered)	600 days
Materials delivered via road <sup>3</sup>	10% to 20%
Road haulage trucks	20 tonne payload
Materials delivered by River Thames	80% to 90%
Barge handling capacity	1,000 tonnes

3.25 Construction of the access road will require approximately 20 road-based truck movements per day. Alongside the movements identified in Table 3.2 above, the following average daily movements of vehicles/vessels are forecast:

- road-based trucks: approximately 100 visits per day (up to 100 arrivals and 100 departures per day giving a total of 200 movements);
- river barges: between 5-6 vessel visits per day.

<sup>1</sup> The estimated tonnage is likely to be greater than the final quantum with design development focused particularly on reduction of import of fill materials.

<sup>2</sup> The construction period will be in excess of 900 days so this is a conservative position, especially given the opportunity to use the River for movement.

<sup>3</sup> The upper end of the forecast for road haulage is considered.

3.26 Whilst figures attached to each parameter are outline in nature, they are also conservative. For the worst case for construction vehicle/vessel movement, these numbers have been increased by approximately 50% for river barges and 80% for road-based trucks to ensure adequate sensitivity and the following average daily movements for have been used for assessment purposes:

- road-based trucks: 180 no. 20 tonne lorries (includes 20 road-based trucks for the access road construction) (up to 180 arrivals and 180 departures per day giving a total of 360 movements);
- river barges: 10 no. 1,000 tonne barges.

3.27 In terms of principal routes that these transport modes will follow, road-based vehicles will access the Kent Project Site from the A2(T) trunk road or the A226 London Road / Galley Hill Road to the south of the Project Site. This would be dependent on the phase of construction and the destination of the delivery, as explained in the CTMP. LRCH is investigating the establishment of a temporary storage consolidation unit at Tilbury Port for construction and servicing and deliveries. Most river vessels will ply between Port of Tilbury and Swanscombe Peninsula (either at Bell Wharf or Seacon's Tower Wharf) with some potential routes from central London or from east of Tilbury, especially dependent upon the source of bulk fill materials.

***Development of the approach to materials logistics***

3.28 It is acknowledged that the current position adopted for the analysis of construction logistics is in outline form. However, the approach taken has been to identify realistic worst case scenarios to undertake qualitative and quantitative assessments of the potential impacts in managing deliveries to (and from) the Project Site. Early contractor dialogue and engagement on the design development and delivery of the Project will present the opportunity to add greater depth of detail and confidence to the overall planning and management of the whole construction process, including materials logistics.

**Contaminated land**

3.29 In an absolute worst case scenario none of the spoil would be suitable for re-use or re-purposing on site (chemically or geotechnically), requiring transport and disposal to an off-site landfill and with a consequent requirement to import primary and/or secondary aggregates. This would entail additional environmental impacts including more transport movements. Equally an absolute best case would be that all spoil arisings could be re-used as fill on site, resulting in significant cost savings and effectively avoiding most off-site environmental impacts.

3.29 A more realistic scenario is that a proportion of the spoil arisings would be readily suitable for re-use on site, a proportion would be suitable following treatment, and a proportion would not be suitable for re-use and would be disposed off-site to landfill. Appendix 8.9

to Chapter 18: *Soils, hydrology and ground conditions* of the ES (document reference 6.2.18.9) is the *Contaminated Land Management Strategy* for the Proposed Development. The strategy describes the measures proposed to risk-assess, remediate and where possible reuse contaminated soil, taking into account the protection of human health and the environment. Until a full contaminated land and geotechnical site investigation has been undertaken, it will not be possible to ascertain the likely volumes of material requiring treatment. As a result, a realistic worst case scenario has been taken as the basis for the EIA for the London Resort project.

- 3.30 There are some particular considerations associated with the potential beneficial re-use of any excavated cement kiln dust (CKD) that currently occupies significant areas of the Swanscombe Peninsula. These reflect its physical and chemical properties and its potential as a fill material, and as an additive to treat/improve other soil arisings. Appendix A: *Use of cement kiln dust* to the *Contaminated Land Management Strategy* (document reference 6.2.18.9, appended to Chapter 18: *Soils, hydrology and ground conditions* of the ES) provides further information on how CKD specifically can be reused.
- 3.31 As the *Contaminated Land Management Strategy* explains, the main requirements to enable the most efficient re-use of spoil and to minimise off-site disposal are:
- the space, time and ambition to maximise beneficial re-use, minimise off-site disposal and minimise demand for primary aggregates;
  - sound definition of the existing ground conditions, including the location, type, nature, physical and chemical properties of the various soil types;
  - plan and track earthworks – a well-defined, operated and recorded materials management plan covering soil sources, properties, treatment and destination;
  - rapid test techniques including the use of a field kit and on-site laboratory, and pragmatic on-site assessment to determine the fate of spoil arisings in terms of:
    - direct re-use;
    - treatment for re-use; and/or
    - off-site disposal;
  - the effective on-site treatment of soils to render them suitable.
- 3.32 A remediation processing compound (RPC) would be established on site and be designed to provide several treatment techniques necessary to cope with the variable physical and chemical properties of the soils excavated from the earthworks. Such a facility would typically occupy some 2.5 ha and would be in operation for a minimum of one year. The RPC will be located within the Gate 2 area of the Proposed Development. The treatment techniques provided are likely to include screening, sorting, stabilisation, washing, bioremediation and thermal treatments. Topsoil manufacture might also be possible.

- 3.33 The efficient use of the facility will balance the throughput of the soil arriving for treatment with the demand for fill, thus minimising the stockpiling of soils at either end of the process.

## **Materials**

### ***Cementitious materials***

- 3.34 The majority of cement-based or ‘cementitious’ materials would be brought onto the Kent Project Site via the River Thames. It is anticipated that this would be stored in silos, connected to a concrete batching plant (see below), in sufficient quantities to provide continuity of production. Opportunities for recycled aggregates and cement replacement would be considered where possible.

### ***Timber***

- 3.35 The use of timber on-site would be monitored closely to optimise reuse. The majority of timber used in the contract in the early stages will be for temporary works such as formwork and support structures. A programme of maximising the re-use of these timber materials will be adopted. The responsible sourcing of timber will be ensured, with a commitment to using only sustainably sourced wood. It is anticipated that sourcing locally within the UK will be prioritised, accepting that some sourcing may be required from elsewhere in Europe. Timber products will be delivered on pallets to Bell Wharf and Tower Wharf.

### ***Pre-manufactured construction components***

- 3.36 As noted above, LRCH will seek to use modularised construction methods where possible. This strategy will include hotel bedroom pods, pre-assembled mechanical and electrical (M&E) plant, structural frames, accommodation buildings, cladding systems and mechanical components. These components would be delivered through Bell Wharf and Tower Wharf via the River Thames on barges.

### ***Electrical infrastructure***

- 3.37 Electrical infrastructure includes the following works to provide temporary electrical supplies for use during construction:
- connection of 132kV substation adjacent to the site;
  - installation of a construction electrical supply (CES) substation, including a 132kV to 11kV transformer, switchgear and associated plant, apparatus, buildings and support structures; and

- 11kV ring mains circuits to provide electrical supplies to the temporary construction facilities, including the workers temporary accommodation.

3.38 This temporary electricity infrastructure will reduce the need to use mobile diesel generators during construction, with noise and air quality benefits.

### ***Sustainability***

3.39 LRCH will encourage the use of sustainable sourcing standards for materials including cement and steel, concrete pipes and blocks, windows, flooring, roof tiles, plastics and wood products. Sustainable sourcing standards can be achieved through schemes such as ISO 14001 and ECO Reinforcement.

### ***Bulk fill***

3.40 Ground conditions and contamination surveys, together with detailed design and modelling of the civil and ground works, would inform the cut/fill arrangements and any need for export or import of materials. A strategy to minimise the extent of import/export would be implemented, including on-site stockpiling of material where appropriate. Subject to the availability of materials of suitable quality and sufficient quantity, it is anticipated that regional or British sourcing would be achievable. Bulk fill will be delivered to Bell Wharf.

### ***Aggregates***

3.41 It is anticipated that aggregates for the purposes of main building construction would be procured from a single source so as to maintain quality and consistency. However, the final strategy for aggregates is still to be determined pending the engagement of a Principal Contractor. It is anticipated that these would be sourced from within the UK and that the majority of this material would be brought to site by river.

### ***Concrete batching plant and other facilities***

3.42 A concrete batching plant would be constructed at the Kent Project Site using prefabricated and manufactured batching plant component such as mixers, conveyors and cement silos, as well as *in situ* reinforced concrete bins for the storage of aggregates. Reinforced concrete foundations would be constructed initially, followed by assembly of prefabricated components using mobile cranes and elevated working platforms. Structural steelwork would be erected to form a framework to support the batching plant, hoppers and storage bins. The construction of storage bins would be undertaken using formwork, reinforcement fixing and casting of sections of storage in a phased sequence. The proposed location of the concrete batching plant is shown in Appendix 6.0.

***Other temporary buildings***

- 3.43 Other temporary buildings will be constructed from modular buildings or steel frame systems. Their approximate locations are indicated in Appendix 6.0. Steel frame buildings and their cladding and roofing materials would be constructed on concrete foundations using mobile cranes and elevated working platforms.
- 3.44 The building designs would incorporate modern, efficient design solutions. Wherever practicable, the temporary buildings would be designed with a modular construction and would be manufactured off-site.

**Site access, security and fencing**

- 3.45 Site access, security facilities and fencing are an essential component for the effective management of the Project because construction sites are extremely susceptible to safety hazards, theft and criminal damage. Besides the need to protect materials, plant and completed structures there needs to be efficient security measures and operations to ensure the well-being of the workforce.
- 3.46 Potential threats to the construction sites include:
- theft;
  - criminal damage (including arson);
  - assault (contractors’ employees);
  - protest;
  - injury or even fatalities if members of the general public stray into areas where construction activities are taking place.
- 3.47 Mitigation measures will include the following:
- continuous presence of security personnel;
  - secure perimeter;
  - perimeter detection systems;
  - control of pedestrian and vehicular access;
  - remote surveillance (video surveillance systems);
  - security marked as part of a recognised scheme and where appropriate security tracked plant.



- 3.48 Before the construction phase commences a dedicated risk assessment for the Project Sites will be developed, in which threats and risks from both criminal and terrorist elements are to be identified.
- 3.49 The London Resort Project Sites will be of such a size and will accommodate considerable volumes of plant and materials such that it is likely to be an attractive target for criminals. In response there will be a continuous presence of trained Security Industry Authority (SIA) security personnel in both static and patrol roles including the use of vehicles. To co-ordinate the delivery of security services a security control room should be located close to the primary access points. Site access points and security facilities would be managed by security personnel.
- 3.50 Limiting pedestrian and vehicular access is critical to the security of the sites. Moreover, there is a duty for the Principal Contractor to *'take reasonable steps to prevent access by unauthorised persons to the construction site'* under the Construction (Design and Management) Regulations 2015.
- 3.51 Preventing unauthorised access for both security and safety is essential. A fence of no less than 2.5 metres high would be erected around the perimeter before work commences. Ideally, this should be the permanent physical perimeter barrier for the London Resort. If this is not possible, the perimeter fencing installed during any enabling works will be utilised for construction works where appropriate, with an updated fence to meet the requirements of increasing security as the Project progresses.
- 3.52 To identify encroachments through the boundary fence a perimeter intruder detection system would be incorporated. Appendix 7.0 indicates proposed access and perimeter fencing.
- 3.53 To control pedestrian access to the site, designated points deploying electronic access controls would be employed to reduce the likelihood of unauthorised access and allow monitoring of entry and egress. These access control points should include full height turnstiles. Such site access and security facilities would be constructed using either traditional or modular building construction techniques. Modular units are pre-fitted with security features such as turnstiles and would be transported to site ready for use.
- 3.54 Similarly, vehicle access and egress would be controlled at dedicated vehicle access control points which have been designed to deal with the expected volumes of site traffic, along with vehicle rejection capabilities to deal with denial of access. An automatic number plate recognition system (ANPR) would be used to monitor and record vehicular movement. Vehicles leaving the site would be subject to random or irregular security checks.
- 3.55 As noted, most construction materials will arrive via the river. Consideration will be given to whether security is managed at the point of origin or at the London Resort wharfs, including a way of denying entry to unauthorised individuals arriving by boat and how they will be appropriately escorted off site.

- 3.56 Video surveillance systems will be provided at the perimeter, access points, emergency exits and key points within the site including offices, materials stores and plant compounds. Images would be monitored and recorded on a continuous basis.
- 3.57 Appropriate levels of illumination should be provided along the perimeter and at the access points. It is particularly important that the lighting at the access points is sufficient to enable the security personnel to conduct checks at night.
- 3.58 Construction workers would arrive at the main entry points by bus or passenger vehicle. Those workers living on the Site Campus would walk or be transported by bus internally to a designated security area.
- 3.59 Waste and other materials despatched from site would also be subject to security controls at all entry/exit points.

#### **Haul roads and crossings**

- 3.60 A temporary road network would be developed within the site boundary for the use of buses, construction vehicles and equipment (see Appendix 8.0). Where possible the construction of a site-wide haul road and road networks would align with the planned routes of permanent roads to minimise disruption, reduce programme and reduce construction waste.
- 3.61 Haul roads would be constructed using appropriate end use materials and techniques. Haul road material would be laid using road construction techniques with mechanical earthmoving equipment such as bulldozers, graders and excavators. Internal road crossings would be provided either at grade or, where required, temporary bridge crossings would be constructed using either *in situ* concrete produced on-site at the concrete batching plant, precast concrete, steel or a combination of techniques. Temporary modular bridge crossings would also be considered.

#### **Temporary and permanent stopping-up and public right of way diversions**

- 3.62 Before any enabling or construction works are due to take place, works will be undertaken to those public rights of way (PRoW) on or adjacent to the Project Site that are likely to be affected by the Project and that have been identified in the draft DCO as requiring diversion and / or permanent / temporary stopping up.
- 3.63 Temporary closures of roads might be required to enable boundary wall / fence removal. This would also be identified and managed through early communication with the relevant authorities and by establishing any necessary diversions.
- 3.64 Where plant traffic crossing is required, the crossing design would be developed with the contractors and designers to meet the various functional and safety requirements for the

Project. This will be managed by utilising traffic light-controlled physical barriers that can be opened or closed to suit requirements, or by deploying temporary traffic marshals.

### Landscape and planting works

- 3.65 Prior to the implementation of the landscape and planting scheme the areas of the site to receive landscape proposals must first be prepared. The timing of these works will be controlled by the wider programme and schedule of works, ensuring sufficient time is given to carry out the necessary operations prior to landscape implementation taking place. Prior to undertaking any works to landscaped areas, ecological and arboricultural survey and appraisal work would be completed in accordance with the *Construction Environmental Management Plan* (CEMP) (document reference 6.2.3.2), the *Ecological Mitigation and Management Framework* (document reference 6.2.12.3) and the *Arboricultural Impact Assessment* (document reference 6.2.12.9), and findings would be reviewed and incorporated into the Project and construction schedule including enabling works.
- 3.66 Enabling works would be split into three groups, relating to preparations prior to hard landscape construction, clearance, preparation and cultivation of areas to be planted, and preparations required in order to implement proposals for retaining and enhancing retained landscape features and wildlife habitats on the site.
- 3.67 Prior to soft landscape implementation taking place the relevant areas, the land will be cleared of existing vegetation not being retained, cleared of any rubbish or other contaminants, graded in accordance with the project earthworks proposals and soils/growing media placed and prepared in line with the relevant soils management plan for the site.
- 3.68 Prior to implementing proposals for the retention and enhancement of existing landscape features, the relevant ecological and arboricultural survey and appraisal work identified in the *CEMP* (document reference 6.2.3.2) the *Ecological Mitigation and Management Framework* (document reference 6.2.12.3) and *Arboricultural Impact Assessment* (document reference 6.2.12.9) will be completed in order to establish the objectives for the retention and enhancement of these areas. For trees being retained and protected, tree protection fencing will need to be erected in line with the proposals set out in the *Tree Retention and Removal Plan* (document reference 6.3.12.57).

## Chapter Four ◆ Main construction works

### INTRODUCTION

- 4.1 This chapter provides an outline of the works that would be undertaken during the main construction stage of the project. As noted in earlier chapters of this CMS, construction would occur in two main phases, the first involving the delivery of Gate 1 and most external Resort infrastructure and amenities on the Kent and Essex Project Sites, and the second phase would comprise the delivery of Gate 2 in the Kent Project Site.

### CONTRACTOR MOBILISATION

- 4.2 The main contract would involve multiple contractors under the control of the Principal Contractor to meet the demands of the early construction works.
- 4.3 Contractor mobilisation works would include the following activities:
- preparation and approval of method statements for the work to be undertaken, to include safety, environmental, quality and regulatory aspects;
  - delivery, installation and testing of key temporary construction plant, such as excavators, marine construction vessels and cranes;
  - installation of site offices and welfare facilities including medical facilities and 'blue light' emergency facilities;
  - protection of access for emergency and maintenance to existing infrastructure present at the project site, including National Grid pylons, a Met Office weather station, a Port of London Authority navigation radar station, an existing water treatment plant and High Speed 1 (HS1) access during the construction process.

### EARTHWORKS

- 4.4 Proposed earthworks include the following, which will be described in turn:
- topsoil and subsoil stripping and storage;
  - bulk earthworks, including the continued remediation of contaminated land;
  - deep excavations.

- 4.5 Topsoil and subsoil stripping and storage is required to segregate reusable topsoil and subsoil that could be used to provide the upper layers in the landscape scheme when bulk earthworks are complete. Bulk earthworks are required to help achieve new permanent ground levels for the Resort. Deep excavations are required to achieve a foundation depth as necessary as well as gravity sewer trenches.

#### **Topsoil and subsoil stripping and storage**

- 4.6 Topsoil and subsoil stripping would take place across most of the Project Site outside areas retained for their landscape, heritage and ecological value. The works will be undertaken in accordance with the *Contaminated Land Management Strategy* (document reference 6.2.18.9) and other implementation plans.
- 4.7 These works would be undertaken in a phased manner with topsoil and subsoil stripped shortly ahead of bulk earthworks to minimise exposed areas as far as practical.
- 4.8 Topsoil and subsoil stripping would take place using conventional mechanical earthmoving methods, including excavators to remove soil material. The excavated material would then be transported to local stockpiles established on site, using dump trucks for storage in accordance with good practice guidelines. Waste material will be transported off site from Bell Wharf by barge.
- 4.9 Once bulk earthworks are complete in areas, reusable soil would be transported from the appropriate stockpiles using dump trucks and placed at its final reuse location within the landscape mounds using low ground pressure bulldozers, excavators and graders. On placement of soils, appropriate methods of decompaction and preparation before seeding would occur using mechanical plant and agricultural machinery, such as towing a till behind a tractor. This would break up the surface of the soil sufficiently to promote water infiltration prior to seeding.

#### **Bulk earthworks / terrain modelling**

- 4.10 Earthworks are likely to generate excavated materials. A proportion of this would be used to create the construction compounds and haul roads and some would be used when creating the building platforms.
- 4.11 Bulk earthworks would occur generally at an early stage in the construction process and would take place across most of the Peninsula outside areas retained for their landscape, heritage and ecological value. The earthworks will be guided by a flood risk model to ensure that the site is protected at all times.
- 4.12 Temporary construction works would be required to achieve the revised ground levels and landforms. This would include the construction of temporary construction drainage, temporary sediment ponds, pumping systems and dewatering, haul roads and some temporary bridging to create improved access to areas of the site.

- 4.13 As site grading and excavation is undertaken, a number of mounds would be created on site. These mounds would be used both as temporary storage for future material use across the site and to screen the construction site from local communities and identified sensitive receptors.
- 4.14 Imported fill material, as required, will be delivered to the Kent Project Site by barge to Bell Wharf and transported to each building zone using dump trucks and low ground pressure bulldozers.
- 4.15 Site grading – the process by which ground levels are adjusted to facilitate construction and landscape work in accordance with approved plans - would occur across the Resort site on Swanscombe peninsula from west to east. The proposed sequence for site grading begins with the area adjacent to the marine works at Bell Wharf.

### Deep excavations

- 4.16 Redundant buried features such as culverts under roads and building foundations, which were not removed during the enabling works, would be excavated during bulk earthworks by mechanical excavators. Basements and underground connecting corridors and service tunnels in buildings would be excavated in the same manner.

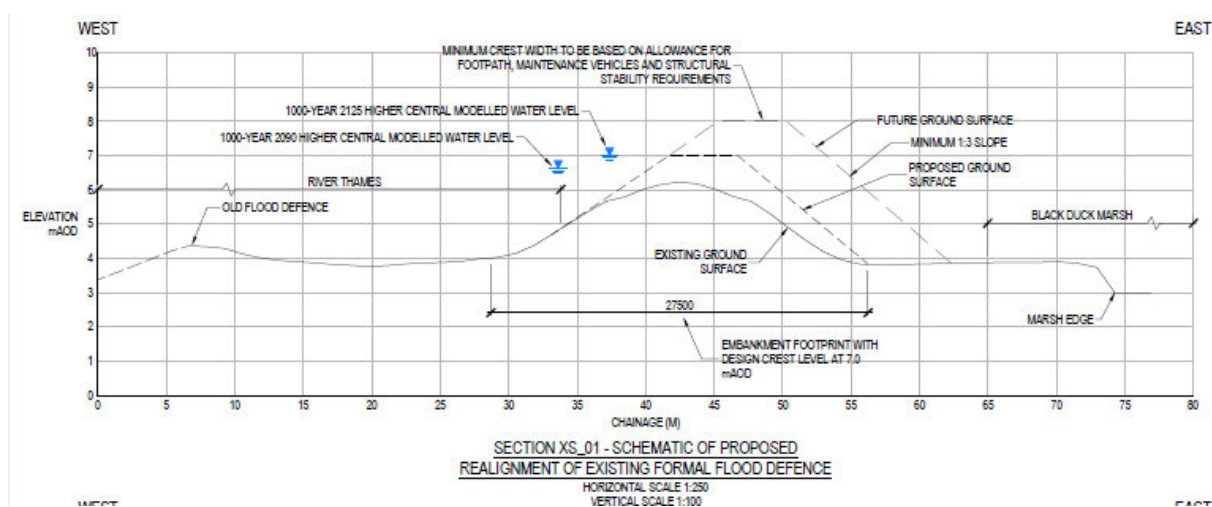
## ENHANCED FLOOD DEFENCES

- 4.17 To protect the Swanscombe Peninsula from tidal flooding from the River Thames in accordance with the recommendations of the *Flood Risk Assessment* (FRA) document reference 6.2.17.1), it will be necessary to construct new defences and in places raise existing defences in line with the proposed levels. This will require the following activities to be undertaken.
- i). Carry out further surveys to identify areas and features of ecological and heritage interest.
  - ii). Carry out further species translocation or archaeological investigation exercises as appropriate.
  - iii). Create an access haul road and working area 10 metres wide on the landside of existing tidal defences. Remove 250-300mm of top/subsoil (storing safely and cover to prevent erosion by rainfall), place geotextile (Terram 1000 or similar), place 300mm type 1 fill.
  - iv). Removal of 250mm-300mm of topsoil from the top of the existing flood bank and the rearward slope, with the topsoil stored in accordance with good practice guidance. Work would be undertaken in discrete lengths of no longer than 50 metres.

- v). Drive any new outfalls through the bank at this stage and create any structural headwall / outfall features.
- vi). Place cohesive fill in layers of no more than 250mm, compacted after each layer, until the finished design flood defence level is achieved, including freeboard, and until a minimum width of crest of defence is achieved. Allow for a minimum of 100mm settlement post-filling.
- vii). Place double-handed, previously excavated and uncompacted topsoil material on the crest of raised bank and landside slope and trim to final profile.
- viii). Apply the approved planting and habitat restoration measures.
- ix). Remove the temporary haul road, aerate the compacted sub-layer, replace the topsoil and trim to final profile.
- x). Re-seed areas of fill in accordance with the approved landscape strategy.

4.18 A preliminary design proposal for the raising of the flood defences is shown in Figure 4.1.

**Figure 4.1: Design proposal for the raising of flood defences around the Swanscombe Peninsula**



## LANDSCAPE

4.19 Once the relevant enabling works have been completed, construction of hard and soft landscape areas and enhancement works in areas of retained landscape can commence in line with the indicative construction programme. Construction of hard landscape areas will require the prior completion of site clearance and engineering works to create formation levels, the installation of all underground services and drainage and the formation / construction of engineered foundations where required.

- 4.20 All hard landscape features are to be constructed in accordance with the approved construction stage drawings and specifications to be produced by the landscape architect. Prior to practical completion all elements are to be inspected by the landscape architect and any snagging items listed for remediation.
- 4.21 All soft landscape implementation would be carried out in accordance with the detailed planting plans and soft landscape specification. All plant stock would be delivered to the Project Site as close as possible to the date of planting and stored in accordance with the provisions of the soft landscape specification until such time as they are planted. Following planting, soft landscape areas would be maintained in accordance with the approved *Landscape and Ecology Management Plan* (document reference 6.2.11.8). Prior to practical completion all planting will be inspected by the landscape architect and any snagging items listed for remediation.
- 4.22 Enhancement works to existing retained features would be carried out in accordance with the approved *Landscape and Ecology Management Plan* and the flood risk management strategy.

## HABITAT PROTECTION AND ENHANCEMENT

- 4.23 Industry-standard measures and good site practices applicable to any development site, and required to avoid / minimise construction stage ecological effects occurring to habitats and faunal species, will be described in more detail in an *Ecological Mitigation and Monitoring Framework* (EMMF) (document reference 6.2.12.3) for each phase of development. In outline, the measures will include the following.
- i). All construction contractor personnel would be given pre-commencement ‘toolbox talks’ regarding the ecologically sensitive features present on the Project Site and measures required to avoid or minimise harm. Location and species-specific ‘toolbox talks’ will be undertaken in which contractors will be made aware of the potential presence of protected and notable species. This will be delivered by a suitably experienced and licenced Ecological Clerk of Works (ECoW). These talks will cover the legal protection and working practices to avoid harming these protected and notable species. The contractors will be informed that if any protected species are found when an ECoW is not in attendance they must not be handled; works must stop immediately in this area (where safe to do so) and advice must be sought immediately from the ecologist.
  - ii). Prior to any works commencing on the site, a walkover survey would be undertaken by the ECoW to ensure that the status of the site for habitats and species has not significantly altered since previous ecological surveys were completed, and to provide location-specific information in accordance with the *EMMF* (document reference 6.2.12.3).



- iii). The ECoW would review the validity of baseline ecology surveys for the site in accordance with industry guidance, and provide a statement justifying need/scope of update surveys to inform mitigation.
- iv). Construction activities affecting key habitats and species would be supervised by an ECoW, with a licenced ecologist used when European-Protected Species (EPS) are potentially present.
- v). Dust suppression measures would be employed to prevent site-derived dust being deposited on or off-site.
- vi). Surface-water run-off prevention measures (for example temporary settlement lagoons and silt traps) would be employed to prevent run-off entering watercourses and waterbodies.
- vii). Ecological Protection Zones (EPZs) would be established around retained habitats through the use of temporary exclusion barriers such as tree protection and Teflon fencing, with appropriate signage, to ensure that all construction activities are excluded.
- viii). EPZs would be delineated by protective fencing, in accordance with BS 5837: 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*', or as prescribed in the *Arboricultural Impact Assessment* (document reference 6.2.12.9)
- ix). All construction activities around retained trees, hedgerows or woodlands to be delivered in accordance with industry standard advice from a suitably experienced arboriculturalist, as detailed in the ArbMS. This might include the use of no-dig technologies where root protection areas conflict with proposed hard surfaces, such as roads, footpaths and other hard landscaping.
- x). Retained trees would similarly be protected from development by the erection of protective fencing in accordance with BS 5837: 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*', or as prescribed in the ArbMS.
- xi). Vegetation removal for temporary construction access would be limited as far as possible, and any areas to be affected would be agreed in advance with the ECoW.
- x). Prohibition of construction activities within 8 metres of watercourses and waterbodies, or with specific working methodologies employed and supervised for any necessary works within this protection zone.
- xi). All enabling/construction works would be undertaken in accordance with pollution prevention guidance notes and publications. Pollution Prevention Guidelines (PPGs) are currently archived on the National Archives website <sup>[1]</sup> and are considered to represent the most up-to-date good practice guidance notes.

- xii). Where work is required outside of daylight hours, temporary lighting would be directed away from retained watercourses, woodlands, mature trees and hedgerows. The *outline CEMP* (document reference 6.2.3.2) provides further guidance in respect of temporary construction lighting.
- xiii) For works on areas of saltmarsh, access by personnel and construction plant and operation areas on the saltmarsh will be restricted to clearly delineated routes to minimise potential effects on this habitat.
- xiv). Booms or other equivalent infrastructure will be included within the designs for the ferry terminal and jetties to reduce the potential for erosion caused by boat wash.

4.24 Construction would be undertaken in accordance with pre-agreed timescales address seasonal ecological sensitivities in accordance with pre-agreed working methods, including:

- vegetation clearance undertaken outside key species-specific seasons, according to vegetation type removed and species likely to be affected (e.g. removal of suitable nesting habitat outside of the breeding bird season, or removal of suitable terrestrial habitat for grass snakes during spring/summer months when individuals are active);
- Alternatively, where the above approach is not possible, and subject to any requirements that might arise from EPS licencing, vegetation clearance would be supervised directly by the ECoW.

#### **Feature-specific measures for species and assemblages**

4.25 The feature-specific measures to be deployed during construction are explained in in the draft *Ecological Mitigation and Management Framework* (EMMF) (document reference 6.2.12.3).

### **DRAINAGE**

4.26 Drainage will comprise foul and surface water disposal systems. Where possible all drainage runs, manholes and ancillary items would be located within one trench to promote the coordinated delivery of underground infrastructure.

4.27 Surface water drainage will discharge at appropriate rates agreed in consultation with the Environment Agency and Kent County Council (KCC) as the Lead Local Flood Authority (LLFA) to existing water courses, landscaped areas and the Rivers Ebbsfleet and Thames. All surface water outfalls into existing water courses would be constructed in accordance with guidelines promoted by KCC and the EA. Drainage works required in the foreshore and up to 16 metres inshore from the flood top of bank of the River Thames will also be subject to the appropriate Flood Risk Activity Environmental Permits from the Environment Agency. Other consents from the Port of London Authority for the drainage

works will not be required during the construction stage as these are incorporated as part of the DCO permission.

- 4.28 Foul water drainage for construction facilities will be designed to be connected to the nearest Southern Water or Anglian Water drainage networks, via temporary connections. Foul drainage will be conveyed via gravity where possible, with lifting stations or pump stations and rising mains incorporated as required.
- 4.29 Where existing ground conditions and the water table allow, the maximum depth of all on site foul water manholes and pipe runs would be limited to six metres. Interim lifting stations would be installed to ensure compliance. On the line and depth of all drainage routes a ground penetration radar (GPR) survey and trial pits would be used to determine the location of potential existing utilities and obstructions.
- 4.30 Deep excavations might be necessary for de-watering wells, trench sheeting and propping.
- 4.31 Excavated materials will be characterised by ground investigation to establish their potential for re-use in drainage trenches.
- 4.32 All existing on site drainage deemed not appropriate for re-use would either be removed and demolished or sealed and abandoned.
- 4.33 All drainage construction components, materials and ancillary items will be specified, designed and constructed in accordance with the current relevant British Standards, Water Industry Specification, Design and Construction Guidance (DCG) and WRc 'The Code'. Across much of the Resort, below ground infrastructure and utilities will be constructed through land affected by contamination (including residual contamination on remediated ground). These potential risks will be mitigated by the construction of below ground "service corridors" – trenches large enough to carry several utilities, separated from the contaminated soils by a permanent barrier (e.g. HDPE membrane) and backfilled with inert fill.

## UTILITIES

### Electricity

- 4.34 Electricity supply to the site would be provided by UK Power Networks (UKPN) as the local Distribution Network Operator (DNO) in accordance with the relevant adopting authority standards for buried utilities. On-site infrastructure provided by the adopting authority will comply with the relevant adopting authority standards. Installation and construction will be in accordance with National Joint Utilities Group (NJUG) and the adopting authority standards.

## Gas

- 4.35 Gas supply to site would be provided by Southern gas Networks (SGN) in its capacity as the local DNO in accordance with the relevant adopting authority standards for buried utilities. On-site infrastructure provided by the adopting authority would comply with the relevant adopting authority standards and relevant Institution of Gas Engineers and Managers (IGEM) Utilisation Procedures. Installation and construction will be in accordance with NJUG and the adopting authority standards.

## Water

- 4.36 Water supply would be provided by the adopting authority and all pipework required for potable water supply and fire hydrants would be provided in accordance with the relevant adopting authority standards. The depths of water mains would comply with NJUG and the adopting authority standards. All water main pipework and ancillary items such as valves, metres and wash out chambers for water supply would accord likewise with the relevant adopting authority standards.

## Wastewater

- 4.37 Permanent foul drainage at the Kent Project Site will discharge to a dedicated on-site wastewater treatment works located on the north-east side of the Swanscombe Peninsula. At the Essex Project Site, permanent foul drainage would discharge into the existing Anglian Water drainage network.

## Digital infrastructure

- 4.38 Digital infrastructure shall be consolidated wherever practically possible throughout the site to minimise duct banks and physical apparatus. Cellular apparatus would be utilised by all Mobile Network Operators (MNOs) including *EE, O2, Three* and *Vodafone*. The cellular sites would be operated by a third-party operator.
- 4.39 The fixed fibre network supporting all digital services and internet services is expected to be adopted by an accredited service provider.
- 4.40 It is anticipated that the depths of telecommunication ducts will be 350mm when installed below a footway and 450-600mm when installed under a carriageway in accordance with NJUG. Outside plant shall be designed and installed in accordance with BICSI G1-17 ICT *Outside Plant Construction and Installation: General Practices*.

## RESORT ACCESS ROAD

- 4.41 The principal method of construction of the proposed Resort Access Road between the A2(T) and the Swanscombe Peninsula is outlined below and should be read in conjunction with the programme provided at Appendix 2.0.

- 4.42 The Resort Access Road corridor is crossed by existing transport infrastructure, namely the A2260 Ebbsfleet Road, Ebbsfleet Gateway serving Ebbsfleet International Station, the North Kent railway and Galley Hill Road in the north. To allow optimum use of the full length of the site and minimise overall programme duration, access for construction of the Access Road would be achieved from the south, centre and north of the site.
- 4.43 The southern access and egress point would be formed off the southbound A2(T) off-slip to provide access to the new gyratory system proposed access, to Station Quarter South (such access being relocated between the west and east junction roundabouts). The A2260 Ebbsfleet Road curtails construction further to the north until the proposed tunnel under the A2260 is constructed.
- 4.44 Access for construction from the central section of the Access Road between the A2260 and the HS1 railway, would be provided from International Way, with construction site entrances to the north and the south. These entrances would be set back from the public road to provide waiting areas to prevent blocking of the station access road by construction vehicles.
- 4.45 Access to the Access Road corridor from the north will be of limited value initially as it would only serve the northern and southern faces of proposed tunnels under A226 Galley Hill Road, and the northern face of proposed tunnels under the North Kent Line but will eventually provide access to the full length of the site.
- 4.46 All access points will require gatemen and wheel-washing facilities to enable both the security of the site and ensure vehicles are in a clean condition to enter the public network.

## **Tunnelling**

### ***General considerations***

- 4.47 The primary requirements for the tunnelling at the London Resort are considered to comprise:
- minimising ground movement and effects on the overlying railway and highway infrastructure;
  - achieving the required safety, environment, and whole life costs requirements.
  - minimising whole life costs, ensuring adequate lining with a sprayed concrete/reinforced concrete shell design rather than a rock bolting and thin sprayed concrete lining solution to reduce the long-term maintenance costs.
- 4.48 The proposed tunnels would be constructed through the Seaford - Newhaven chalk formation with a thin deposit of head materials (<0.5m) overlying the chalk. Chalk can be a relatively weak and heavily jointed rock. At the same time, chalk is considered a very

good tunnelling material with few hazards, which generally relate to a block failure along jointing from the exposed ground. Chalk is considered easy to excavate with appropriate plant and equipment.

- 4.49 The anticipated construction methodology is that pre-cast concrete box-jack sections will be assembled at the working face of the excavated tunnel and thrust progressively to form the tunnel lining. The lead unit would have a shield placed on top and in front of the unit face. The chalk would be excavated by an 8t tracked tunnel excavating machine that can operate within the confines of the six metre high precast sections. The spoil would be fed back through each successive tunnel unit to enable loading onto lorries for deposition or disposal in accordance with methods described earlier in this CMS.
- 4.50 With each successive pre-cast section, the rams of jacks would be withdrawn and crange used to place the next unit between thrust wall and the last placed unit. Each tunnel will require its own in-situ thrust wall to be constructed, and a separate pre-casting yard serving the tunnels under the A226 is proposed for this purpose.
- 4.51 The proposed tunnels are shown in Highways Plans – General Arrangement (document reference 2.12, specifically LR-PL-WSP-DCP-2.12.2 & .12). The proposed tunnels would be completed in the following sequence:
- i) North Kent railway line – Eastern Road Tunnel
  - ii) North Kent railway line – People mover Route Tunnel
  - iii) North Kent railway line – Western Road Tunnel
  - iv) A226 – Eastern Road Tunnel
  - v) A226 – People mover Route Tunnel
  - vi) A226 – Western Road Tunnel
- 4.52 This sequence is proposed for two reasons. First, prioritising tunnelling under the railway provides a route for the A226 tunnel casting yard. Second, working room to complete the eastern tunnels is achieved by jacking the People Mover tunnel ahead of western road tunnels.
- 4.53 The People Mover route would serve as a haul route for tunnelling works until their completion. Once the tunnels are in place the roads and services feeding the London Resort will be constructed, the final phase of access road works being the People Mover route alongside Ebbsfleet International Station.

***A226 (London Road) and local railway lines***

- 4.54 The programme’s critical path for the Access Road is driven by the pair of triple northern tunnels, running under the North Kent railway line and the A226 (London Road). A Pre-

casting yard would be set up on site with its own concrete batching plant to cast and store tunnel units. Access to the pre-casting yard would be provided from a central access along the proposed People Mover route.

### ***Tunnel beneath the A2260 Ebbsfleet Road***

- 4.55 It is currently envisaged that the new A2260 underpass will be constructed either using a large concrete jacked box or a cut-and-cover method under a 48-72hrs road closure.
- 4.56 In the jacked box option a reinforced concrete box is cast on a jacking base in a pit adjacent to landform through which the tunnel will pass. An open cellular shield is constructed at the front of the box and tunnelling is carried out incrementally with c. 150mm of excavation being followed by comparable box advance into the excavated void. When the box has been fully installed, any residual voids around the box are grouted up and the shield, jacking equipment, etc. are removed. Portal wing walls and the road that passes through the tunnel are then constructed. The jacked box option would minimise disruption to the traffic on the A2260 as jacking operations are generally well controlled, minimising disturbance to the ground and live carriageway.
- 4.57 The cut-and-cover option would need to take place over a 48-72hr road closure of the A2260, when the earthworks would take place, and the bridge (built in the compound) would be transported into place using a self-propelled modular transporter (SPMT).

### **A2(T) gyratory junction – existing utilities**

- 4.58 If an enabling works package is developed for any necessary statutory diversions, it might be that some minor earthworks and drainage items should be considered for inclusion, to ensure that the diversions are placed in proposed corridors and any cross services drainage installed ahead of new services.

## **PEOPLE MOVER**

- 4.59 The Project includes the addition of a People Mover route from Ebbsfleet International station to the London Resort arrival plaza and beyond to the proposed passenger ferry terminal on the western edge of Swanscombe Peninsula. The People Mover route will be located to the west of the new Access Road.
- 4.60 The foundations for the People mover will be constructed on a shallow embankment utilising *Jablite* or similar polystyrene blocks across the Baker's Hole Site of Special Scientific Interest (SSSI), minimising the need for intrusive excavations in the protected area.
- 4.61 The principle of this construction approach is to minimise the loads that will be transferred to the existing ground. This method will help to protect below-ground features of archaeological and geological interest *in-situ*, with the additional benefit that if there was a substantiated requirement to investigate the Baker's Hole SSSI area in the future it would

be relatively easy to remove the People Mover route foundations and realign the carriageway.

## MARINE INFRASTRUCTURE

- 4.62 Marine works will be required to support the main construction phase as well as the operational stage of the Project. As such they are described in the preceding chapter of this CMS as well as here in the main construction section.
- 4.63 The permanent operation of the site will be supported by three different elements of marine infrastructure:
- Ferry pontoon – this will be used to transfer visitors and Resort staff living north of the River Thames from the Tilbury passenger terminal to the Resort;
  - Bell Wharf – this will be used to handle outgoing waste via barges to off-site waste handling facilities. It will also be used for incoming bulk supply requirements if ever needed;
  - Roll-on / roll-off ferry pontoon – this is an option under consideration to provide the flexibility to use the Port of Tilbury to support the day-to-day servicing of the Resort, ferrying goods via a roll-on / roll-off ferry from storage in Essex.

## BUILDINGS

- 4.64 LRCH proposes to adopt efficient fast-track construction methods for buildings. Where possible prefabricated building components will be manufactured off site, including bedroom pods for the hotel complexes and the use of pre-cast concrete and modular steel components in buildings. This approach will be particularly helpful when building the warehouse buildings in the back of house area and in car park structures.
- 4.65 By incorporating these techniques the overall construction programme can be reduced, while providing maximum on site control and thus efficiency.

## RIDES AND ATTRACTIONS

- 4.66 The Gate 1 and Gate 2 themed areas will make extensive use of pre-manufactured components for both the rides and the themed cladding. These will include various large components that where feasible will be brought to the Kent Project Site by barge.



## Chapter Five ◆ Removal of temporary structures and landscape restoration works

### INTRODUCTION

5.1 This chapter outlines how construction operations will be brought to a conclusion and the Project Site restored, including the removal of:

- concrete batching plants;
- offices;
- worker welfare facilities and temporary workers' accommodation;
- workshops;
- security facilities;
- construction compounds.

### REMOVAL OF BUILDINGS AND CONSTRUCTION INFRASTRUCTURE

5.2 Methods for dismantling and removal would include:

- the removal of modular buildings using mobile cranes and elevated working platforms;
- concrete foundations would be removed using mechanical earthmoving and the demolition equipment;
- removal of construction compounds using mechanical earthmoving machinery.

5.3 Where temporary construction buildings associated with Gate 1 can be reused, these would be relocated to the Gate 2 site to be repurposed.

5.4 It is intended that, where possible, any structures demolished that contain concrete or brick would be crushed for reuse on site. Other material that can be recycled would be either reused on site or removed to be appropriately recycled.

5.5 Similar measures will be applied for the removal of:

- compounds;
- laydown areas;

- parking;
- temporary construction utilities;
- haul and access roads.

## LANDSCAPE RESTORATION

- 5.6 Where possible, construction compounds and haul roads will be located in areas within the built or surfaced footprint of the Resort, such that the quantum of landscape restoration needed following construction purposes will be limited.
- 5.7 Once site excavations are complete, capping will prevent any further land contamination issues within the restored areas. Where possible contaminated soil will be treated and re-used on site as part of the landscape restoration.
- 5.8 Degraded areas of marsh habitats at Black Duck Marsh, Botany Marsh and Broadness Marsh will be restored through an enhanced management regime. Additionally a constructed reedbed will be created to form the new northern buffer to the Resort, filtering grey water and stormwater from the Resort.
- 5.9 Restored salt marsh habitats are proposed along the northern edge of Swanscombe Peninsula through the re-profiling of banks and the realignment of flood defences.

## Chapter Six ◆ Asset protection

### INTRODUCTION

- 6.1 The proposed development will interact with a range of established infrastructure on and around the Project Sites. Much of this infrastructure is the subject of Protective Provisions in Schedule 11 of the *draft DCO* (document reference 3.1), and the protection of environmental assets is reinforced through Requirements in Schedule 2 of the draft Order.
- 6.2 Subject to relevant DCO provisions, this chapter of the CMS provides an account of how significant third party assets will be protected during the construction of the London Resort.

### HIGHWAYS

- 6.3 Local roads to the Project Site will be protected and maintained. A condition survey would be undertaken prior to construction and repeated at the end of construction, to enable any damage to be identified. A snagging list would then be prepared.
- 6.4 The existing local road network will only be used for setting up the haul road construction and tunnelling activities. Once these have been completed the route of the Resort Access Road will become the main landward construction access with the primary point of access being off the A2(T) Ebbsfleet junction.
- 6.5 During construction, wheel-washing facilities will be installed on each site construction access to prevent mud being drawn on to the public highway.

### HIGH SPEED 1

- 6.6 The proposed works have interfaces with the HS1 Thames tunnel, which runs below the Swanscombe Peninsula, as well as the railway running in cut and cover tunnel and above ground at grade. Ebbsfleet Station and its car parks are affected by the proposals. HS1 also has various ancillary infrastructure, including a pumping station, on and adjacent to the Project Site.
- 6.7 Construction-related issues of interest to HS1 include:
- access to HS1 facilities to be maintained during construction;
  - impacts on Ebbsfleet International Station and its car parks;

- potential effects on track and tunnels due to temporary or permanent loading or vibration;
- controls on use of cranes or other plant that could fall on the railway;
- control of wind-borne debris and dust;
- noise;
- storage of hazardous materials; and
- security.

6.8 LRCH will continue to engage with HS1 to ensure its assets are protected throughout the construction and operation of the London Resort. This will be by means of an Asset Protection Agreement.

## OTHER RAILWAYS

6.9 The North Kent Line passes over the chalk spine that will be penetrated by tunnels for roads including the People Mover route. As with HS1, an Asset Protection Agreement will be sought with Network Rail.

6.10 The primary concern of Network Rail will be to guarantee the stability of the railway whilst the tunnels are constructed underneath. Track monitoring will be required, with a suitable baseline established before works commence. Controls on the use of cranes or any other works that could pose a risk of falling onto the railway will also be required.

## UTILITIES

6.11 It will be necessary to divert, remove or abandon above and below ground services running across the development. This will be undertaken by the relevant statutory undertakers as owners or operators of the infrastructure, and would include:

- Existing Southern Water drainage, pump station and redundant Sewage Treatment Plant (STP);
- Thames Water potable water supply;
- HS1 ditches and groundwater drainage;
- National Grid overhead transmission power lines;
- Openreach cables and ducts; and

- UKPN cables and ducts

6.12 Schedule 10 of the *draft DCO* (document reference 3.1) includes Protective Provisions for electricity, gas, water and sewerage undertakers in Part 1, for the operators of electronic communications code networks in Part 2 and for the drainage authorities in Part 3.

### Electricity

6.13 National Grid operates a network route of overhead transmission lines through the eastern portion of the Kent Project Site which cut across the proposed highway works in the Ebbsfleet Valley. Safety clearance zones under overhead power lines and around pylon foundations during construction will generally be in accordance with National Grid guidelines.

6.14 The main clearance schedule is identified in Table 6.1 below.

**Table 6.1: Main clearance schedule for National Grid assets**

Item	Description of clearance	Minimum clearance (metres) at 400kV
1	To Ground	7.6
2	To Normal Road Surface	8.1
3	To road surface of designated '6.1 metres high load' routes	9.2
4	To motorway or other road surface where a 'skycradle' can be used	10.5
5	To motorway road surface where scaffolding is to be used on:	16.3
	(i) Normal 3 lane motorways	13.3
	(ii) Elevated 2 lane motorways	
6	To any object/building on which a person may stand. Including ladders, access platform, etc.	5.3
7	To any object which access is not required AND on which a person cannot stand or lean a ladder	3.1
8	To trees under or adjacent to line and:	3.1
	(i) Unable to support ladder/climber	5.3
	(ii) Capable of supporting ladder/climber	3.1
	(iii) Trees falling towards line with line conductors hanging vertically only	
9	To trees in orchards and hop gardens	5.3
10	To irrigators, slurry guns and high pressure hoses	30.0
11	To street lighting standards with:	4.0
	(i) Standard in normal upright position	4.0
	(ii) Standard falling towards line with line conductors hanging vertically only	1.9
	(iii) Standard falling towards line	

## Gas

6.15 SGN has low pressure gas mains that will be affected by the proposed development. As part of the proposals the low pressure mains will be disconnected as required, back to the site boundary.

## Water

6.16 Southern Water and Thames Water have existing low pressure water distribution networks that will be affected by the development proposals. All proposed works adjacent to existing water assets will be undertaken in accordance with water industry asset protection guidelines and Protective Provisions contained in Schedule 11 of the *draft DCO* (document reference 3.1). Any assets that are to be abandoned would be disconnected back to the development boundary.

## Wastewater

6.17 Southern Water has existing assets that will require diversion and abandonment, as follows:

- an existing foul water pump station in Manor Way and a 600 mm rising main to be relocated and diverted within the Kent Project Site, in accordance with Protective Provisions contained in Schedule 10 of the *draft DCO* (document reference 3.1). This is to be designed and constructed under a Section 185 Agreement under the Water Industry Act 1991;
- The existing sewage treatment plant would be abandoned and land transfers to be agreed.

## MARINE STRUCTURES AND NAVIGATIONAL AIDS

6.18 Marine structures and navigational aids are to be protected. Any works that need to take place such as cable diversions, moving existing navigation aids or installing temporary aids would be undertaken in accordance with the Protective Provisions in the DCO.

## Chapter Seven ◆ Health and safety

### INTRODUCTION

7.1 This chapter explains the general provisions for health and safety during the construction of the London Resort. All relevant regulations will be complied with a good practice guidance will be followed.

### CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015

7.2 The London Resort is a notifiable project for the purposes of the Construction (Design and Management) Regulations 2015 (CDM Regulations). Buro Happold will be appointed to act as the Principal Designer, as defined by CDM Regulations, and will discharge its duties under the CDM Regulations.

7.3 The Principal Designer will:

- manage and coordinate the design activities at the pre-construction phase. They will develop management arrangements, which describe how they will deliver this in compliance with CDM Regulations.
- manage, co-ordinate and ensure compliance with the CDM regulations in the design of the Project and through to the handover of the Pre-Construction information to the Principal Contractor for commencement of the construction process.
- ensure that the Principal Contractor provides a construction phase plan as required by the CDM Regulations, reviewed and approved by London Resort Company Holdings Limited, which sets out the day-to-day arrangements for the management of health and safety during construction.
- ensure that the Principal Contractor provides and is responsible for appropriate control and oversight of construction health and safety arrangements for the London Resort.

### HEALTH, SAFETY AND WELFARE PROGRAMMES

7.4 Through the Principal Contractor, LRCH will require that all personnel engaged in the construction process have adequate experience to perform the activities executed under their responsibility or in their scope. All key contractors and sub-contractors will be required to have sufficient resources of the required competence to meet the contractual requirements and perform tasks to maintain safety at all times. Personnel performing

specific assigned tasks on the Project will be qualified on the basis of appropriate education, training, competence and experience. The Principal Contractor shall make specific checks as required to ensure competency and training is maintained.

- 7.5 The Principal Contractor will ensure the roles and responsibilities of all named personnel and appropriate communication details and channels are clear and that clear project management procedures are in place for all aspects of the construction.
- 7.6 LRCH will require that all construction personnel attend inductions including matters related to site rules, health and safety requirements, arrangements for first aid and emergency response, and environmental management.
- 7.7 Indicative arrangements concerning environmental competence, training and induction are presented in the *Outline CEMP* (document reference 6.2.3.2).

## SUPPLY CHAIN

- 7.8 The high health and safety requirements and expectations of LRCH would be defined and cascaded down to its suppliers by the Principal Contractor within the contractual arrangements, and they would adhere to these throughout the construction programme.
- 7.9 LRCH will require its supply chain to deliver their works to an exemplary standard for health, safety and welfare performance, with a 'safety first' philosophy and that every worker must go home safely every day.
- 7.10 The Principal Contractor will be instructed to develop a behavioural safety programme in collaboration with the supply chain.

## EQUIPMENT AND MATERIALS

- 7.11 LRCH will require all materials, plant and equipment installed on the Project Site to be audited, either during manufacture or prior to despatch from the suppliers' premises, by a suitably qualified discipline inspector or engineer. The Principal Contractor must be satisfied that any vendor or contractor supplying goods which require traceability has an adequate system of unique identification to satisfy these requirements.
- 7.12 The Principal Contractor will reserve the right to undertake random inspections as it deems necessary to maintain compliance. If doubt arises as to the fitness for purpose of any supplied product it shall require to be clearly marked as such and quarantined until the suspected non-conformance can be resolved.
- 7.13 An appropriate system for the logging, storage, and marking of all equipment and materials will be required. The suppliers' special instructions and delivery notes will be enforced during handling, storage and installation with appropriate training or notification



of personnel. The correct lifting procedures will require to be followed to ensure safe, efficient handling. These processes will be auditable by the Principal Contractor.

## **ROAD VEHICLES**

- 7.14 The Principal Contractor will require that all road construction vehicles meet the required, recognised standards and will comply with relevant regulations. Where necessary, the Principal Contractor will conduct appropriate independent audits on construction vehicles to ensure they meet these standards and are fit for purpose for their prescribed roles. All road vehicles used during construction will be required to comply with the procedures and requirements set out in other relevant documents.

## **RIVER VESSELS**

- 7.15 The Principal Contractor will require that all construction vessels meet all applicable regulatory requirements and comply with the international maritime rules (as adopted by the flag state) and regulations. Where necessary, the Principal Contractor will conduct appropriate independent vessel audits on construction vessels to ensure they meet these standards and are fit for purpose for their prescribed roles. All river vessels used during construction will be required to comply with the procedures and requirements set out in other relevant documents.

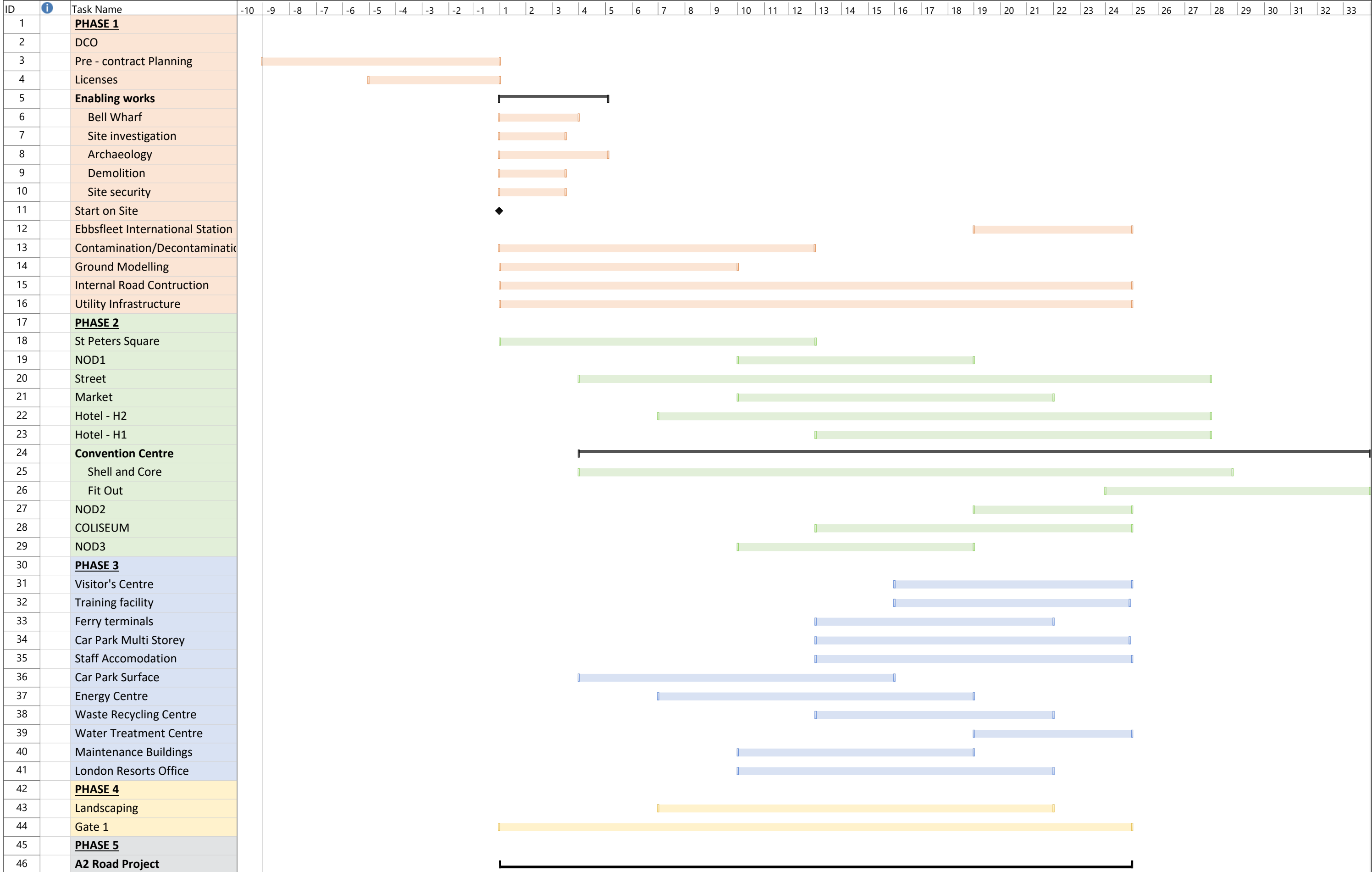
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## Appendices

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## Appendix 1.0 – Indicative construction programme

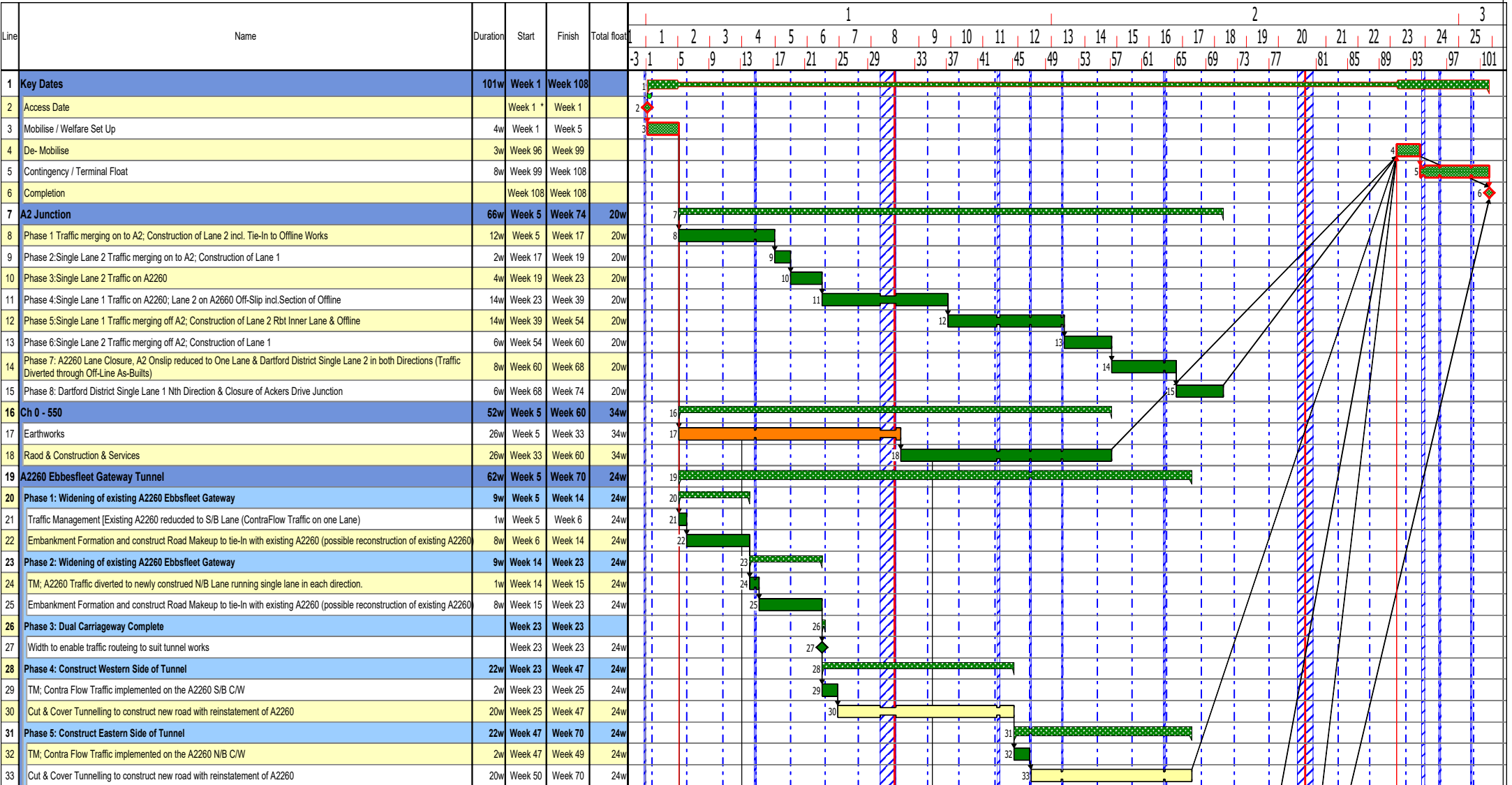
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## Appendix 2.0 – Access Road construction programme



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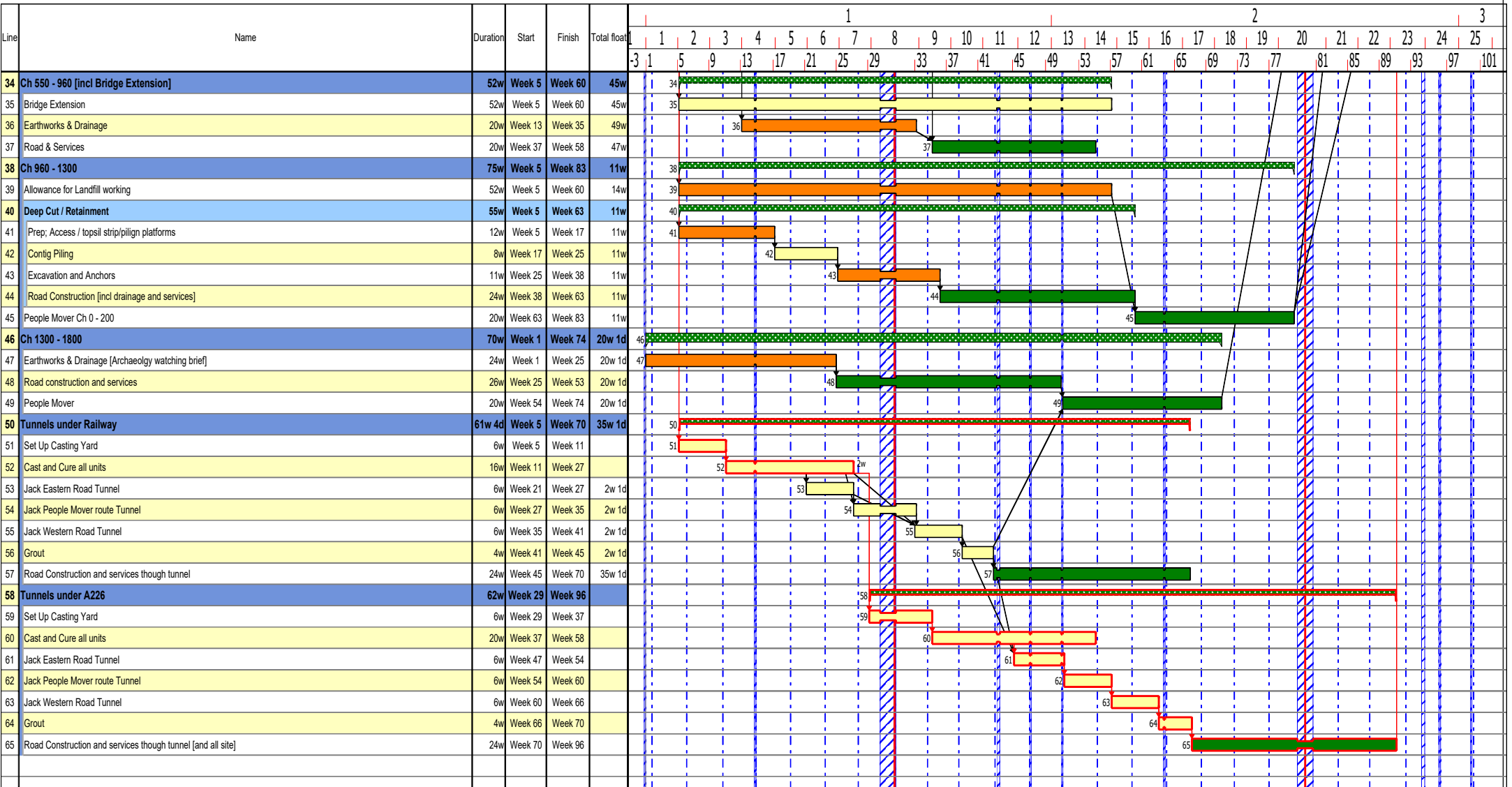
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 Roadworks & Services
  Earthworks
  Structures

Milestone Appearances  
 Start Milestone

**Programme Ref :** VFL - PP - 260520 - msw.  
**Revision :** draft **Revision Date :** 26/05/2020  
**Revision Comment :**  
 For review

**Title :**  
**Draft Construction Programme**

VOLKERFITZPATRICK  
 Hertford Road  
 Hoddesdon  
 Herts EN11 9BX



Trades Contractor, Draft Construction  
 Roadworks & Services
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Milestone Appearances  
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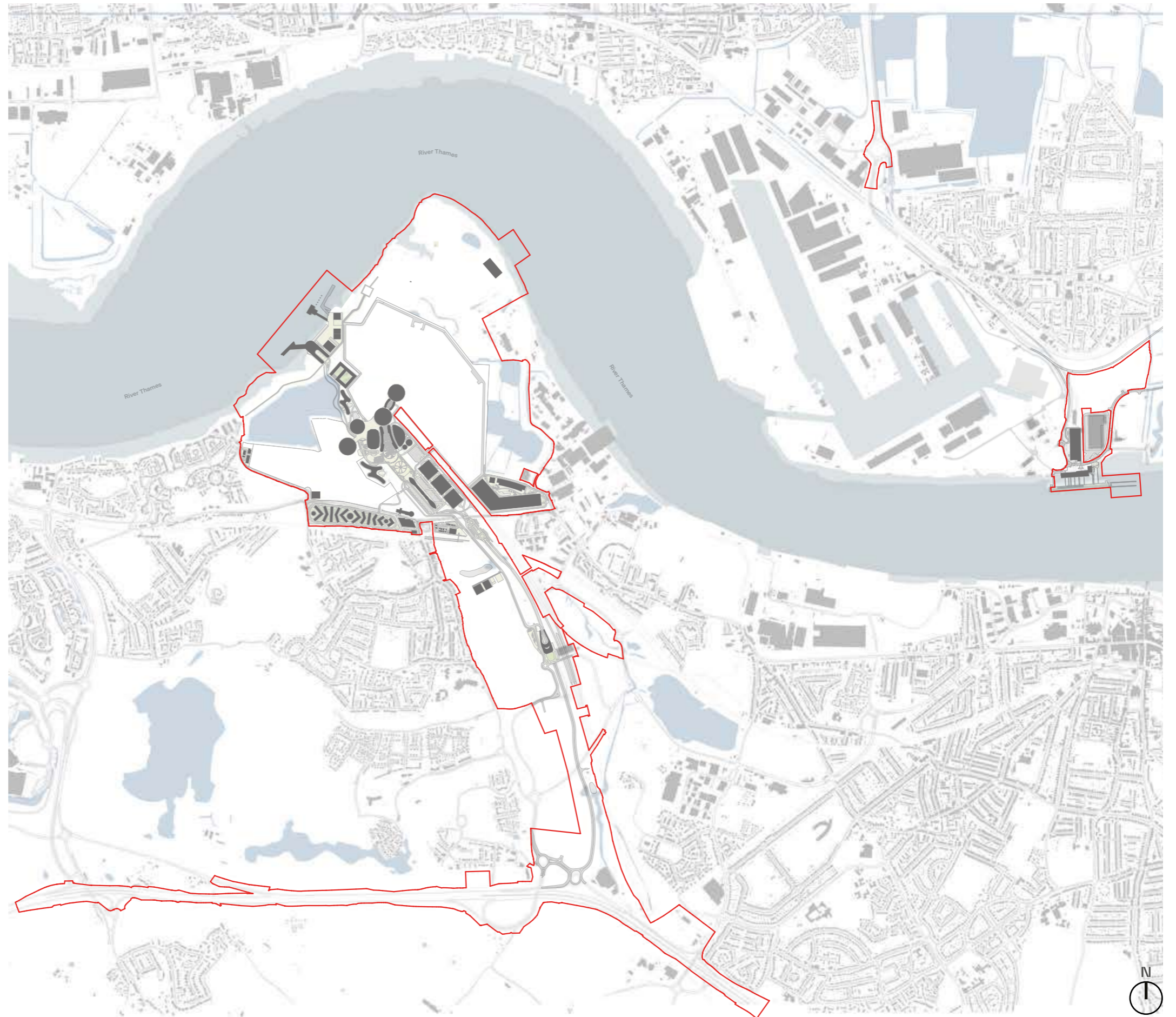
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**Draft Construction Programme**

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 Herts EN11 9BX

## Appendix 3.0 – Site Plan

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# Site Plan



— Order Limits

## Appendix 4.0 – Building zones

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## Building Zones

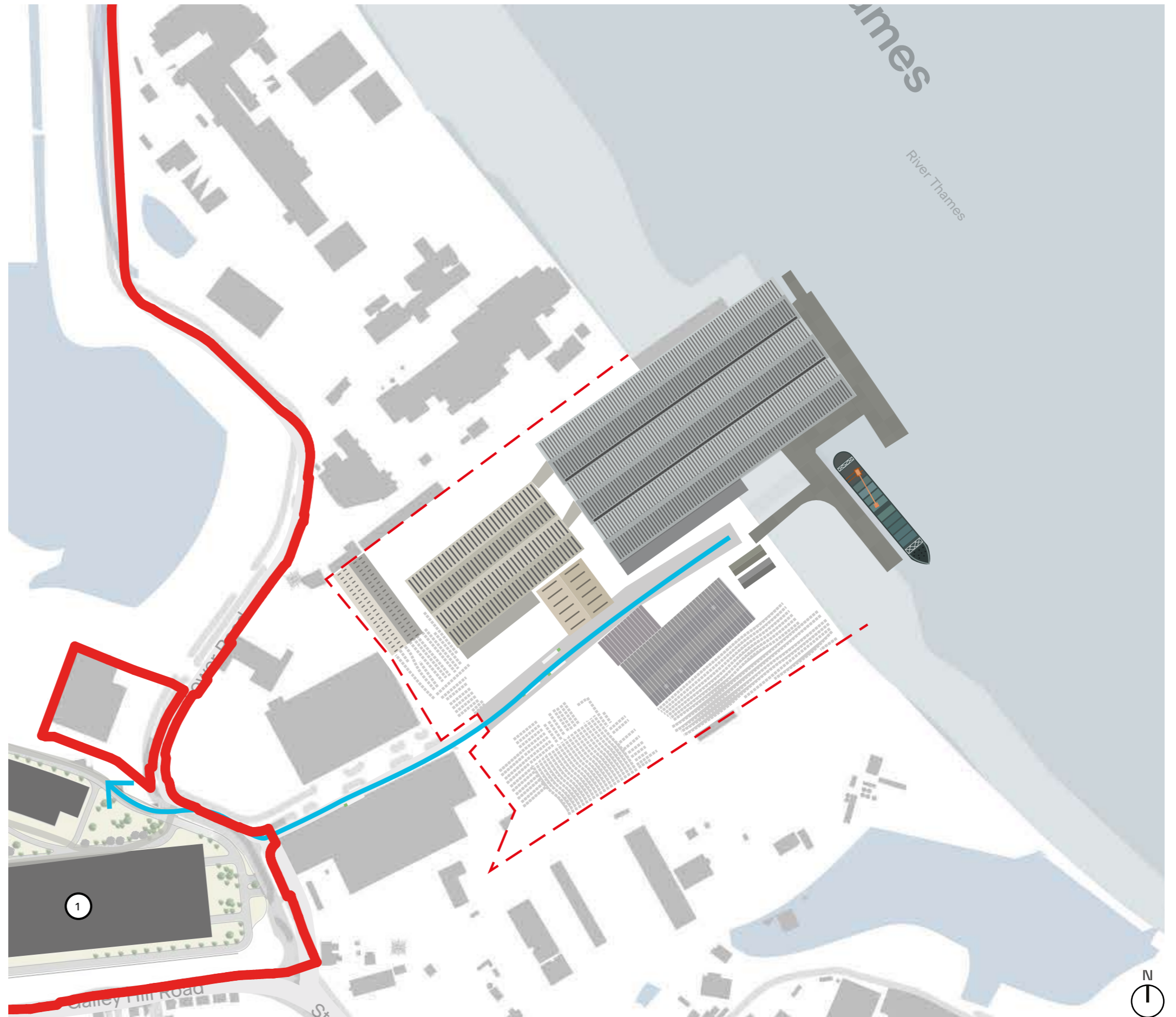
- 1 Water Treatment Facility
  - 2 Gate 1
  - 3 Gate 1 Back of House
  - 4 Ebbsfleet International Terminal (T2)
  - 5 Bamber Pit Back of House
  - 6 The Sports Ground Back of House
  - 7 The London Resort Car Parks (CP1, CP2, CP3)
  - 8 The London Resort Passenger Terminal (T1)
  - 9 The London Resort Plaza
  - 10 The London Resort Hotel (H1) & Boulevard
  - 11 The Waterpark
  - 12 Node 3 : Gate 1 Payline
  - 13 Node 2 : The Market
  - 14 The Conferention Centre
  - 15 Hotel 3 (H3)
  - 16 Visitor Centre and the London Resort Academy
  - 17 Staff Accommodation
  - 18 Gate 2
  - 19 Gate 2 Back of House
  - 20 Node 4 : Gate 2 Payline
  - 21 The Coliseum
  - 22 Hotel 4 (H4)
  - 23 Hotel 2 (H2)
  - 24 The London Resort Ferry Terminal (T3)
  - 25 The London Resort Port
  - 26 RoRo Facility
  - 27 White's Jetty
  - 28 The London Resort Tilbury Car Park (CP4)
  - 29 The London Resort Tilbury Terminal (T4)
- Order Limits



## Appendix 5.0 – Seacon Terminal

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## Seacon Terminal



1 London Resort Back of House

— Order Limits

- - - Seacon Boundary

→ Delivery route from Seacon Terminal to The London Resort

## Appendix 6.0 – Site compounds and offices

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## Site Compounds and Offices



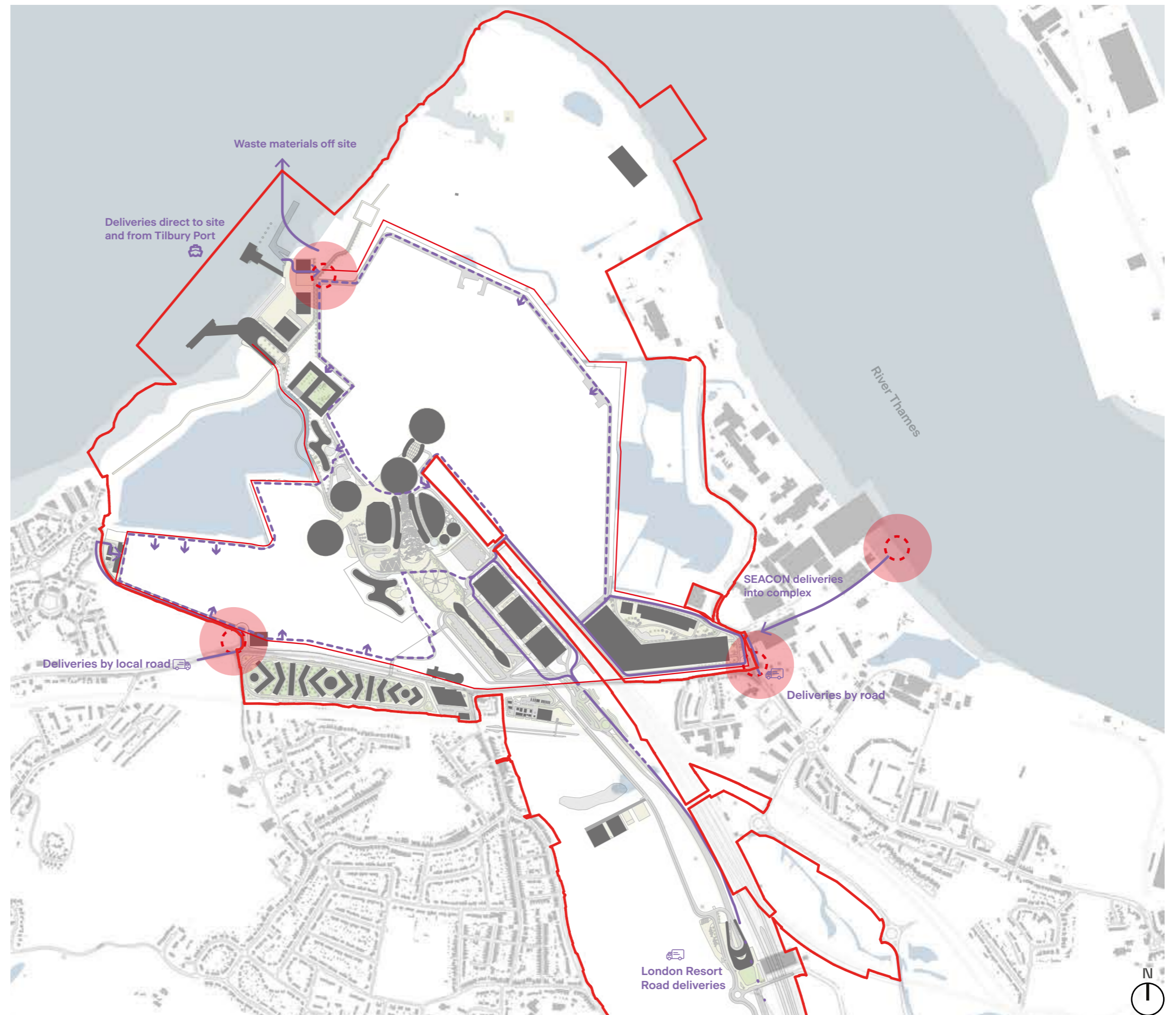
- Order Limits
- Gates 1&2
- Gate 2 Admin Complex Hub (Offices, Car Parking, Caravan Park, modular accommodation) and build Light Medical Facility
- Site compound and offices (temp). Each building zone will include a storage compound area
- Concrete Batching Plant Area
- Potential Batching Plant area
- ← HS1 Access

## Appendix 7.0 – Delivery proposals



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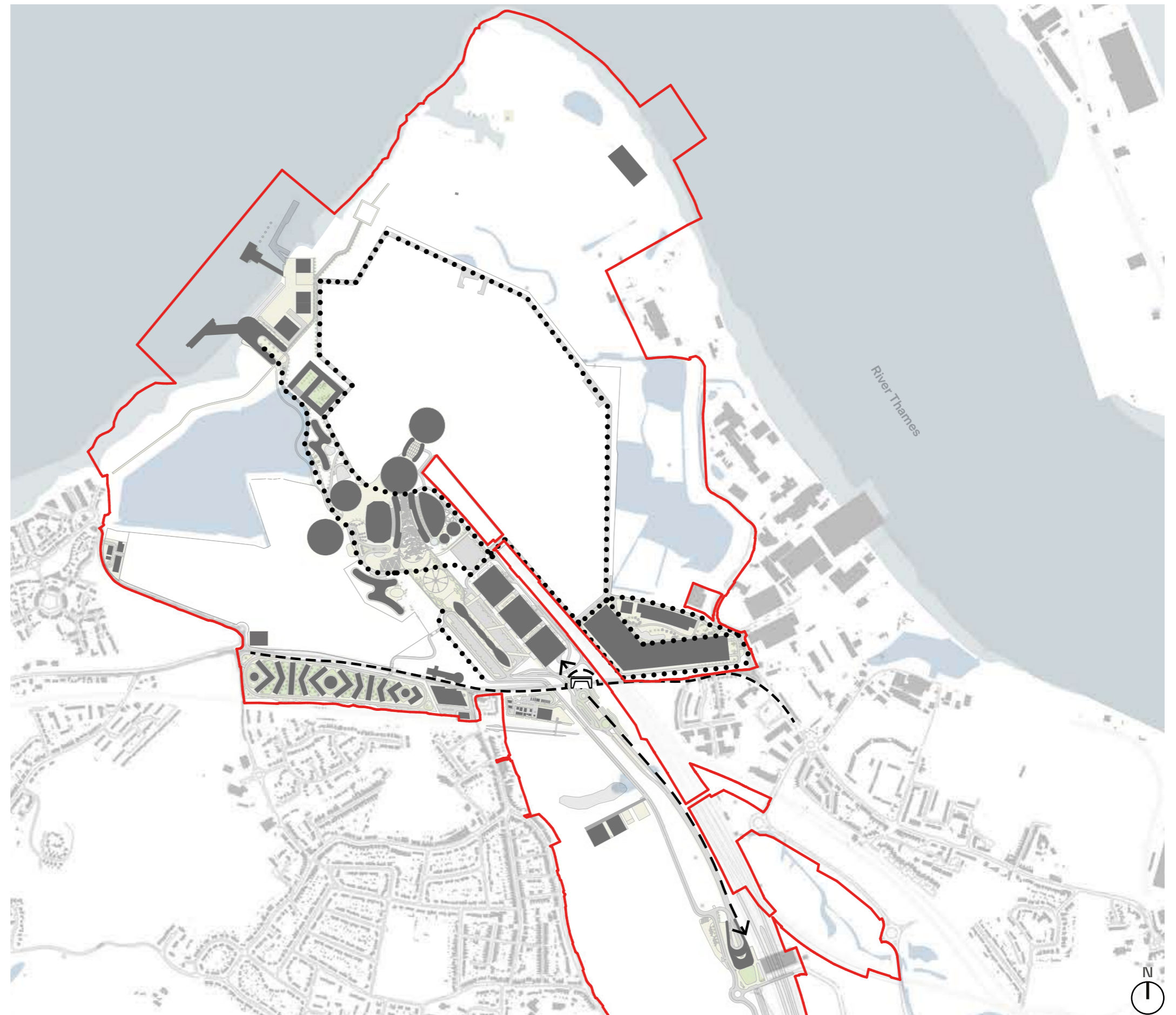
## Delivery Proposals



## Appendix 8.0 – Internal road distribution

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## Internal Road Distribution



## Appendix 9.0 – Construction phasing plans

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**Construction Phase [1]**

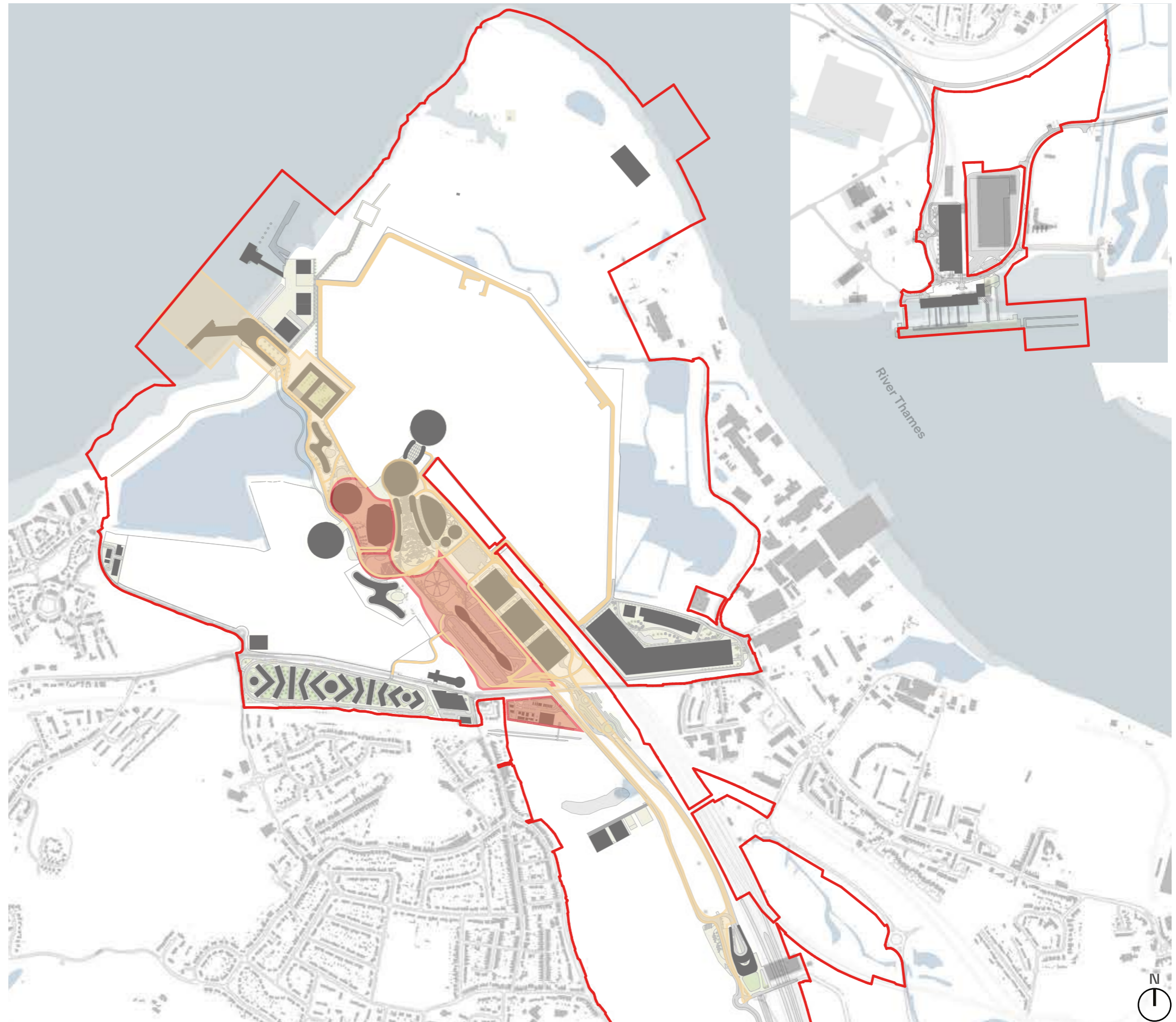


- Site compound and offices (temp). Each building zone will include a storage compound area
- Potential Batching Plant area
- Starting works
- Jetty preliminary works
- Archaeology
- Site security/compounds and fencing
- Contamination/decontamination
- Start on site hotel sub-structure
- New road A2 to peninsula
- Ground modelling
- Internal road construction
- Utility infrastructure
- Arrivals Plaza commence
- Ongoing
- Completed





### Construction Phase [2]



- Starting works
- Boulevard and Market
- Confederation Centre
- Surface Car Park
- Energy Centre
- Ongoing
- Completed
- Ground modelling complete to construction areas
- Remediation works



Construction Phase [3]



Starting works

Sub-structure Hotel 3  
Gate 1 Themed area  
Ground modelling  
Internal road network  
Utility infrastructure.

Ongoing

Internal road network  
Utilities infrastructure

Completed

Ground modelling complete





### Construction Phase [4]



- Starting works
- Project building/sub structure
- Node 1
- Boulevard
- Node 2/3
- Staff Accommodation
- Office Building
- Maintenance Building
- The Coliseum
- Ongoing
- Completed



Construction Phase [5]

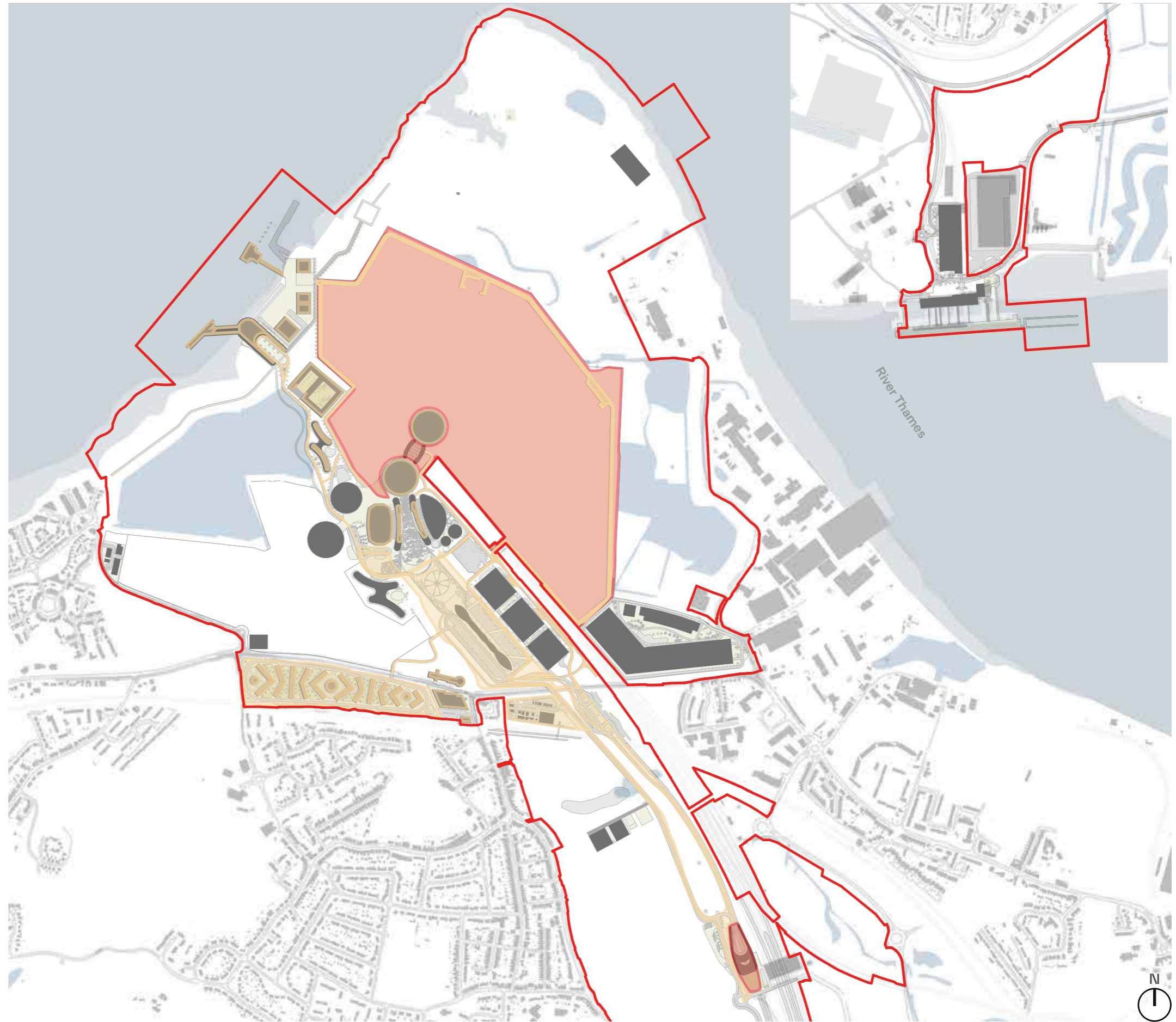


- Starting works
- Visitor Centre
- Ongoing
- Construction of individual buildings
- Completed
- Surface Car Park





Construction Phase [6]



- Starting works
- Ebbsfleet International Station Gate 1 (sub-structures)
- Ongoing
- Construction of individual buildings
- Completed
- Maintenance buildings



### Construction Phase [7]



Starting works

Start on site (Gate 1)

Ongoing

Construction of individual buildings  
Node 2

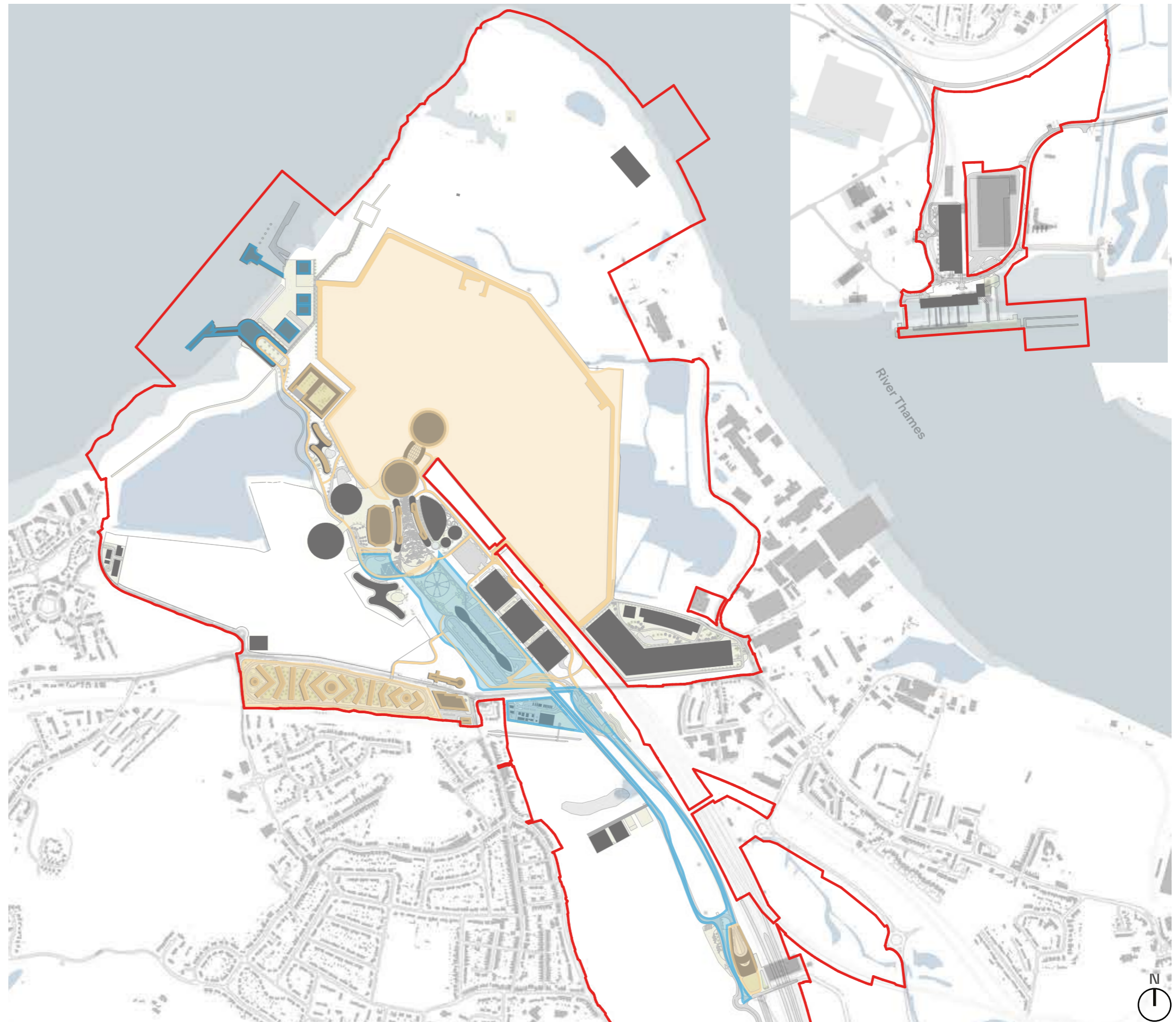
Completed

Node 1  
Ferry Terminal  
Energy Centre/Waste Recycling Centre  
New road completed and operational





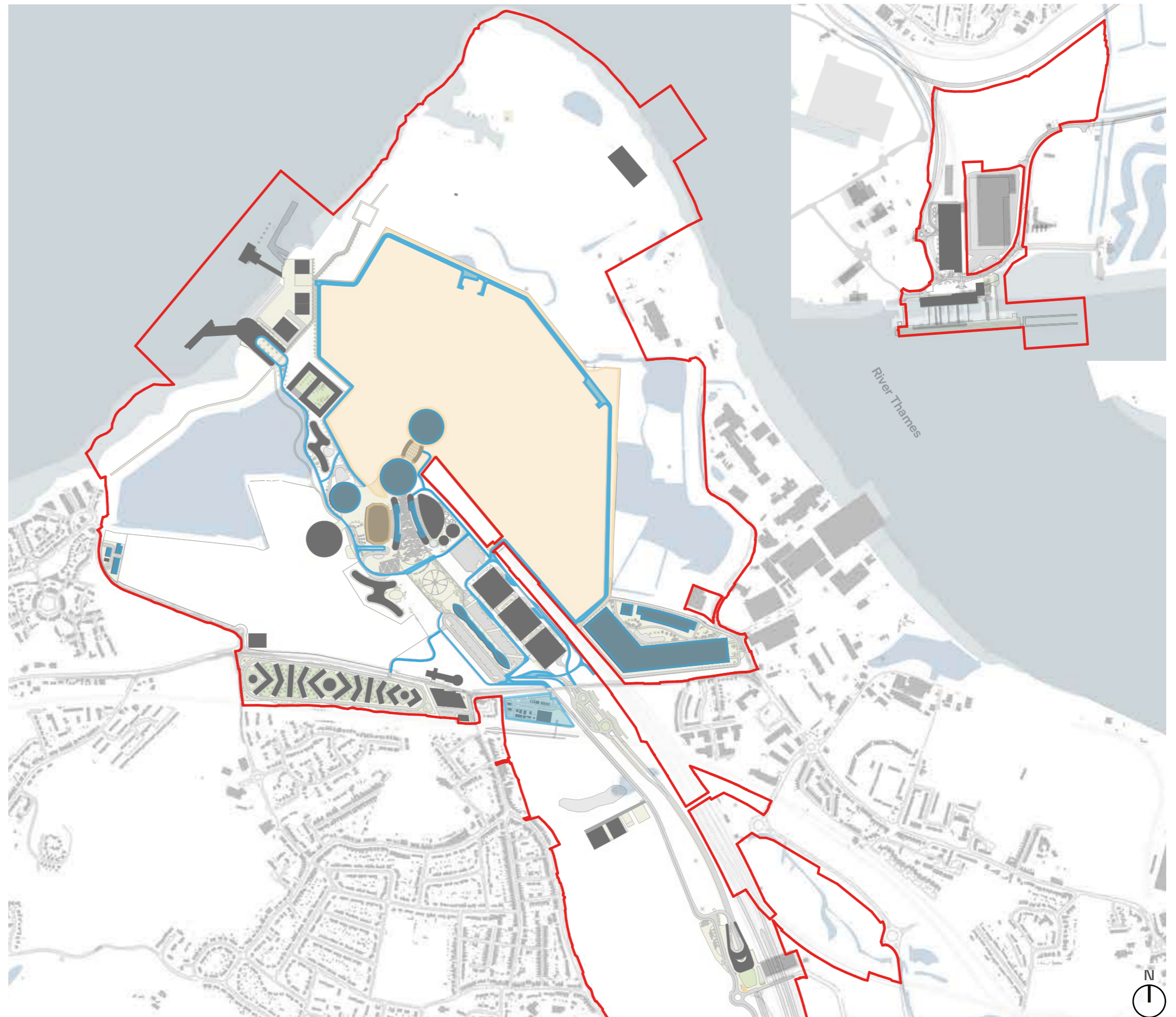
### Construction Phase [8]



- Starting works
- Ebbsfleet International Station Gate 1 (sub structures)
- Ongoing
- Gate 1
- Completed
- Hotels - commissioning
- Staff Accommodation
- Visitor Centre/Training Facility
- Multi-Storey Car Park



Construction Phase [9]



- Starting works
- Dismantling of contractors compounds and infrastructure
- Ongoing
- Completed
- Construction/commissioning to all buildings





### Construction Phase [10]



Starting works

Ongoing

Final works to all buildings/landscaping and external works  
Fitting out to Conference Centre ongoing

Completed

Completion of Gate 1  
Month 30 complex open to the public



Construction Phase [11]



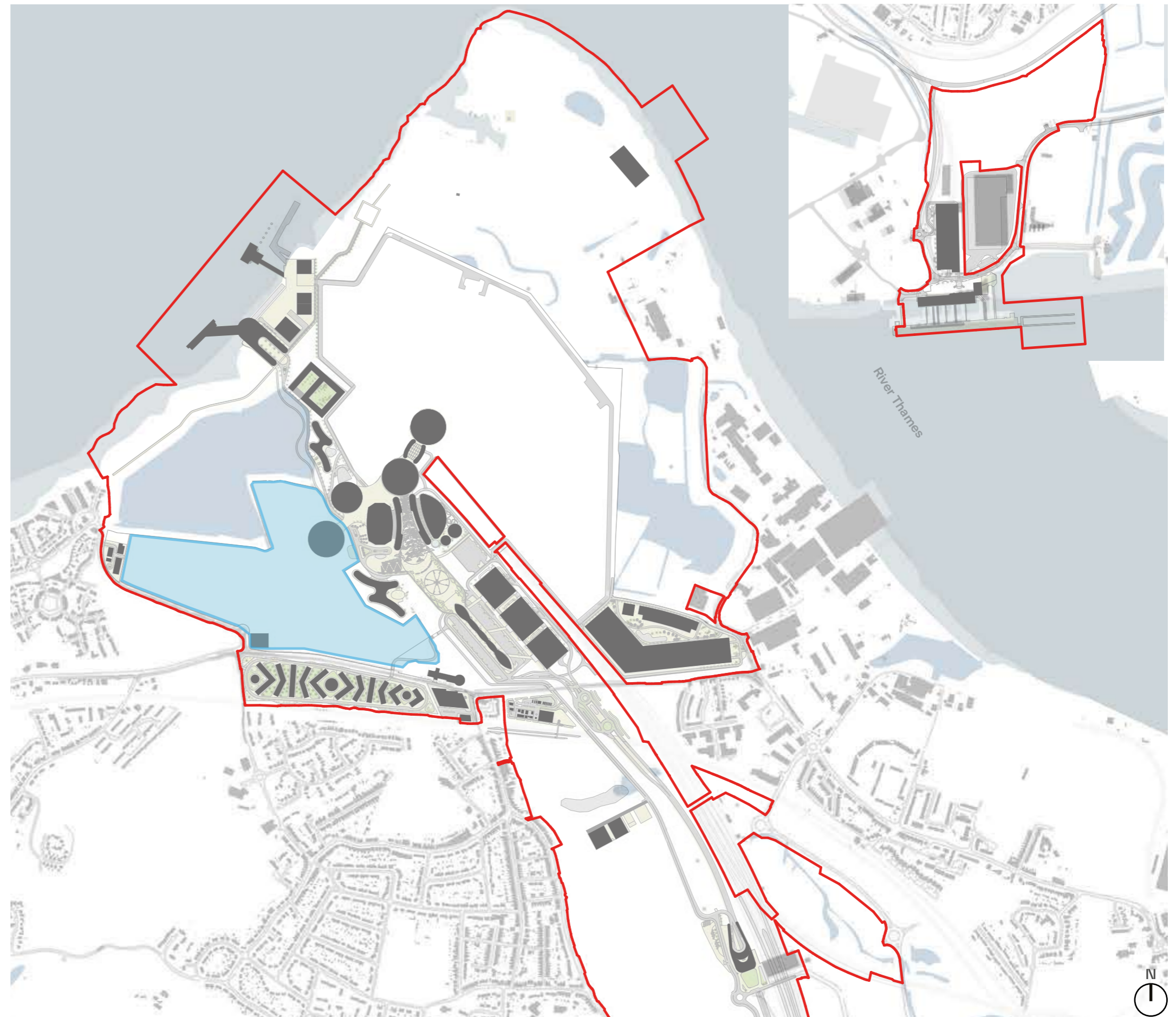
- Starting works
- Ongoing
- Completed

Completion of Conference Centre  
Post opening/snagging and commissioning





### Construction Phase [Gate 2]



- Starting works
- Provisional start date 3<sup>rd</sup> quarter 2027
- Ongoing
- Completed
- Completion and operational 2029

## Appendix 10.0 – Outline Community Engagement Plan (construction)

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# **The London Resort Development Consent Order**

BC080001

## **Outline Community Engagement Plan (Construction)**

Revision: 00

December 2020

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## Revisions

Revision	Description	Issued by	Date	Approved by
00	Issue for DCO submission	BOS	24/12/2020	LRCH/COP

### Copper

Third Floor  
 11-15 Farm Street  
 London  
 W1J 5RG



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2 Chapter Two ◆ Community Engagement Plan	3

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## Chapter One ◆ Introduction

### INTRODUCTION AND PURPOSE OF DOCUMENT

- 1.1. This document, the Outline Community Engagement Plan (CEP) (construction) sets out the approach that London Resort Company Holdings (LRCH) will take to ensure that it maintains community and stakeholder engagement activities beyond the point of achieving DCO consent. It provides an outline approach to delivering engagement and communications activity throughout the period of enabling works and construction.
- 1.2. It seeks to maintain, and where possible build upon, networks that have been established within the community and with stakeholders during pre-application consultation to provide consistency and continuity. However, it also considers additional communications mechanisms, channels and stakeholder groups, that may become appropriate in the next phase of the project.
- 1.3. LRCH will ensure it regularly conducts engagement and communication activities with the local community during the construction of the Resort, to include enabling works.
- 1.4. LRCH has always been committed to ensuring that the London Resort works for the local community as well as visitors. This outline CEP outlines how this will be achieved and how LRCH's ongoing relationship with the local community will continue throughout the construction period.
- 1.5. Residents living within the vicinity of the Project Site, and businesses operating in the local area, will be regularly informed and updated regarding the activities related to the progression of the Resort.
- 1.6. A more detailed CEP will be developed closer to the time of enabling works and construction starting at the Project Site. This will be informed by ongoing engagement and communications activity over the DCO examination phase.
- 1.7. A subsequent plan addressing community engagement will be developed to cover the operation of the Resort, at the appropriate point.

### SCOPE AND OBJECTIVES

- 1.8. The role of the CEP is to outline planned community engagement activity in the areas that surround the Resort and will be impacted during construction of both Gate 1 and Gate 2.
- 1.9. Specifically, the CEP outlines:
  - the role of the Community Relations team;

- project contact details;
- community stakeholders that are covered by this plan;
- core engagement channels;
- core engagement topics;
- frequency of engagement;
- location-specific tactical engagement plans;
- how progress will be tracked; and
- enquiries and complaints procedures.

1.10. This CEP will be delivered by LRCH's dedicated Community Relations team.

1.11. Key objectives are as follows:

- Conveying important public health and safety messaging (we are relentless in ensuring all of our construction work will be carried out to the highest safety standards);
- Providing clear signage indicating messaging about route diversions and safety precautions for the public to adhere to; and
- Maintaining our existing strong links to and relationships with the local community surrounding the site for the Resort and being a 'good neighbour'.

## Chapter Two ◆ Community Engagement Plan

### STAKEHOLDERS

- 2.1 It is important to LRCH that the local community, the general public and other stakeholders continue to be involved in the development of the Resort, and that they continue to be involved and engaged during the construction phase.
- 2.2 For the purposes of this CEP, the ‘community’ is defined as
- Individuals, businesses and groups based or living in the vicinity of the Resort;
  - Individuals who are users of the area or visitors to it (e.g. workers, commuters, and shoppers); and
  - Community groups, voluntary organisations, faith communities, and schools and colleges in the vicinity.
- 2.3 Our stakeholder mapping will be reviewed and updated at key milestones during examination and prior to construction starting on site to ensure it is up-to-date, and that new groups are added as appropriate. This will include groups identified through consultation and ongoing engagement activity during the pre-construction and examination period.
- 2.4 Key stakeholder categories include:
- Local government, including county councils, borough/district councils and parish councils;
  - Political representatives, e.g. MPs and related officials;
  - Community representatives, including residents’ associations;
  - Local interest groups;
  - Residents in the vicinity of the Resort;
  - Local community and users;
  - Local businesses and community facilities; and
  - Hard to reach groups.

- 2.5 Ongoing engagement will continue with host authorities, and appropriate statutory consultees. Where construction causes impact to services, for example causing road closures, impacting engineering works, limiting access to stations and other facilities, we will work with the relevant service providers to agree messages and ensure timely dissemination of information through LRCH and their customer channels.

## CHANNELS AND TOOLS

- 2.6 LRCH will employ a range of communication methods and tools, building on successful and established channels and engagement activity. By using a combination of digital and traditional communications methods, LRCH will ensure that all target audiences, notably those within the local community most likely to be affected by construction, will be kept as up-to-date as possible.
- 2.7 Channels include:
- LRCH Website;
  - LRCH Social Media Channels;
  - Local community events;
  - LRCH hosted Webinars;
  - LRCH Newsletters (digital and hard copy) and direct mail;
  - Press; and
  - Local influencers (councillors, community group leaders etc.).
- 2.8 The construction phase will provide LRCH with a physical presence in the area. Communications activity will include:
- On-site information boards and hoardings; and
  - Establishment of a Visitor Centre, with events and site tours during construction (subject to health and safety requirements).

## LIAISON GROUPS, FORUMS AND TASKFORCES

- 2.9 LRCH has an ongoing programme of engagement with a variety of stakeholders. Bespoke working groups and forums will be established to maintain engagement with these groups, including but not limited to:

### Community Liaison Group (CLG)

- 2.10 Established in June 2016, the group reconvened in summer 2020, prior to statutory consultation. Membership is drawn from local elected representatives, organisations and community groups with an interest in the Project. The purpose of the group is to provide a forum for discussion and feedback, and to assist with the provision of information to the local community. Membership will be reviewed on an ongoing basis and updated as and when appropriate.
- 2.11 This group will play an important role in helping to inform the detailed engagement plan for the construction phase, disseminating information to the wider community, and feeding back any issues or concerns.

### Accessibility and inclusivity forum

- 2.12 At the time of the DCO submission, LRCH is preparing to set up an Accessibility and Inclusivity Forum. This follows on from an accessibility webinar which took place during Stage 5 statutory consultation, and as informed by consultation feedback.
- 2.13 This group will draw membership from key stakeholder groups that represent members of the community facing accessibility issues, and will play an important role in ensuring the needs and views of disabled people are taken into account during this phase.

### Employment and Skills Taskforce

- 2.14 LRCH is working with providers of education services and stakeholders that are focussed upon employment skills in the development of an *Outline Employment and Skills Strategy* (document reference 6.2.7.7).
- 2.15 By the time the project reaches the construction phase, an Employment and Skills Taskforce will be established. This group will be able to assist with the provision of information to local schools and further education establishments, helping to disseminate messages to teachers, students and parents in the community, and help to shape a Science Technology Engineering Arts and Mathematics (STEAM) outreach programme.

### An iterative approach

- 2.16 Additional liaison group and fora may be set up as we progress through the post consultation and examination phases, in addition to dedicated channels or topic specific workshops or newsletters.
- 2.17 The need for this will be informed by feedback from local communities and residents. These are important as they allow for two-way discussion and feedback, ensuring that issues, concerns or misunderstandings within the community can be fed back to LRCH and resolved.



## COMMUNITY RELATIONS TEAM

- 2.18 LRCH has a dedicated Community Relations team that will lead on public engagement during the construction process. They will be the first point of contact for the local community, able to respond to any questions and progress any complaints or enquiries.
- 2.19 Contact details for the team are as below:
- Telephone: 0800 470 0043 (operated weekdays between 9:00am and 5:30pm, with a 24-hour answerphone service)
  - Email: info@londonresortcompany.co.uk
  - Post: FREEPOST: LONDON RESORT CONSULTATION
- 2.20 Local communities will also be able to contact LRCH's through the Resort's established social media channels on Facebook and Twitter.

## EXPECTED TOPICS AND AREAS OF ENGAGEMENT

- 2.21 We are committed to working with the local community that will be affected during the construction phase of the Resort, in order to mitigate potential impacts as far as possible. We will give careful consideration to all matters that arise during that period, which are likely to include:
- Phasing of work, schedule and timetable;
  - Concerns about auditory and visual impact;
  - Impacts on the road network, traffic management and transport;
  - Environmental impacts; and
  - Cultural heritage.

## COMPLAINTS HANDLING AND INVESTIGATION PROCEDURE

- 2.22 As part of the application submission, an *Outline Construction and Environmental Management Plan* (document reference 6.2.3.2) has been developed which details how LRCH will manage the potential impacts of the London Resort on the local community during the construction process.
- 2.23 Included within this document is a proposed complaints procedure for the London Resort. This is explained below, and should be considered to also form part of this CEP.
- 2.24 The purpose of this procedure is to describe the requirements for the receiving and distribution of incoming correspondence / emails and telephone complaints about the

construction of the London Resort (such as dust and noise issues) and to outline the methods of internal communication.

- 2.25 The procedure will ensure that formal complaints in relation to the operations at the London Resort can be addressed and closed accordingly.
- 2.26 The procedure will also facilitate suggestions for improving related construction impacts.
- 2.27 The Community Relations team will normally receive all incoming communication relating to impacts of construction works.
- 2.28 On receipt of the correspondence the team will:
- Examine the content and acknowledge receipt within three working days;
  - Seek advice from the Project team (if required) to provide further context around the enquiry;
  - Carry out an investigation (if required);
  - Ensure corrective action is applied (if required);
  - Undertake ongoing dialogue with originator of the complaint; and
  - Compile a formal response with corrective actions and ensure this is closed with originator.
- 2.29 Records of all complaints and enquiries and how they have been dealt with will be held centrally by the Community Relations team on their specific General Data Protection Regulation compliant database.
- 2.30 All of our contractors will adhere to a strict code of conduct, and will represent the Resort through a respectful approach to the community.