The London Resort Development Consent Order

BC080001

Environmental Statement
Volume 4: Non-technical Summary

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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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London Resort Company Holdings Limited

The London Resort

Non-technical summary of the Environmental Statement

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One ◆ Introduction

BACKGROUND

1. This document is the *Non-Technical Summary* (NTS) of the *Environmental Statement* (ES) of proposals by London Resort Company Holdings Limited (LRCH) for a new leisure and entertainment attraction known as the London Resort. The ES sets out the findings of an environmental impact assessment (EIA) of the Proposed Development, including identifying significant positive and negative environmental effects and ways to reduce or avoid any harm that the London Resort might cause to the local environment and living conditions. This information will help the government to decide whether to give consent for the Proposed Development or not.

London Resort Company Holdings Limited

2. LRCH is a UK-registered company established specifically to promote the London Resort. It is led by a management team with considerable experience of delivering and operating some of the world's largest leisure, sports and entertainment developments, and is supported by international investors. LRCH has entered into licence agreements with UK and international film and television studios and is working closely with these partners to develop high quality and innovative themed attractions in the Resort.

Projects of national significance

3. In May 2014 the government confirmed that project qualifies as a 'nationally significant business or commercial project' under the Planning Act 2008. This means that rather than applying to the local councils for planning permission, LRCH is required to apply for a 'Development Consent Order' (DCO) from the government.

4. Before applying for a DCO an applicant is required to undertake extensive public consultation and use the feedback to refine the development proposals. Several rounds of public consultation have been held for the project since 2014, with the latest taking place between 27 July and 21 September 2020. A *Consultation Report* setting out LRCH's response to matters raised in the consultation is submitted as part of the DCO application (document reference 5.1).

Environmental impact assessment

5. LRCH applied to the government for an EIA 'scoping opinion' in June 2020 (document reference 6.2.1.3). This is a stage that ensures that LRCH can make sure that the ES will contain the information required to inform the government's decision-making.

6. The ES provides a detailed account of the likely significant effects and is based upon the

scoping opinion received from the government in July 2020 (document reference 6.2.1.4).

SITE DESCRIPTION

7. The Project Site lies approximately 30 km east-south-east of central London on the south and north banks of the River Thames, in the ceremonial counties of Kent and Essex (please see figure NTS-1 at the end of this document). For clarity, the section of the Project Site to the south of the River Thames is referred to as the 'Kent Project Site' and that to the north of the river is identified as the 'Essex Project Site'. The term 'Project Site' refers to both the Kent and Essex Project Sites collectively. The 'Order Limits' within which the proposed DCO would apply are shown on the Location Plan (document reference 2.1).

8. The Kent Project Site occupies much of the Swanscombe Peninsula, formed by a meander in the River Thames, and includes a corridor for transport connections extending generally southwards to the A2(T). It also includes a section of the A2(T) corridor approximately 3.5 km in length between the existing Bean junction to the west (A2(T) / B255) and Pepper Hill (A2(T) / B262) to the east. The Kent Project Site occupies 387.53ha of land in a complex shape.

9. The Kent Project Site includes land falling within the areas of Dartford Borough Council (DBC) to the west and Gravesham Borough Council (GBC) to the east. The majority of the Kent Project Site also falls within the Ebbsfleet Garden City, established in April 2015, for which Ebbsfleet Development Corporation (EDC) is the Local Planning Authority.

10. The High Speed 1 (HS1) line crosses the Kent Project Site along an approximate north-west to south-east axis. The urban areas of Stone, Greenhithe, Ingress Park and Swanscombe lie to the west and south. These are largely residential in character, with commercial uses concentrated on Stone's river frontage. Beyond Greenhithe to the south-west of the Kent Project Site lies Bluewater shopping centre, a significant regional retail destination. To the east of the Kent Project Site lies Northfleet, a neighbourhood of mixed residential and commercial uses.

11. Across the southern and south-eastern parts of the Swanscombe Peninsula is an extensive industrial area concentrated around Manor Way, Galley Hill Road and London Road. To the south of the A2(T) the land is more open and rural in character, with small settlements amid farmland and woodland blocks. Most of this area lies in the Metropolitan Green Belt.

12. The Essex Project Site includes areas of land east of the A1089 Ferry Road and the Tilbury Ferry Terminal, incorporating the London International Cruise Terminal and non-contiguous the Asda roundabout at the junction of the A1089 St Andrews Road / Dock Road, Windrush Road and Thurrock Park Way. The Essex Project Site is 25.54 hectares in area.

13. The Essex Project Site falls within the area of Thurrock Council, a unitary authority. The Essex Project Site lies immediately to the east of the existing port of Tilbury and to the west of Tilbury2, a new port currently under construction. At the south-east corner of the

Port lies the Tilbury Ferry Terminal incorporating the London International Cruise Terminal (a grade II* listed building featuring a floating landing stage and series of bridge structures). The Asda roundabout is located to the north of the port of Tilbury and incorporates highway land.

PROJECT OVERVIEW

14. The Resort will be a nationally significant visitor attraction and leisure resort, built largely on brownfield land at 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.

15. A detailed description of the Proposed Development is provided in chapter 3: *Project description* (document reference 6.1.3) of the Project ES. The focus of the Resort will be a 'Leisure Core' containing 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'). Outside the Gates will be a range of ancillary retail, dining and entertainment facilities in an area known as the Market.

16. 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 e-Sports Coliseum, creative spaces, a transport interchange including car parking, 'back of house' service buildings, an energy centre, a wastewater treatment works and utilities required to operate the Resort. Related housing is also proposed to accommodate some of the Resort's employees.

17. Substantial improvements are proposed to transport infrastructure. This will include a new direct road connection from the A2(T) and a dedicated transport link between Ebbsfleet International Station, the Resort and a passenger ferry terminal beyond. The ferry terminal would serve visitors arriving by ferry on the River Thames from central London and Tilbury. A coach station is also proposed. 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.

18. The Proposed Development would 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 the retention and enhancement of wildlife habitats.

THIS DOCUMENT

19. The rest of this NTS is set out as follows.

- ***Part two*** explains the Proposed Development, how a site for the London Resort was found and how the site and master plan have evolved.
- ***Part three*** is a summary of the topic-based assessments in chapters 7-21 of the ES.
- ***Part four*** offers some concluding comments and outlines the next steps in the DCO process.

20. Chapter 5: *Relevant law and policy* of the ES (document reference 6.1.5) summarises the law, planning and environmental policy and national and local tourism strategies that are relevant to a consideration of the London Resort proposals. This chapter is not summarised in this document.

21. If more detail is required about the London Resort proposals and their environmental effects it is recommended that the reader looks at the ES itself or other documents submitted with LRCH's DCO application. To assist the reader the document reference numbers for these more detailed documents are provided throughout this summary.

Two ◆ Site selection and project description

INTRODUCTION

22. This section summarises chapters three and four of the ES. Chapter 3: *Project description* (document reference 6.1.3) describes the Proposed Development. Chapter 4: *Project development and alternatives* (document reference 6.1.4) explains the site selection process that led the Swanscombe Peninsula in Kent to be identified as the preferred location for an entertainment resort, and looks at the main development options that were considered once the Swanscombe site (known in the ES as the Kent Project Site) had been selected.

FINDING A SITE

23. The UK is one of the most visited countries in the world but lacks an entertainment resort comparable to those found elsewhere in Europe and in the USA and Asia.

24. A question faced by the project promoters at the outset was where in the UK an entertainment resort with a truly global profile should be located. The south-east of England was identified as benefiting from a catchment area sufficient to support an entertainment resort of the scale proposed. Additionally, by a large margin, London is the most popular destination for international visitors, suggesting that a location close to the capital was desirable. London offers direct air and rail connections and is located conveniently with respect to international ferry services. Domestically, London is also the hub of the national rail and road networks. No other region of the UK and few places elsewhere in Europe offer comparable connectivity or population density.

25. If possible, LRCH wanted to find a site for the Resort that would be within 100 km of London, outside the London green belt and Areas of Outstanding Natural Beauty, and with good transport connections. If possible the site should also be on previously used or 'brownfield' land in need of regeneration, and located away from existing theme parks.

26. With these considerations in mind, LRCH decided to focus its site search in a broad corridor extending from Northamptonshire in the north-west, around the north and east of London to Kent in the south-east. Options identified through this process are mapped in figure 2 at the back of this document and are as follows.

    1. North Northamptonshire
    2. Marston Vale
    3. Luton and Dunstable
    4. M25 north corridor
    5. M11 corridor

6. Great Leighs racecourse, Essex
7. Southend-on-Sea and Canvey Island
8. Cliffe, north Kent
9. Swanscombe Peninsula, Kent
10. Ashford, Kent
11. Olympic Park legacy development sites, London

27. LRCH assessed site options against broadly-based criteria, giving weight to planning, environmental, social and economic considerations. The criteria included:

- land availability;
- land use;
- proximity to and connectivity with London;
- transport and accessibility;
- environmental constraints;
- planning constraints;
- regeneration and economic benefits;
- micro-climate.

28. The findings of the individual evaluations of these eleven options are summarised in appendix 4.1 to the ES (document reference 6.2.4.1) and illustrated in table NTS-1 overleaf.

29. The original intention was to reduce the long list to a shortlist of between two and four options for more detailed evaluation. In the event, one option performed so well against all of the evaluation criteria in comparison with the alternatives that LRCH decided to focus on confirming the feasibility of that option. The site concerned was the Swanscombe Peninsula on the Thames estuary (option 9).

30. As the summary in appendix 4.1 (document reference 6.2.4.1) to the ES affirms, this option offers a unique combination of advantages. It centres upon a large and generally unused brownfield site with a broadly level terrain, large enough to accommodate a full resort development. It is close to the edge of London but outside of the metropolitan green belt. It lies only 1 km north of Ebbsfleet International Station, which offers high speed train connections to London St Pancras International Station with a journey time as low as 17 minutes and services to and from continental Europe.

31. Strategic highway routes in the locality include the A2(T), which passes 3 km to the south of the peninsula and provides a connection to Junction 2 of the M25 motorway to the west and onwards into London. The Dartford Tunnels and Queen Elizabeth II Bridge crossings of the River Thames lie approximately 3 km to the west of the site. The Swanscombe Peninsula does not contain any international or national wildlife or heritage designations, and it offers the potential to dovetail the Resort development with significant local economic regeneration initiatives. These conclusions were verified in discussions with local authorities and a range of other stakeholders.

Table NTS-1: Summary of the site options evaluation undertaken by LRCH

Red = negative Amber = neutral Green = positive

	Option	**Land availability**	**Land use**	**Proximity to London**	**Transport and accessibility**	**Environmental constraints**	**Planning constraints**	**Regeneration and economic benefit**		**Overall assessment**
1.	**North Northamptonshire**									
2.	**Marston Vale**									
3.	**Luton / Dunstable**									
4.	**M25 north corridor**									
5.	**M11 corridor**									
6.	**Great Leighs racecourse**									
7.	**Southend / Canvey Island**									
8.	**Cliffe, north Kent**									
9.	**Swanscombe, north Kent**									
10.	**Ashford, Kent**									
11.	**Olympic Park legacy sites**									

RESORT DESIGN AND EVOLUTION

32. To explore in detail the potential of the Swanscombe site, LRCH has undertaken a range of activities including the following.

- ***Site evaluation***, including studies of ground conditions, landscape and heritage sensitivities and ecology field surveys. The outputs from these surveys is explained in detail in the topic-based chapters of the ES.

- ***Analysis of existing patterns of land use, land ownerships and liabilities***. This work has been informed by extensive dialogue with landowners and occupiers on the Project Site.

- ***Wide-ranging design studies***. This design work has tested different development layouts and transport options, assisting understanding of how the London Resort would fit into the local context.

- ***Extensive consultations*** with local authorities, statutory agencies, landowners and other interested parties. Over the course of the project development, there have been five major rounds of public consultation for the project, the most recent being the statutory public consultation undertaken between July and September 2020.

33. Chapter 4: *Project development and alternatives* of the ES (document reference 6.1.4) explains some of the main development options that LRCH has considered in the evolution and refinement of its proposals for the London Resort.

THE PROPOSED DEVELOPMENT

34. The Planning Act 2008 provides that development consent may be granted for both a Nationally Significant Infrastructure Project (NSIP), referred to as the 'Principal Development', and for 'Associated Development', which is development that supports the Principal Development. The Housing and Planning Act 2016 enables DCO development to be accompanied by 'Related Housing', with a guideline maximum of 500 dwellings to be consented by this means. The London Resort DCO application includes up to 500 Related Housing units to accommodate some of the Resort's workforce.

35. The master plan for the London Resort is shown in figure 3 at the back of this document. The main elements of the Proposed Development are as follows.

36. The ***Principal Development*** includes:

- the treatment of polluted land, especially on the Swanscombe Peninsula;

- the Leisure Core, comprising a range of events spaces, themed rides and attractions, entertainment venues. The main theme parks would be developed in landscaped settings in two phases known as Gate One and Gate Two.

- terrain remodelling, hard and soft landscape works, amenity water features and planting;

- pedestrian and cycle access routes and infrastructure;

37. The ***Associated Development*** includes:

- public areas outside the two Gates offering a range of retail, commercial, dining and entertainment facilities in a sequence of connected public spaces including an area identified as the Market;
- the A2(T) Highways Works comprising modified roundabouts with traffic signals at the A2(T) / A2260 Ebbsfleet junction.
- car parks with an overall volume of 10,750 spaces, split between the Kent and Essex Project Sites;
- four hotels providing family, upmarket, luxury and themed accommodation totalling up to 3,550 suites or 'keys'. One hotel will incorporate access to an enclosed water park;
- a 'Conferention' Centre (i.e. a combined conference and convention centre) capable of hosting a wide range of entertainment, sporting, exhibition and business events;
- a e-Sports Coliseum designed to host video and computer gaming events and exhibitions;
- a 'Back of House' area accommodating many of the necessary supporting technical and logistical operations to enable the Entertainment Resort to function, including administrative offices, a security command and crisis centre, maintenance facilities, costuming facilities, employee administration and welfare, medical facilities, offices and storage facilities, internal roads, landscaping and employee car parking;
- a visitor centre and staff training facility;
- an operations resource centre;
- a people mover and transport interchanges;
- a Resort access road of up to four lanes (i.e. up to two lanes in each direction;
- local transport links,
- river transport infrastructure on both sides of the Thames, including the extension of the existing floating jetty at the Tilbury ferry terminal and a new floating jetty and a reconditioning of Bell Wharf at the Swanscombe Peninsula;
- utility compounds, plant and service infrastructure including an energy centre;
- a wastewater treatment works with associated sewerage and an outfall into the River Thames;

- flood defence and drainage works;
- habitat creation and enhancement and public access;
- security and safety provisions;
- data centres to support the Resort's requirements.

38. ***Related Housing*** comprising up to 500 flats for Resort workers. Each flat would typically include 4-6 bedrooms.

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

40. 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 (serving visitors arriving by ferry on the River Thames from central London and Tilbury); a new direct road connection from the A2(T) and a coach station. 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.

Building the Resort

41. Detailed information on how the Resort would be built, including environmental safeguards, is provided in a *Construction Method Statement* (CMS, document reference 6.2.3.1), a *Construction Environmental Management Plan* (CEMP, document reference 6.2.3.2) and a *Construction Transport Management Plan* (CTMP, document reference 6.2.9.2). Outline versions of these documents have been submitted with DCO application for the London Resort.

The Resort in operation

42. The London Resort is designed to cater for up to 6.5 million visitors per year with Gate One open only, and up to 12.5 million visitors per year with Gates One and Two in operation. It will be a destination with a global profile, with up to 35% of visitors projected to come from overseas.

43. Visitors would arrive at the London Resort by a range of transport modes including train, car, coach and ferry. On arrival at the Resort's arrivals plaza, the Resort layout will aim to lead them intuitively to their destination of choice, which might be the hotels, the retail, dining and entertainment (RDE) area outside the payline for Gates One and Two.

44. Visitors might come for one day or opt to stay in one of the Resort's hotels for a longer

visit. With its transport terminals and the RDE area all outside the paylines for Gates One and Two, it is intended also that the RDE area will be attractive to afternoon or evening visitors from the local area and beyond. The proposals include connections to pedestrian routes to encourage local visits, including the comprehensive enhancement of Pilgrims' Way from Swanscombe.

Gates One and Two

45. Gates One and Two will each incorporate theme park rides and attractions, events spaces and entertainment venues. Each Gate will be subdivided into themed zones. These zones will reflect agreements with intellectual property (IP) brands with a global profile and will include rides and attractions suitable for families, children and the more adventurous thrill-seeking visitor. These will include film, television and computer gaming brands as well as attractions bespoke to the London Resort. From time to time, attractions will be updated or replaced to ensure that the Resort always has a fresh appeal to visitors, and flexibility is sought in the DCO to this end.

46. The proposed maximum heights above sea level for buildings and structures within Gate one range from 40 to 100m and for Gate Two between 35 and 65m. The upper height parameters enable the construction of tall rides and centrepiece features such as a castle. At least 60% of the attractions within the Gates will be located inside buildings with the aim of providing a compelling entertainment experience regardless of the weather. In Gate Two the indoor and outdoor attractions would be arranged with a view to maintaining residential amenity in adjacent neighbourhoods including Ingress Park.

47. Shops and restaurants, cafes and outlets linked to the Resort experience will be integrated into Gates One and Two. A combination of theatres and indoor and outdoor venues in Gates One and Two will provide West End quality productions and shorter-format shows.

48. Both Gates will have an external entrance plaza providing guest services and shops and a 'City Hall' building that will include administrative offices, security and first aid and information services.

Associated development

49. Four hotels with up to 3,550 suites or 'keys' will provide overnight accommodation for visitors, these will be located in the Leisure Core close to Gates one and Two.

50. Outside the Gates visitors will be attracted by a Water Park, to be located in one of the hotels on site, building dedicated to hosting a range of e-Sports computer gaming events, known as the Coliseum, and a Conferention Centre capable of accommodating up to 4,000 seated visitors and used flexibly for concerts, live television productions, exhibitions and conventions.

Transport infrastructure

51. A maximum provision of 10,000 car parking spaces for visitors and hotel guests is proposed, in up to four multi-storey car parks, along with up to 250 VIP parking spaces under the main visitor plaza and 500 staff parking spaces in the Back-of-House area, giving a total of 10,750 car parking spaces. Also proposed are 200 coach parking spaces, 350 motor cycle spaces and 250 secure cycle spaces for visitors. Approximately 7,500 of these car parking spaces are proposed at the Kent Project Site in three multi-storey car parks, along with 150 coach parking spaces. One multi-storey car park with 2,500 spaces is proposed at the Essex Project Site with parking for 50 coaches at ground level.

52. The highway works to the A2(T) will provide a dedicated access to the Resort and separate local and Resort traffic. A new Resort Access Road up to four lanes in width and approximately 2.3km in length will provide the sole means of access by private car between the A2(T) / A2260 Ebbsfleet junction and the Resort. The Access Road would run parallel to the existing HS1 railway and provide access to car parks. Existing roads would continue to provide access to Swanscombe and Northfleet, unimpeded by visitor traffic to the Resort.

53. A 3.1km people mover route is proposed between a proposed Resort travel interchange located to the west of Ebbsfleet International Station and the ferry terminal on the Swanscombe Peninsula. The route would incorporate stops at the main transport interchange adjacent to the Resort car parking area and visitor entrance plazas, with visitor orientation facilities at each. The route would be used exclusively by a dedicated fleet of articulated electric people movers.

54. A passenger ferry terminal with a new floating pontoon jetty is proposed between Bell Wharf and Ingress Park for use by Uber boats by Thames Clippers' passenger ferry services between the Resort and central London and passenger ferry services from Tilbury. Dedicated facilities would be provided at the Essex Project Site in the former Tilbury Riverside railway station building.

Local transport links

55. A network of pedestrian and cycle routes will be provided on the Swanscombe Peninsula to improve connectivity within existing neighbourhoods and create linkages with the network of green spaces.

56. Existing public transport services will be improved to encourage non-car modes of travel to the Proposed Development. A Green Travel plan would be implemented to promote car sharing and non-car based transport modes for staff and an Event Management Plan will explain how the car parking spaces will be used throughout the year and in response to specific events at the Proposed Development.

Other infrastructure

57. LRCH's objective is for the London Resort to be carbon-neutral once in operation. The proposals include renewable electricity supply, renewable heating and cooling, an electricity sub-station, a wastewater treatment works to serve the Resort and a dedicated waste management facility.

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Three ◆ Environmental effects

INTRODUCTION

58. This section summarises the assessments of the environmental effects of the London Resort proposals under the topic headings listed below.

- Land use and socio-economic effects
- Human health
- Land transport
- River transport
- Landscape and visual effects
- Terrestrial ecology and biodiversity
- Marine ecology and biodiversity
- Cultural heritage and archaeology
- Noise and vibration
- Air quality
- Water resources and flood risk
- Soils, hydrogeology and ground conditions
- Waste and materials
- Greenhouse gases and climate change
- Cumulative effects

59. A chapter for each of these topics can be found in the ES. In this NTS the following standard headings are used in each topic section.

i). ***Introduction***

ii). ***Baseline*** – a summary of what is found or happening in the locality at the moment.

iii). ***Likely environmental effects and proposed mitigation*** – the predicted effects that the construction and operation of the London Resort will have on these baseline conditions, and the protective measures that have been included in the DCO application for the London Resort and identification of any likely significant effects that remain once mitigation has been applied.

1. LAND USE AND SOCIO-ECONOMIC EFFECTS

Introduction

60. Chapter 7: *Land use and socio-economic effects* of the ES (document reference 6.1.7) looks at the effects of the Proposed Development on communities, jobs and livelihoods and the local and regional economy.

61. Chapter 7 of the ES describes in detail the current circumstances of the Project Site and surrounding communities. This provides a basis for assessing the effects of the project on:

- **the local and regional economy**: including the effects on existing businesses that might be displaced by the Proposed Development and of the construction and operation of the London Resort, which would represent a very substantial investment in the area.

- **residents:** including the labour market;

- **employment, skills and training providers**: local schools, colleges, universities and training providers, and the people who depend upon their education and skills offerings;

- **housing**: the stock of homes in the housing market (including private rented, short-term accommodation and visitor accommodation) and the people who reside in them;

- **community facilities**: community facilities, including open space and public rights of way) and the people who use them.

Baseline

62. The baseline assessment considers the local and regional context, including existing employment, housing supply, skill levels and educational attainment, open space provision, health and crime, along with the scale and skill levels of the available construction workforce.

63. The picture is dynamic because much of the Kent Project Site and surrounding areas lie in Ebbsfleet Garden City, in which the Ebbsfleet Development Corporation (EDC) is promoting extensive developments of new housing, business and commercial development with supporting transport improvements and social and green infrastructure.

64. Much of the local community has average and higher levels of economic activity, but some neighbourhoods experience deprivation and below-average qualifications and skill levels, both in Kent and Thurrock. A significant minority of the local workforce on both sides of the River Thames commutes to London for employment (table NTS-2 overleaf).

Table NTS-2: Out-commuting rates in the core study area

	Out-commuting	% to London
Dartford	66%	47%
Gravesham	66%	34%
Thurrock	54%	34%
South East	51%	12%
UK	46%	15%

Source: Census, 2011

65. The Proposed Development would displace existing industries on the Northfleet Industrial Estate, Kent Kraft Industrial Estate, Galley Hill Industrial Estate and Manor Way Business Park on the southern edge of the Swanscombe Peninsula. These businesses include heavy industrial functions such as concrete manufacturers, demolition services, metal scrap collectors, vehicle repair centres, and recycling plants.

66. Being close to Greater London and the populous counties of Kent and Essex, there is a large pool of construction workers potentially available to work on the London Resort project. The assessment considers the skills levels available and identifies some concerns around skills shortages and the ageing of the labour pool, but recognises that the Proposed Development would provide a significant opportunity for training and 'upskilling' for construction workers.

67. To inform an assessment of the effects of the London Resort in operation, local leisure, retail, dining and entertainment facilities and the employment they provide are identified. These include businesses in local town centres and in the regional shopping and leisure centres such as Bluewater and Lakeside. In common with the national trend, traditional town centres have been struggling in the face of on-line shopping and changing leisure demand.

68. The baseline assessment of socio-economic effects also considers the national and global context in terms of existing theme park and resort attractions. At present the UK has several theme parks attracting visitor numbers in the range of 1.5-2.5 million per year, but no entertainment resorts of global appeal.

Likely environmental effects and proposed mitigation

Construction

69. The socio-economic assessment finds that the London Resort is likely to generate the following significant residual socio-economic effects.

- At the construction stage of the Proposed Development, major beneficial effects are predicted due to the generation of 3,300 to 5,000 construction jobs in the first phase

of development that includes Gate One, and 1,100 to 1,700 construction jobs during the construction of Gate Two, with attendant opportunities for training and improvements in skills.

- Approximately 90 businesses on existing industrial estates inside the Kent Project Site would be displaced by the Proposed Development, supporting an estimated total of 1,040 full-time equivalent jobs or an estimated 1,160 full and part time jobs in total. LRCH proposes a generous property compensation policy for displaced businesses to assist with their relocation. Given this, it is concluded in the worst case that there would be a moderate adverse effect within the Project Site in 2022 for affected businesses and their employees as a direct result of the displacement.

- To reduce pressures on local housing and accommodation at the construction stage, LRCH proposes to provide accommodation for construction workers inside the London Resort site and/or on a cruise liner moored at the Port of Tilbury.

Operation

70. The socio-economic assessment finds that the London Resort is likely to generate the following significant residual socio-economic effects once operational.

- At the operational stage of the London Resort it is predicted as a worst case that 7,650 jobs (4,835 full-time equivalent jobs) would be created in 2025 with Gate One operational, and 11,845 jobs (7,675 full-time equivalent jobs) once Gate Two is operational in 2029. Once the Proposed Development reaches maturity in 2038, it is predicted that total employment would reach 16,145 (10,170 full-time equivalent jobs).

- The assessment identifies a range of wider socio-economic benefits arising from the construction and operation of the London Resort at the local level, including increased expenditure by workers and visitors, skills and training benefits through the proposed implementation of an employment and skill strategy, and opportunities for local firms to supply goods and services to the Resort.

- The Proposed Development would have major beneficial effects in all assessment years at the national level as a result of the provision of a unique, global resort in the UK. These amount to £50bn of gross economic activity (GVA) generated in the UK over the initial 25-year period and up to 48,000 direct, indirect and induced jobs.

2. HUMAN HEALTH

Introduction

71. Chapter 8: *Human health* of the ES (document reference 6.1.8) looks at the effects of the Proposed Development on human health. Health is defined by the World Health

Organisation as *'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'*. Development and planning can play a role in the wider determinants of health and well-being. The assessment in ES chapter 8 considers the ways in which the London Resort may affect these determinants of health and wellbeing. It also considers health inequalities and how the London Resort may affect different groups in different ways. Potential health effects are set out in table NTS-3 below.

Table NTS-3: Potential health effects considered in this assessment, by phase of development

Construction phase	**Operational phase**
Potential health effect of displacement or change in access affecting public services and community facilities	Any potential health effects associated with changes in noise and vibration
Potential health effect of displacement or change in access to open spaces	Potential health effects associated with changes in air quality
Potential health effects from displacement of commercial uses	Potential health effects from a change in local traffic and active travel
Potential health effects from displacement of residential dwellings	Potential health effects associated with changes in electromagnetic field exposure
Potential health effect of changes to local traffic and transport and changes in use of active travel modes	Potential health effect of increased flooding
Potential health effect of construction resulting in changes in noise and vibration	Potential health effects associated with the creation and disposal of hazardous waste
Potential health effect of construction resulting in changes in air quality	Potential health effects related to water contamination
Potential health effect of construction resulting in hazardous waste	Potential health effects related to changes to levels of neighbourhood amenity
Potential health effects of construction resulting in water contamination	Potential health effects associated with the inclusive design, site access and facilities in and around the London Resort
Potential health effects of construction related to changes to levels of neighbourhood amenity	Potential health effects relating to changes in access to work and skills
Potential effects of the presence of the construction workforce	Potential health effects of provision of worker accommodation
Potential health effect of work and training opportunities created	Potential health effects of change in the demand for residential accommodation
Potential health effect of construction workers on health services	Potential health effects from a change in the demand for health services
Potential construction health effects related to a changing climate	Potential health effects from a change in the demand for public services and community facilities
	Potential health effects associated with open space provision and amenity space
	Potential health effects from changes in community cohesion

Construction phase	Operational phase
	Potential health effects from changes in crime and community safety (including fear of crime)
	Potential health effects from changes to access to healthy and unhealthy food
	Potential health effects from changes in the transmission of communicable diseases
	Potential health effects related to a changing climate

Baseline

72. The assessment identifies a complex pattern of health trends in the defined study area and identifies contributory factors including economic deprivation and low skills, which both affect well-being. Other influences including air quality and access to open space are also taken into account. The assessment identifies vulnerable groups, set out in table NTS-4 below.

Table NTS-4: Receptor populations considered in this assessment

Receptor population group	Receptor population
General population	Residents
	Workers in the area and on site
	Visitors to the area (including those visiting the London Resort)
	Road and public transport users, pedestrians and cyclists (transport users)
Vulnerable groups	Children and young people
	Pregnant women
	Older people
	Low-income groups and the unemployed
	Ethnic minority groups
	People with disabilities, neuro-cognitive conditions, long-term illness, or who experience mental ill health (including neuro-cognitive conditions, mental health issues and dementia, autism and epilepsy)
	Lesbian, gay, bisexual, transgender and queer and others (LGBTQ+) people
	Single parents
	Traveller populations

Likely environmental effects and proposed mitigation

Construction and operation

73. The assessment identifies a wide range of potential adverse health effects but in most cases, no significant adverse effects have been identified. In summary the health assessment finds that the London Resort generates the following indirect health effects.

- Indirect positive effects on human health include substantial new employment and training opportunities through the construction and operation of the London Resort and improved access to recreational amenities and open space on the Swanscombe Peninsula. There are demonstrable links between employment, economic well-being an individual's sense of self-worth and their physical health.

- Indirect adverse effects including increased demand for local health services and the potential loss of employment for workers of displaced businesses on existing industrial estates inside the Project Site. Other adverse factors include the demolition of one residential property containing three flats, increased demand for residential accommodation locally during the construction phase, and a potential increase in crime and the fear of crime.

74. Proposed mitigation includes the provision of an on-site medical facility in the London Resort, close liaison with health services providers and the emergency services during the construction and operation of the Proposed Development, and the implementation of a strong equalities policy to ensure access to employment and training for marginalised groups in the locality.

3. LAND TRANSPORT

Introduction

75. Chapter 9: *Land transport* (document reference 6.1.9) of the ES looks at the environmental effects of land transport associated with the construction and operation of the Proposed Development. The assessment of these effects has been informed by road traffic modelling and has informed the access strategy for the London Resort. It takes into account the use of public transport including trains, buses and river ferries in addition to the private car. The following environmental effects are assessed:

- severance – communities or individuals being separated from amenities or contacts by increased road traffic or restricted access;
- driver delay caused by increased in road traffic;
- pedestrian delay;
- pedestrian and cyclist amenity;

- fear and intimidation from increased road traffic;
- accidents and safety;
- bus passenger delay, again as a result of road congestion.

Baseline

76. The transport baseline for the London Resort is rendered complex partly by other things happening in the locality, including major development associated with the delivery of Ebbsfleet Garden City, improvements currently underway to the A2(T) Ebbsfleet junction, and proposals by Highways England for the Lower Thames Crossing, a motorway tunnelled under the Thames to the east of Tilbury and Gravesend to provide relief for the M25 Dartford crossing.

77. For both the Kent and Essex Project Sites the baseline assessment identifies and describes the characteristics of the local strategic highway network, local roads, the local rail network and local bus services. The standard of facilities for pedestrians and cyclists is also considered and road traffic accident data are reviewed. The baseline assessment defies easy summary in view of the range of transport modes, roads and junctions considered, but presents of a picture of existing congestion on various local roads that demands a combination of new and improved road infrastructure and an emphasis on non-road-based transport solutions.

Likely environmental effects and proposed mitigation

Construction

78. During the construction period, traffic movements are likely to be associated with the following sources:

- the delivery and/or collection of plant/machinery;
- the delivery of construction materials and/or removal of waste materials; and
- the construction workforce.

79. The traffic associated with the construction phase(s) would include heavy plant and lifting machinery, as well as material deliveries by HGVs and light vehicles transporting the construction workforce. The number of construction vehicles would fluctuate on a daily basis and would depend on the stage of the construction process.

80. It is estimated that the total volume of material required to construct the Proposed Development is circa three to four million tonnes. As the Proposed Development is located on the River Thames, it is proposed that 80% of the total volume of material will be taken to and from Project Site via barge boats. On this basis it is assumed that the remaining 20% of the materials would be delivered by HGVs via the road network.

81. The peak construction period is expected to require 6,000 construction workers to be working each day at the Proposed Development. It is estimated that 25% of the construction workers would live on-site during week with the remaining 75% commuting daily to the project Site.

82. During the peak construction period of Gate One, it is forecast that the Kent Project Site would generate 2,016 road traffic movements a day (equating to 1,008 vehicle visits). These will be split across the day between 06:00-19:00 with no trips arriving or departing in the morning or afternoon peaks.

83. The Essex Project Site is predicted to generate 412 road traffic movements a day (equating to 206 vehicle visits), with these split over the arrival (06:00-08:00) and departure (18:00-19:00) periods for the construction workers.

84. Construction activity associated with the delivery of Gate One is estimated to peak in 2023. The greatest change in the traffic volume resulting from the Gate One construction on any local road is estimated to be 8.9%. This would be on the westbound on-slip to the A2(T) from the A2260, and is remote from residential neighbourhoods. This is a modest increase and falls within the daily variation of the traffic (approximately +/- 10%), and would be of a temporary and local nature.

85. It is forecast that the number of construction workers would drop by 50% to approximately 3,000 per day during the construction period for Gate Two. As before, it is assumed that 25% of the total construction staff would live on site.

86. During the peak construction period for Gate Two, it is forecast that the Kent Project Site would generate 878 vehicle movements a day (equating to 439 vehicles). These will be split across the day between 06:00-19:00 with no trips arriving or departing in the morning or evening peaks. The greatest change in the traffic volume resulting from the Gate Two construction on any local road is estimated to be 3.9%. This would be on the westbound on-slip to the A2(T) from the A2260.

87. The Essex Project Site is likely to generate 162 vehicle movements a day (equates to 81 vehicle visits), with these split over the arrival (0600-0800) and departure (1800-1900) periods for the construction workers.

88. The DCO application is accompanied by an outline *Construction Transport Management Plan* (CTMP, document reference 6.2.9.2) that provides detailed information concerning construction traffic, including:

- construction vehicle routeing;
- proposed programme and duration;
- number of construction personnel including travel arrangements and mitigation;
- number of construction and delivery vehicles using the public highway;
- traffic management.

Operation

89. The DCO application is accompanied by a *Transport Assessment* (document reference 6.2.9.1) that considers the highway impact of the Proposed Development on the strategic and local highway network. The assessment is based on the outputs of the traffic modelling and includes a review of queue lengths, journey times and road junction capacity. The assessment takes into account measures in-built into the Proposed Development to manage, reduce and avoid road traffic generation and congestion, including:

- additional junction capacity provided at the A2(T) Ebbsfleet Junction including the provision of the Resort Access Road - a dedicated dual carriageway vehicular access providing access to the Proposed Development from the A2(T). This would provide the only means by which visitors could approach the London Resort by car, and would keep visitors off the local road network.

- improvements to the A226 London Road/High Street/Pilgrims Road in Swanscombe, specifically the improvement of provision for pedestrians and cyclists enabling the removal of one arm of the junction, providing capacity improvements;

- provision of a signal-controlled arrangement at the Asda Roundabout at Tilbury, with changes to carriageway widths and lane markings.

90. A *Bus Strategy* (document reference 6.2.9.11, Appendix TA-V) proposes a range of improvements and/or new bus services to fulfil the aim of delivering high-quality bus services. These improvements will enhance, support and promote the active use of public transport for visitors and staff of the Proposed Development.

91. Rail is a core component of the public transport strategy and, due to the Proposed Development's proximity to the High Speed One (HS1) railway line, it represents the fastest way to get to the Proposed Development from central London and other destinations. A *Rail Strategy* (document reference 6.2.9.1, appendix TA-U) is proposed with Ebbsfleet International Station being the primary rail access point to the Proposed Development. The strategy seeks to ensure that there would be sufficient capacity on trains and stations, whilst using demand management interventions to manage demand at all local stations.

92. To further ensure that local communities are not burdened unacceptably with London Resort traffic, additional mitigation measures proposed by LRCH include:

- an *Off-Site Car Parking Plan* (document reference 6.2.9.1, Appendix TA-Y) to monitor and if need be prevent Resort visitors parking in neighbouring residential roads, a Walking and cycling strategy (document reference 6.2.9.1, section 10);

- a *Travel Demand Management Plan* (document reference 6.2.9.1, appendix TA-AC) that would determine specific measures and techniques that can be applied at a scale to

help optimise the people-moving capacity of travel and transport networks. This would have the benefit of helping reduce peak period travel demand that may otherwise present acute capacity issues on highway networks or transport services, leading to unacceptable congestion and journey time delays;

- a *Delivery and Servicing Plan* (document reference 6.2.9.1, Appendix TA-AE) to ensure that freight vehicle activity to and from Proposed Development works effectively and efficiently. The Plan aims to specifically manage the timing of deliveries and consolidate deliveries wherever possible.

93. With all of the mitigation and safeguards proposed it is concluded that the Proposed Development would not result in significant adverse land transport-related environmental effects.

4. RIVER TRANSPORT

Introduction

94. Chapter 10: *River Transport* (document reference 6.1.10) of the ES looks at the environmental effects of river transport associated with the construction and operation of the Proposed Development. It is proposed that waterborne traffic will form a significant part of the transport strategy for the London Resort. When the Resort is being built it is intended that 80% of construction materials would be brought to the site on Swanscombe Peninsula by river, reducing substantially the reliance on road transport. Construction waste would also be transported off site by boat. Once the Resort opens, it is proposed that visitors will have the option of travelling to and from the Site by an Uber Boats by Thames Clippers service from central London and by a shuttle ferry service from the Essex Project Site.

Baseline conditions

95. Up to 86 ships pass the Project Site on the Thames each day. There are also up to 26 sailings of the passenger ferry between Tilbury and Gravesend. The river transport chapter of the ES is accompanied by a Navigational Risk Assessment (NRA), which identifies existing shipping movements on a defined section of the River Thames where it passes the Project Site, and considers the potential for risks and hazards associated with river traffic generated by the Proposed Development. These includes risk of collisions, the grounding of vessels in shallow water and the effects of 'boatwash' – the wakes of passing vessels.

96. The assessment identifies navigational aids on the Thames that help to ensure the safe passage of this ferry traffic. It also takes into account recreational sailing, including activities based at the Thurrock Yacht Club at Kilvert's Wharf in Grays on the north bank of the river and the Broadness Cruising Club based at Broadness Creek on the Swanscombe Peninsula which benefits from a functioning slipway.

Likely environmental effects and proposed mitigation

Construction

97. The assessment assumes that construction materials would be transferred to the Kent Project Site using standard 1,000 tonne barges pulled by tug. Materials would be delivered at a reconditioned Bell Wharf on the western side of Swanscombe Peninsula and potentially to the existing Seacon freight terminal on the eastern side of the Peninsula, which would receive materials on pallets. For the purposes of assessment, the upper limit for daily barge movements is likely to be determined by the capacity of the berths at the Kent Project Site, which is estimated to be eight barge discharges per day (16 vessel movements). It is expected that waste removal from the Kent Project Site would use the same barges on their return journey.

98. Some of the construction workers would arrive at the London Resort by passenger ferry from the Essex Project Site. It is assumed that this this would require eight return journeys per day (16 ferry movements) by ferries capable of accommodating up to 500 workers.

99. Some dredging of the Thames might be required to enable these boat movements. Whilst the total volume of material that might require removal has not yet been confirmed, it is not considered likely to exceed 100,000 cubic metres, which would equate to around 60 barge movements. The dredging operations themselves would be undertaken using grab dredgers or trailer suction dredgers depending on the nature of material to be removed.

100. It is concluded that river traffic movements associated with the construction of the London Resort can be undertaken safely and without significant hazard to other river traffic or the river environment resulting from – for example, collisions.

Operation

101. Proposals for River Transport associated with the London Resort visitors includes a new passenger ferry service between Tilbury and the Resort operating up to 84 movements per day This service would have capacity to accommodate up to 16,800 visitors per day.

102. Along with the Tilbury service, additional passenger services between central London and the London Resort of up to 54 movements per day are proposed. These services would be capable of accommodating up to 10,000 visitors per day, which based upon the peak mode share of 15% this would equate to 1.8 million per year by 2038.

103. In addition to the proposed passenger services, operational deliveries would create additional vessel movements to and from the London Resort. These movements are likely to be limited by the capacity of the associated terminal facilities at six per day so will be significantly less than the anticipated passenger service traffic.

104. A range of mitigation is proposed to ensure that operational river traffic for the London Resort will operated safely and without impeding existing shipping. These measures include speed, safety and route controls supported by effective engagement with

stakeholders, and further assessment of sightlines for vessels and consideration for lighting design once the detailed design of the Proposed Development progresses.

5. LANDSCAPE AND VISUAL EFFECTS

Introduction

105. Chapter 11: *Landscape and visual effects* (document reference 6.1.11) of the ES considers the landscape and visual effects of the Proposed Development. Landscape and visual effects are independent but related. Landscape effects relate to changes to the landscape and the features that contribute to the landscape character and quality. Visual effects relate to the appearance of such changes within views and the resulting effect on visual amenity.

Likely environmental effects and proposed mitigation

106. A number of significant adverse effects have been identified through the assessment at both the construction and operational phases of the Proposed Development. The effects that are predicted are primarily landscape and visual impacts that, in many cases are unavoidable by virtue of the fact that the Project Site is of such a size, scale and quality of design and would be a landmark attraction.

Construction

107. The significance of the construction phase effects is only temporary for the duration of the construction stage of each phase. Also, they will not affect all residents and/or viewpoints to the same degree at the same time, as the construction will be phased across the Project Site and by the time that later phases commence, the mitigation built into earlier phases will become more established, thereby minimising effects on certain receptors.

Operation

108. The operational effects that have been identified in landscape and visual terms have been minimised as far as possible and through the design of the scheme which ensures that the Proposed Development is as sensitive as possible on the existing landscape and views.

109. In landscape and visual terms, the impact assessment in the *Schedule of Construction Effects* (Appendix 11.2, document reference 6.2.11.2 and *Schedule of Operational Effects* Appendix 11.3, document reference 6.2.11.3) indicates that the greatest scope for significant permanent effects relates to the construction and early years of the operation phase (Year 1 of completion) of the Proposed Development at the Project Site.

110. The Proposed Development will considerably and permanently change the existing landscape of the Swanscombe Peninsula. However, on the basis of the proposed landscape and ecological mitigation strategies, it is considered that the overall residual

effects upon the landscape fabric and features of the Swanscombe Peninsula would be beneficial, including retention and enhancement of existing areas of ecological habitats such as marsh, reeds and grassland as well as creation of newer areas.

111. With regard to the Proposed Development at the Essex Project Site, landscape and visual effects would be localised, particularly after the construction phase when the changes are in progress and more evident. During operation, it is considered that the effects would be minimal at Year 1 and further reduced by Year 15.

112. The impact assessment indicates that the Proposed Development along the Access Corridor is likely to reinforce the existing landscape character of Ebbsfleet Valley through which it runs. Parts of the A2(T) Corridor landscape are likely to experience more minor changes due to the A2(T)/B259 junction improvement works. Taking into account the proposed landscape and visual mitigation strategies, it is anticipated that the new road and junction improvement works would be successfully integrated into the landscape without significant adverse effects. The landscape and visual impact of the Access Corridor is likely to be relatively localised.

6. ECOLOGY AND BIODIVERSITY

Introduction

113. ES chapter 12: *Terrestrial and freshwater ecology and biodiversity* (document reference 6.1.12) looks at the effects of the Proposed Development on ecology and biodiversity on land and on inland waterways. In particular, it considers the likely effects of the Proposed Development on the important ecological features identified within the Project Site or its potential zone of influence.

Baseline

114. Baseline survey work and consultation with nature conservation bodies identified the following ecological features of importance for assessment purposes. Many of the protected nature conservation sites are outside Project Site but were included in the assessment to take into account potential linkages with wildlife habitats on Swanscombe Peninsula and elsewhere.

Protected nature conservation sites

SPA	*Special Protection Area, a European designation that protects bird habitats*
SAC	*Special Area of Conservation. Another European designation to protect high quality habitats*
Ramsar	*Wetland habitats protected under a European convention*
SSSI	*Site of Special Scientific Interest, a UK designation covering sites of natural and geological interest*
LWS	*Local Wildlife Site – a local designation*

Thames Estuary and Marshes SPA/Ramsar;
Medway Estuary and Marshes SPA/Ramsar/ SSSI;
North Downs Woodland SAC;
Darenth Woods SSSI;
Inner Thames Marshes SSSI;
South Thames Estuary and Marshes SSSI;
West Thurrock Lagoon and Marshes SSSI;
Mucking Flats and Marshes SSSI
Wouldham to Detling Escarpment SSSI
Botany Marshes LWS;
Ebbsfleet Marshes, Northfleet LWS;
Alkerden Lane Pit LWS;
Tilbury Marshes LWS.

Habitats and plant life

Rare plants;
Broad leaved Semi Natural Woodland;
Scrub;
Semi-improved grassland;
Coastal/Floodplain Grazing Marsh;
Open mosaic on previously developed land;
Waterbodies (ponds, standing water and ditches);
Swamp (reedbed);
River Ebbsfleet.

Animal species

Wintering waterfowl and wading birds;
Wintering terrestrial birds;
Breeding Birds;
Pochard breeding population;
Bats;
Dormice;
Otter;
Water Vole;
Harvest Mouse;
Amphibians;
Reptiles;
Insects.

115. Inside the Project Site the focus of interest from an ecological perspective is the Swanscombe Peninsula, which includes surviving marshlands and some distinctive habitats for insects on previously developed land and land used in the past for tipping cement kiln dust and dredged material from the River Thames.

Likely environmental effects and proposed mitigation

Construction

116. In the absence of mitigation, most of the adverse effects on wildlife and habitats would occur at the construction sites. These effects would include habitat loss and fragmentation, changes in the character of retained habitats and the potential for disturbance from construction noise, movement, vibration and lighting.

117. In response LRCH proposes comprehensive mitigation that would include the *Construction and Environmental Management Plan* (CEMP, document reference 6.2.3.2) and an *Ecological Mitigation and Management Framework* (EMMF, ES Appendix 12.3, document reference 6.2.12.3). The EMMF provides mitigation and management measures for individual species and habitats.

118. LRCH is committed to delivering 'biodiversity net gain' as a part of its proposals. To this end, it has identified land off-site that offers the potential to create new wildlife habitats ES Appendix 12.10: *General Principles for Offsite Ecological Mitigation* (document reference 6.2.12.10) explains how this would work.

119. Other safeguards for wildlife and habitats are included in ES Appendix 12.9: *Arboricultural Impact Assessment* (document reference 6.2.12.9) and ES Appendix 12.11: *Artificial Lighting Impact Assessment* (document reference 6.2.12.11).

Operation

120. Many of the measures outline are designed to be of permanent benefit to wildlife and habitats and, as such, are relevant as mitigation once the London Resort becomes operational. Also relevant at the operational stage is the mitigation that is embedded in the design of the London Resort, including the enhancement of Black Duck Marsh, Broadness Marsh and Botany Marsh, the creation of new saltmarshes through the alteration of the flood defences on parts of the shoreline around the Swanscombe peninsula, and the creation of green pathways for wildlife running through the Resort itself.

121. Overall, it is considered that the Proposed Development is capable of delivering a net biodiversity gain subject to on-site impact avoidance and mitigation measures outlined above and the delivery of off-site ecological mitigation.

7. MARINE ECOLOGY AND BIODIVERSITY

Introduction

122. Chapter 13: *Marine ecology and bio-diversity* (document reference 6.1.13) of the ES looks at the effects of the Proposed Development on the ecology of the River Thames.

Consideration is given in the assessment to changes to water quality and the river sediment transport regime, habitat loss and disturbance, underwater noise and vibration, use of artificial light, the potential for spread or introduction of non-native species, and accidental pollution events.

Baseline conditions

123. Surveys of the shoreline and waters off the Kent and Essex Project Sites confirmed the presence of a wide range of marine life, including plankton, fish, marine mammals, non-native species and animals and plant life occupying areas of the shoreline between and below high tide and low tide.

124. Protected areas in the defined study area for marine ecology include the Swanscombe Marine Conservation Zone (MCZ), which provides habitats for the rare tentacled lagoon worm, and the West Thurrock Lagoon and Marshes Site of Special Scientific Interest (SSSI) on the northern bank of the Thames opposite the western side of the Swanscombe Peninsula.

Likely environmental effects and proposed mitigation

Construction

125. Construction activities with the potential to have significant effects on marine ecology in the absence of protective measure include loss of and disturbance to shoreline habitats, disturbance from dredging and piling, noise and sediment disturbance from construction vessels, disturbance from construction lighting and releases of pollution from construction plant and machinery and from the movement of contaminated soil.

126. Elements of the proposed development with the potential to affect marine ecology include the reconditioning of Bell Wharf, the construction of a new passenger ferry terminal and jetty and works to strengthen flood defences at the Kent Project Site, and the proposed extension of the floating landing state at the Essex Project Site.

127. The Proposed Development includes a range of measures to protect marine ecology, including:

- a lighting strategy to reduce the effects of artificial lighting on fish and marine mammals.

- an area of managed alteration to the flood defences and riverbank profile along sections of the Swanscombe Peninsula to provide additional saltmarsh habitat to mitigate the loss of habitat at the ferry terminal. This will increase areas of mud flat, salt marsh, small pools, rocks and shingle areas, with reeds, sedges and grasses transitioning into scrub vegetation. In total it is estimated that approximately three hectares of saltmarsh habitat will be created, which is more than three times the area that would be disturbed by the construction of the ferry terminal and jetty and the

outfall for the proposed wastewater treatment works, also on the Peninsula.

- management of vehicles and vessels during construction to protect the coastal environment and ecology.

- protection from polluting activities during construction is provided in the outline Construction Environmental Management Plan (CEMP, document reference 6.2.3.2);

- a range of measures to limit noise disturbance to wildlife during construction, and the deployment of floating booms to protect exposed shoreline feature from boatwash – the wake from boats.

Operation

128. Once the Resort is in operation the potential for significant effects on marine ecology is limited and relates principally to effects associated to ferry movements and the potential for wildlife to be disturbed by noise and lighting from the Resort itself. Mitigation is proposed in response to both of these and, as noted, there would be a net increase in saltmarsh habitat through managed alterations to the flood defences and the river bank profile on the Swanscombe Peninsula.

8. CULTURAL HERITAGE AND ARCHAEOLOGY

Introduction

129. Chapter 14: *Cultural heritage and archaeology* (document reference 6.1.14) of the ES looks at the effects of the Proposed Development on the historical environment, including sites and buildings of historical, architectural, cultural and archaeological value and historic features in the River Thames. The assessment has been undertaken through a combination of desk-based analysis of previous survey work and new field assessment, guided by consultations with Historic England and local authority conservation officers and archaeologists.

130. Because a development can affect the 'setting' of historic buildings and features – the environment in which they are seen and understood - protected features outside of the Project Site have also been identified and assessed.

Baseline conditions

131. Protected historical features inside the project site are comparatively few in number. They include three listed buildings of architectural or historical interest as follows.

- Grade II* listed Riverside Station, including floating landing stage, Tilbury
- Grade II listed Swanscombe Cutting Footbridge Crossing A2(T) east of A296 Junction
- Grade II listed Boundary Stone, Ingress Park

132. There are three scheduled monuments inside the Project Site:

- An Old Stone Age or 'Palaeolithic' site near Baker's Hole to the north-west of Ebbsfleet International Station, comprising flints and other evidence of human activity dating from 150,000 to 250,000 years ago. Baker's Hole is also a Site of Special Scientific Interest (SSSI) because of its geological interest;
- A New Stone Age or 'Neolithic' sites near Ebbsfleet, containing evidence of human occupation dating from 2,400 to 4,000 years ago;
- Springhead Roman Site near the A2(T) road. This extends beyond the Project Site and includes evidence of a town and temple from the Roman period (AD 43 - 410).

133. There are no World Heritage Sites, conservation areas, registered parks and gardens, registered battlefields or protected shipwrecks inside the Project Site. The Project Site contains a range of evidence from its industrial past, including foundations, jetties and piers, and a list of unprotected archaeological features is also included in the ES.

Likely environmental effects and proposed mitigation

Construction

134. The greatest potential for direct physical effects on features and areas of historical or archaeological value occurs at the construction stage of the Proposed Development, when excavations are taking place for the erection of buildings or for changes in the profile of the ground.

135. The assessment predicts a major effect on the heritage significance of the Baker's Hole Scheduled Monument and SSSI and associated but non-designated Palaeolithic deposits as a result of damage or destruction of deposits from construction. However, proposed mitigation, including the lightweight construction of the proposed people mover route over the top of the protected site and additional site investigation prior to construction, would mean that the archaeological value of the site would be retained largely unharmed.

136. The Proposed Development includes restoration works at the grade II* listed Riverside Station at Tilbury, from where visitors parking or arriving by coach on the Essex side of the river would be able to board ferries to the London Resort. This would be a positive effect in cultural heritage terms.

137. It is proposed that development on other parts of the Project Site would be preceded by an appropriate and agreed level of archaeological investigation before buildings works started. Indirect effects during the construction phase such as the presence of flashing lights on moving vehicles, dust, and the presence of cranes in the setting of listed buildings would cease once construction is complete.

Operation

138. Once the Proposed Development enters its operational phase, effects on the historic environment would be limited to indirect effects, arising from the presence of Resort buildings and rides in the setting of historic buildings and features. The assessment suggests that this would not affect the significance of heritage assets to an unacceptable degree.

139. LRCH acknowledges that the Proposed Development offers opportunities for the furthering of archaeological and cultural heritage knowledge and appreciation through dedicated programmes of community engagement, display and interpretation. The nature of the use, display and interpretation of the archaeological and built heritage evidence is outlined in a *Historic Environment Framework and Mitigation Strategy* (ES Appendix 14.9; document reference 6.2.14.9) that accompanies the current DCO application.

9. NOISE AND VIBRATION

Introduction

140. Chapter 15: *Noise and vibration* (document reference 6.1.15) of the ES looks at how of the Proposed Development might give rise to noise and vibration during the construction and operational stages. Noise and vibration can arise from groundworks, piling, vehicles and machinery during the construction stage, and from sources including traffic, theme park rides and outdoor events such as parades during the operation of the Resort.

Likely environmental effects and proposed mitigation

Construction

141. An assessment into the potential noise impact from the different construction phases of the Proposed Development was undertaken in line with the relevant British Standards.

142. The construction noise assessments within the ES identified the noise impact of the following:

- predicted noise levels from construction;
- the impact from construction vibration at the closest sensitive receptors;
- construction traffic impacts based on transport predictions for future flows during 2023 and 2024.

143. Mitigation measures that could be used to reduce noise levels at receptor locations where reasonably practicable have been provided in detail in ES Chapter 15: *Noise and air quality*

(document reference 6.1.15) and are controlled through the CEMP (document reference 6.2.3.2) and the CMS (document reference 6.2.3.1).

144. If these supplementary mitigation measures are implemented along with good site practice, the worst-case residual demolition and construction impacts to the existing environment are considered to produce a 'minor adverse' significance around Gate Two and the hotel for the duration of general construction activities. This impact is considered to be acceptable.

Operation

145. Assessment of the potential noise impact due to the operation of the Proposed Development has also been undertaken. The baseline conditions around the Project Site have been assessed against 2038 (the proposed opening year for the London Resort) operational predictions for:

- traffic noise assessment;
- assessment of ride and attraction noise;
- assessment of noise limits for the Proposed Development's fixed utility buildings and mechanical plant locations;
- assessment of noise breakout from external loudspeaker systems located within the pay line of the London Resort;
- passenger ferry noise impact;
- assessment of the potential impact of low frequency noise from dredgers landing material at Bell Wharf, on proposed London Resort hotels;
- noise limits and typical stand-off distances for the proposed helicopter landing site.

146. The assessment has determined that if the operational mitigation measures are implemented, residual noise effects are likely to be reduced to negligible or minor adverse. The noise impact of the London Resort development can be controlled to levels below thresholds for community annoyance in residential neighbourhoods near the Kent and Essex Project Sites.

147. The greatest residual effects in sites identified as sensitive to noise in Chapter 12: *Terrestrial Ecology and Biodiversity* of the ES (document reference 6.1.12) were at Black Duck Marsh, Broadness Marsh, Bamber Pit and Baker's Hole, which are all in or beside the Kent Project Site. Negligible noise impacts are expected at sites protected for their ecological and biodiversity importance outside the DCO Order Limits.

10. AIR QUALITY

Introduction

148. Chapter 16: *Air quality* of the ES (document reference 6.1.16) looks at the potential effects of the Proposed Development on air quality. During construction, air quality be affected by the release of dust and very fine particles known as 'particulates', and by fumes from vehicles, plant and machinery. In operation, vehicle fumes from road and river traffic, emissions from any on-site energy centre and odour from waste handling might be of concern in the absence of mitigation. The assessment also takes into consideration air quality at protected nature conservation sites in the locality.

Baseline

149. The Environment Act 1995 requires local authorities to monitor air quality in their areas. Where national air quality objectives are not likely to be met, local authorities should declare these areas as Air Quality Management Areas (AQMAs). These areas typically feature significant sources of air pollution along with relevant human exposure. Most AQMAs in the UK are declared due to traffic emissions.

150. Part of the Kent Project Site is in the Northfleet Industrial Area AQMA identified by Gravesham Borough Council, and close to the Dartford AQMA identified by Dartford Borough Council. Both areas experience nitrogen dioxide and particulate emissions that exceed air quality objectives.

151. LRCH used detailed air quality monitoring data from Dartford, Gravesham and Thurrock Councils to construct a detailed picture of air quality in the locality. Nitrogen dioxide levels in advance of national objectives were identified at roadside locations in all three boroughs. Air quality at seventeen sites of nature conservation value, including European and national protected sites, local wildlife sites and ancient woodlands, was also identified.

Likely environmental effects and proposed mitigation

Construction

152. The main potential effects on air quality arising from the construction phase of the Proposed Development) are dust deposition and an increase in particulate concentrations. The following construction works will have the potential to lead to air quality effects:

- site preparation and clearance works, including demolition of existing structures, enabling works, installation of fencing and barriers around the Kent and Essex sites, vegetation clearance and excavation, and land remediation/management;

- earthworks, including topsoil and subsoil stripping and storage, bulk earthworks and deep excavations;

- main construction works, including construction of onsite structures and buildings, including office buildings, waste and recycling facilities, site infrastructure and advance landscape/planting works;

- vehicle emissions from construction traffic and the transport of materials to and from the Kent and Essex sites.

153. Proposed mitigation includes a range of measures to minimise dust, including road cleaning and the use of physical barriers and covers on chutes, skips and materials stockpiles likely to give rise to dust, and the use of mains electricity in preference to diesel or petrol–powered generators. The reliance on river transport for construction materials and waste will reduce substantially the emissions from road-based construction traffic.

Operation

154. The impact of operational road traffic generated by the Proposed Development has been predicted using dispersion modelling for a number of assessment years. Using the worst case assumption that there is no change in existing background air quality conditions, one survey location is predicted to experience a moderate adverse impact owing to operational traffic generated by the Proposed Development for the 2024 assessment scenario. Should background air quality conditions improve in line with government projections, the predicted impact at this receptor would be negligible. The impact at all remaining receptors for all assessment years is predicted to be negligible, even using the worst case assumption that there is no change in existing background air quality conditions.

155. The impact from emissions associated with the proposed energy centre has been predicted using dispersion modelling, and owing to the predominantly emission free heating strategy that uses heat pumps, the contribution from energy centre emissions is shown to be very small and can be ruled insignificant in line with Environment Agency guidance.

156. The impact from traffic and energy centre emissions has also been predicted at designated nature conservation sites in order to determine the potential for significant effects to occur. Some of the surveyed mature conservation sites would have a minor increase in nitrogen deposition from air emissions. Nitrogen enriches the soil and can affect the range of plant life that a soil can sustain. The outputs from this work are taken into account in ES chapter 12: *Terrestrial and freshwater ecology and biodiversity* (document reference 6.1.12).

157. Assessment of the potential for odour effects to occur from the proposed wastewater treatment works on the north-eastern side of Swanscombe peninsula identified a potential slight adverse odour impact close to the works. Odour effects at offsite receptors are predicted to be negligible. With the adoption of standard odour mitigation techniques for the wastewater treatment works, no significant odour effects are

predicted.

158. The potential effects from vessel emissions associated with the proposed development has been assessed qualitatively, taking into account the likely increase in boat movements associated with the development and the locations of proposed jetties. Owing to the distance between source and receptor, the impact from vessel emissions is assessed to be negligible.

11. WATER RESOURCES AND FLOOD RISK

Introduction

159. Chapter 17: *Water resources and flood risk* of the ES (document reference 6.1.17) considers the potential effects of the Proposed Development on water resources and flood risk. It covers matters relating to a number of different aspects of water resources and the water environment, including:

- flood risk management;
- surface water drainage
- foul drainage;
- water resource management;
- water quality and commitments to the Water Framework Directive (WFD);
- maritime infrastructure.

Baseline conditions

160. Chapter 17 - *Water resources and flood risk* of the ES (document reference 6.1.17) describes the existing water environment of the Kent Project Site and the Essex Project Site. Noteworthy features of the Kent Project Site include:

- the extensive contamination of the Swanscombe Peninsula from cement kiln dust (CKD) tips and other brownfield former industrial land. Land disposal of CKD creates highly alkaline conditions. This can lead to the absorption of metals including barium, beryllium, cadmium, lead and chromium in the groundwater;

- a number of drains, filtration systems, aeration lagoons and other features are present. Much of the Peninsula has re-vegetated naturally but there are areas of bare ground;

- parts of the Kent Project Site are developed including the existing Manor Way, Northfleet, Kent Kraft and Rod End industrial estates. The HS1 railway crosses the Swanscombe Peninsula on a south-east to north-westerly alignment, and include drainage infrastructure that prevents the tunnel from flooding;

- the Swanscombe Peninsula supports extensive areas of marshland including Black

Duck Marsh, Botany Marsh and a marsh around the HS1 tunnel portal. Broadness Marsh at the northern tip of the Peninsula was historically a saltmarsh, but now has a raised terrain as a result of CKD tipping and the deposition of dredged river material; and

- a range of surface water features exist in and close to the Kent Project Site, including streams, ponds, flooded former chalk pits and drainage ditches.

161. Much of the Essex Project Site comprises level hard-surfaced land used currently for vehicle storage. The Essex Project Site is bounded by railways on its northern and western sides and a drainage channel to the east. The 'East Tilbury Dock Sewer Main River' runs from north to south inside the western part of the Essex Project Site before discharging into the River Thames, much of it in an open channel. The 'Pincock's Trough sewerage channel Main River' passes just east of the Essex Project Site and also discharges into the Thames.

162. A *Flood Risk Assessment* (FRA) is provided in appendix 17.1 of the London Resort ES (document reference 6.2.17.1). It identifies flood risk from river, tidal, surface water, sewer, artificial and groundwater sources for the Project Site and considers the frequency and impact of flooding from these different sources. Much of the Swanscombe Peninsula has flood defences to protect against river and tidal flooding.

163. ES chapter 17: *Water resources and flood risk* (document reference 6.1.17) also identifies existing arrangements for water supply and the treatment of wastewater from the Project Site.

Likely environmental effects and proposed mitigation

Construction

164. The Kent Project Site has pre-existing water contamination issues due to its past and current uses including landfill, leachate treatment and general environmental condition of the peninsula and its marshlands. Construction processes would introduce a new set of environmental sensitivities including the creation of new pathways for land contaminants to enter water courses, for example.

165. Through best-practice approach to the demolition and construction process as well as supplementary mitigation measures included in an outline *Construction Environmental Management Plan* (CEMP, ES Appendix 3.1, document reference 6.2.3.2) that accompanies the ES, it is considered that residual effects can be kept to non-significant levels across both sites.

166. An assessment of the River Thames' flow characteristics sediment patterns has also been carried out and the results have been used to assess the impact of potential changes of the marine infrastructure and coastal/riverbank conditions on the river. Whilst some minor changes to flow speeds, sedimentation rates and deposition areas have been identified, these are considered negligible in the context of the general regime of the river

and will not create any significant impacts.

Operation

167. In operation the London Resort should bring an improvement to water quality as a result of pollution control measures proposed for the Kent Project Site. Improvements are also proposed to flood defences on the Swanscombe Peninsula.

168. Wastewater from existing industrial and other buildings on the Kent Project Site is currently discharged into the foul sewerage network. Because the local wastewater treatment plant at Northfleet does not have the capacity to manage all of the wastewater from the London Resort once in operation, a new wastewater treatment works is proposed on the north-eastern side of the Swanscombe Peninsula to treat the wastewater from the London Resort. The works would treat wastewater to established standards required by the Environment Agency and treated water would be discharged into the River Thames.

169. The only residual significant impact identified with respect to water resources and flood risk, is a potential impact on water demand at the Kent Project Site once the Proposed Development is operational. Based on the current potable water demand profile for the Site, this is considered a minor adverse impact, considering that solutions that are being explored through engagement with Thames Water to consider how, through water storage and demand minimisation measures, potable water demand can be met.

170. Development at the Essex Project Site involves less physical development with the propensity to significantly affect water resources and flood risk, and existing water supply, drainage and wastewater transfer and treatment arrangements would be able to accommodate the Proposed Development with incremental modification.

12. SOILS, HYDROGEOLOGY AND GROUND CONDITIONS

Introduction

171. Chapter 18: *Soils, hydrogeology and ground conditions* of the ES (document reference 6.1.18) considers the potential effects of the Proposed Development on soils, hydrogeology (ground water) and ground conditions. It includes consideration for contaminated land, a relevant concern given the extensive history of waste tipping and landfilling on Swanscombe Peninsula and in the Ebbsfleet Valley.

172. The Proposed Development is assessed against the baseline of the Project Site by developing a Conceptual Site Model that describes the environmental features and expected interaction of potential contamination sources.

Likely environmental effects and proposed mitigation

Construction

173. The assessment identified a number of potential significant adverse effects during demolition and construction. A limited number of further potential adverse effects exist during operation. The majority of these significant adverse effects exist on the Kent Project Site, reflective of the scale of works proposed in the area, the particular challenges of the current / former land use, and the sensitivity of the identified receptors.

174. All of the potential significant adverse effects that have been identified can be mitigated. A range of general mitigation measures have been identified that apply to the whole of the Proposed Development, namely the need for ground investigations to define a Remediation Strategy and contractor's health and safety method statements, all secured via DCO requirements, to ensure appropriate design and construction of the Proposed Development.

175. Additional specific mitigation measures are required on the Kent Project Site, in particular in areas where Environmental Permits apply. Here, the Environment Agency must be notified and approve proposals for ground investigation and any construction that could affect landfill infrastructure, its management or reporting regime. Appropriate characterisation of soils (including deposited wastes such as CKD) will be required to ensure its beneficial re-use, treatment or disposal. This further characterisation will be obtained from the planned programme of ground investigations which will be secured through a requirement in the DCO.

176. With the additional specific mitigation measures applied, the vast majority of potential effects have been assessed as negligible. The residual effect on the River Thames during operation on the Swanscombe Peninsula (Kent Project Site) will be minor beneficial. This is because the upgraded leachate treatment plants and improved surface water drainage system will resolve known issues where existing drainage ditches containing leachate overtop during high rainfall events, with consequent untreated discharge directly to the River Thames.

177. Ground conditions at the Project Site may be vulnerable to extreme weather events or climate change during the demolition / construction phase. For example, significant rainfall could overwhelm normal site surface water controls and lead to mobilisation of contamination within site soils. This can be mitigated by the provision of detailed incident management plans, to be defined within the *Construction Environmental Management Plan* (CEMP) (document reference 6.2.3.2) and site management documents once a contractor has been appointed for the works. The ground investigations will include monitoring (for example, of hazardous ground gas emissions, groundwater level and chemistry) over sufficient duration to enable design that is resilient to climate change once the Proposed Development is in operation.

Operation

178. Operationally the identified effects are generally negligible. This is because the ground conditions concerns would have been appropriately considered and mitigated at the construction phase of the Proposed Development. There will be a minor beneficial effect on the River Thames as a result of the upgrade to leachate treatment plants.

13. WASTE AND MATERIALS

Introduction

179. Chapter 19: *Waste and materials* of the ES (document reference 6.1.19) considers the likely effects of the Proposed Development on the generation of waste during the construction and operation of the Proposed Development, and the use of material resources in its construction.

180. The Proposed Development will generate significant quantities of both construction and operational waste and will require materials during the construction phase that will deplete natural resources.

Likely environmental effects and proposed mitigation

Construction

181. The significance of effects during construction, before mitigation, is expected to be Slight to Moderate adverse for materials. Effects for construction, demolition and excavation (CDE) waste are expected to be Large adverse on Kent inert landfill receptors to Slight adverse on Essex inert landfill receptors with approximately 322,100 of inert waste generation from the Project Site. Effects on non-hazardous waste receptors for Kent at construction stage are expected to be Very Large adverse for Kent, and Slight adverse for Essex.

182. An *Outline Construction Waste Management Plan* (OCWMP, document reference 6.2.19.2) has been included as part of the ES that outlines designing out waste measures and measures that should be adopted during the construction phase to maximise waste segregation and recycling. Reuse and recycled materials procurement should be adopted where possible to minimise demand on virgin materials. Following mitigation, it is expected the residual effects will be Slight adverse for materials. For waste, residual effects will be Moderate adverse for Kent inert landfill receptors to Slight adverse for Essex inert landfill receptors, with approximately 144,000 m^3 of inert CDE waste potentially being landfilled from the Project Site. Effects on non-hazardous landfill receptors remain the same after mitigation measure for both the Kent and Essex Project Sites.

183. Following the adoption of best practice measures outlined in the ES relating to CDE waste, the Proposed Development is expected to surpass targets set out in the 2008 Waste

Framework Directive, 2011 Waste Regulations and 2013 Waste Management Plan (England). These required a 70% diversion rate of construction and demolition waste, and the Proposed Development is set to divert at least 90% of both waste types with a best practice approach. Implementation of this will be the responsibility of LRCH and the Principal Contractor.

184. Hazardous waste effects from the construction phase are expected to have a Very Large (adverse) effect, and hazardous operational waste effects are expected to have a Slight (adverse) effect in the worst-case scenario carried out in this assessment. It is noted that hazardous construction waste effects are temporary and will take place over the course of the construction period which will reduce pressure on landfills and other infrastructure. It is also likely that much of this waste will be diverted from landfill for other treatment, but the portion cannot be confirmed at this stage.

Operation

185. The significance of waste effects during the operational phase is expected to be Very Large (adverse) for non-hazardous landfills in Kent. A high proportion of operational waste will be recyclable and an *Outline Operational Waste Management Strategy* (OOWMS) (document reference 6.2.19.1) has been developed, which outlines the measures to store, segregate and collect waste to maximise recycling. With the implementation of mitigation measures, total non-hazardous waste generation may reduce to approximately 341,000m^3. The residual effects reduce to a Moderate or Large (adverse) for Kent non-hazardous landfill receptors.

186. Overall, considering the residual effects, the effects of materials from the Proposed Development are considered to be 'Not significant' and waste effects, mainly due to CDE waste, are considered to have a 'Significant' effect overall. With the exception of the effect on Essex waste receptors, which is expected to be 'Not Significant' due to minimal waste production at the Essex Project Site.

187. It is acknowledged that, even after mitigation measures, expected effects of the Proposed Development are Significant. This is due certain factors which should be taken into consideration:

- the sensitivity of landfills in both Kent and Essex are very high, and are therefore sensitive to a large development such as London Resort);
- this assessment approach considers scenarios where all residual waste is sent to landfill in Kent and/or Essex. It is likely that this will not be the case. Instead, significant portions of residual waste might be sent to waste-to-energy plants and the majority of recyclable waste will be sent to appropriate waste recovery facilities;
- effects from CDE waste are temporary and expected to be spread out during construction phases, which will significantly reduce pressure on landfills and other infrastructure.

14. GREENHOUSE GAS AND CLIMATE CHANGE

Introduction

188. Chapter 20: *Greenhouse gases and climate change* of the ES (document reference 6.1.20) considers the effects of the Proposed Development on greenhouse gas emissions and climate change. The increasing concentration of greenhouses gases (GHG) such as carbon dioxide (CO_2) and methane in the atmosphere restricts the Earth's ability to reflect solar heat back into space, resulting in global warming. This affects weather patterns and is causing a rise in sea levels.

189. These risks prompt an obligation to reduce GHG, which arise from sources including vehicle exhausts and the generation of electricity and heat from non-renewable energy sources, during both the construction and operational phases of the Proposed Development.

190. In addition to the need to reduce GHG, the assessment is also required to consider the vulnerability of the Proposed Development to the risks associated from a changing climate, such as increased flooding and extreme weather events, and the proposed measures contained within the design for the London Resort to reduce these risks.

Likely environmental effects and proposed mitigation – Greenhouse gas emissions

Construction

191. The identified effects associated with the construction stage embodied carbon and life cycle embodied carbon have been deemed to be 'Moderate Adverse', which means that effects are significant. This aligns with the World Green Building Council report, Bringing Embodied Carbon Upfront which highlights the fact that embodied carbon contributes around 11% of global carbon emissions and has historically been largely overlooked. Recent emerging industry guidance, set out within the ES chapter, reinforce the need to reduce construction embodied carbon by setting transitional targets towards net zero embodied carbon. Opportunities to reduce construction stage embodied carbon relative to the business-as-usual benchmarks used in estimating the embodied carbon will continue to be explored as the design develops and appropriate reduction targets put in place prior to further Resort design development.

Operation

192. The Proposed Development has a target of achieving net zero energy emissions during operation through a range of embedded design measures such as energy generation, use of renewables and efficiency.

193. When taking into consideration the measures set out within the Sustainability Strategy (document reference 7.7) and the Energy Strategy (document reference 6.2.20.3), the

significance of effects related to GHG emissions associated with operational energy was deemed to be Negligible. The significance of effects related to GHG emissions associated with operational water consumption was deemed to be Minor Adverse and, the significance of effects related to GHG emissions associated with operational transport was deemed to be Moderate Adverse.

Climate change adaptation and resilience

194. Climate change risks to the Proposed Development were identified using industry standard Guidance described in ES chapter 20. Climate change risks were then assessed for the Proposed Development based on the probability of an event occurring and the consequence of that event occurring.

195. Mitigation measures were identified for identified risks based on the assessment of probability and consequence. With appropriate mitigation measures in place, the risk rating for all climate change risks relating to the Proposed Development has been reduced to a low level.

15. CUMULATIVE, IN-COMBINATION AND TRANSBOUNDARY EFFECTS

196. An assessment of a project's environmental effects should take into account other development and activities that are happening in the locality so that a project is not assessed in isolation. These are known as *cumulative effects*. It is necessary also to recognise that there might be a multiple of effects upon the same receptor – for example, changes in noise *and* air quality - that, whilst not significant on their own, together result in a significant effect. These are known as *in combination effects*. The law also requires significant *transboundary effects* on other states in the European Economic Area to be taken into account.

197. These effects are considered in ES chapter 21: *Cumulative, in-combination and transboundary effects* (document reference 6.1.21). In general, the cumulative effects identified are either negligible, and are most often temporary because they would arise only during the construction stage of the Proposed Development. A range of specific mitigation to mitigate or avoid adverse cumulative effects is identified.

198. The in-combination assessment has identified that there is the potential for human receptors to experience a number of effects during both the construction and operational phase of the Proposed Development. These effects are assessed as part of the individual topic assessments in ES chapters 7-20. When taking these measures into account and in considering the temporary nature of the construction related effects, the in-combination assessment concludes that there are no additional significant effects arising that require consideration.

199. Following assessment it is not considered at the scoping stage that the Proposed Development would give rise to significant transboundary effects on EEA States.

Four ◆ Conclusion and next steps

SUMMARY OF ENVIRONMENTAL EFFECTS AND MITIGATION

200. LRCH proposes a wide range of measures to protect the environment and local amenity during the construction and operational stages of the London Resort project. Specific mitigation measures proposed in response to individual environment effects are set out in a table in Chapter 22: *Conclusion* of the ES (document reference 6.1.22).

201. The mitigation includes a wide range of safeguarding plans, strategies and commitments. These would be enforced through the draft Development Consent Order (draft DCO, document reference 3.1). which would be subject to 'Requirements' similar to planning conditions that apply to a conventional planning permission from the local planning authority.

NEXT STEPS

202. The DCO application for the London Resort will be examined by a panel appointed by the Planning Inspectorate, known as the 'Examining Authority'. During the examination process, interested parties will have several opportunities to comment on the DCO application, including the findings of the ES and the adequacy of the measures that LRCH proposes to ensure a neighbourly and acceptable form of development.

203. To view the full ES and other application documents mentioned in this ES NTS, and to keep up to date with the DCO examination process, please refer to the London Resort project page on the Planning Inspectorate's National Infrastructure Planning website at the following link:

https://infrastructure.planninginspectorate.gov.uk/projects/south-east/the-london-resort/

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Figure NTS-1 Location Plan - Regional Context

THE LONDON RESORT

Ref:	Figure NTS-1
Date:	17-12-2020
Paper size:	A3
Scale:	1:500000

0 4000 8000 12000 16000 20000 m

Project Site Boundary

Wessex House
Priors Walk
Wimborne
BH21 1PB

savills

N

1:12500

0 100K 200K 300K 400K 800K

THE LONDON RESORT DEVELOPMENT CONSENT ORDER

Order Limits Plan

DARTFORD BOROUGH COUNCIL, GRAVESHAM BOROUGH COUNCIL AND THURROCK COUNCIL

Sheet 1 of 1

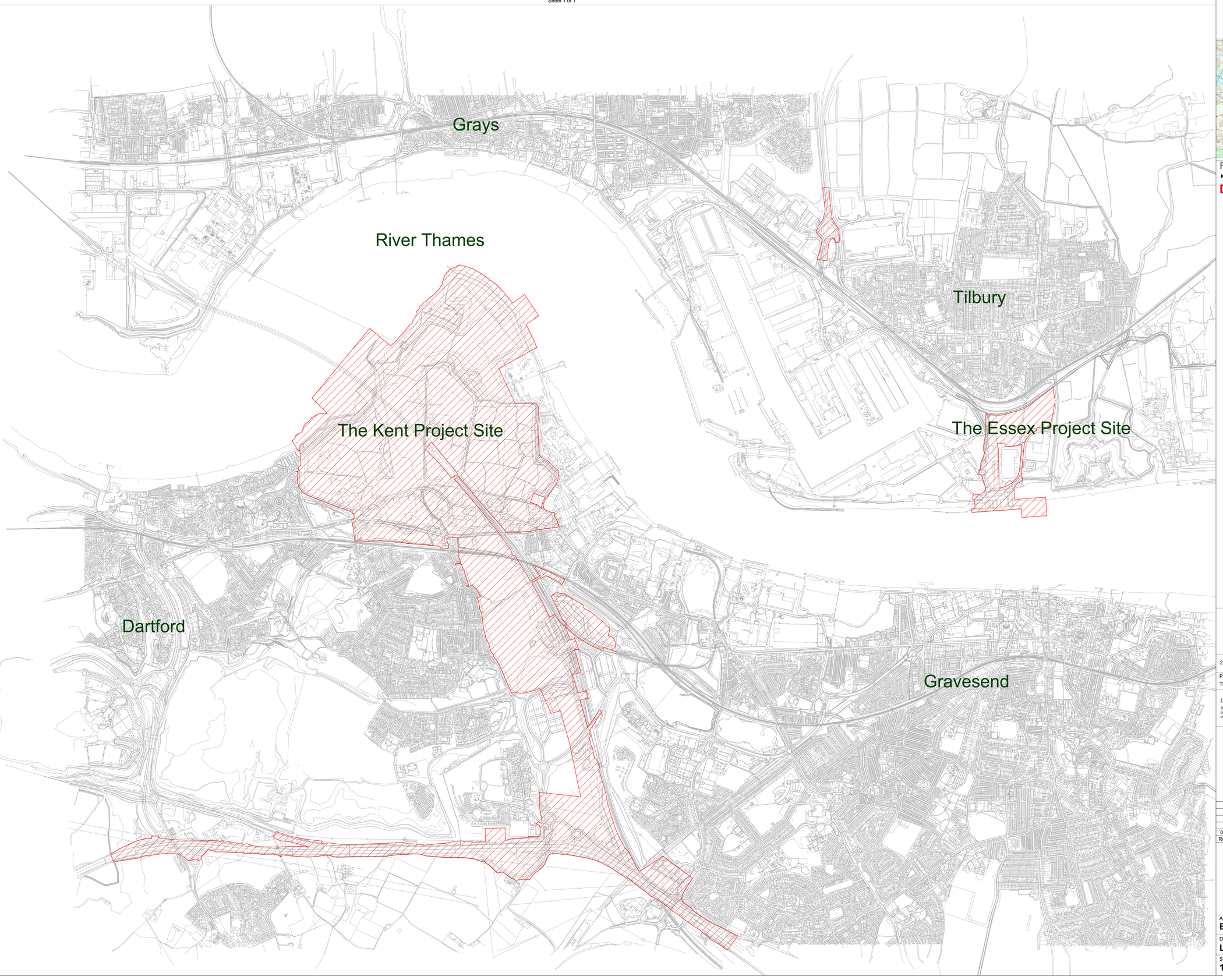

Figure NTS-2

Key

Land within the DCO Order limits

Apt

235 St John Street London EC1V 4NG www.apt.london

Project	Project No.
The London Resort	19072

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Rev	Reason for Issue	Date	Drw | Chk
00	Order Limit Freeze	13/10/20	Apt

THE LONDON RESORT DEVELOPMENT CONSENT ORDER

Order Limits Plan

DARTFORD BOROUGH COUNCIL, GRAVESHAM BOROUGH COUNCIL AND THURROCK COUNCIL

Sheet 1 of 1

Application Number
BC080001

Drawing Reference
LR-DG-APT-DCO-003.0

Scale	Sheet:	Revision
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THE LONDON RESORT DEVELOPMENT CONSENT ORDER
Illustrative Masterplan
DARTFORD BOROUGH COUNCIL, GRAVESHAM BOROUGH COUNCIL AND THURROCK COUNCIL
Sheet 1 of 1

DRAFT

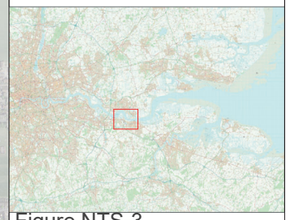

Figure NTS-3
Key
Order limits

Apt

235 St John Street London EC1V 4NG www.apt.london

Project	Project No.
The London Resort	19072

Disclaimer

Rev	Reason for Issue	Date	Drw | Chk
00	Issue for Consultation	24/07/20	Apt

THE LONDON RESORT DEVELOPMENT CONSENT ORDER

Illustrative Masterplan

DARTFORD BOROUGH COUNCIL, GRAVESHAM BOROUGH COUNCIL AND THURROCK COUNCIL

Sheet 1 of 1

Application Number
BC080001

Drawing Reference
LR-DG-APT-ILP-124.0

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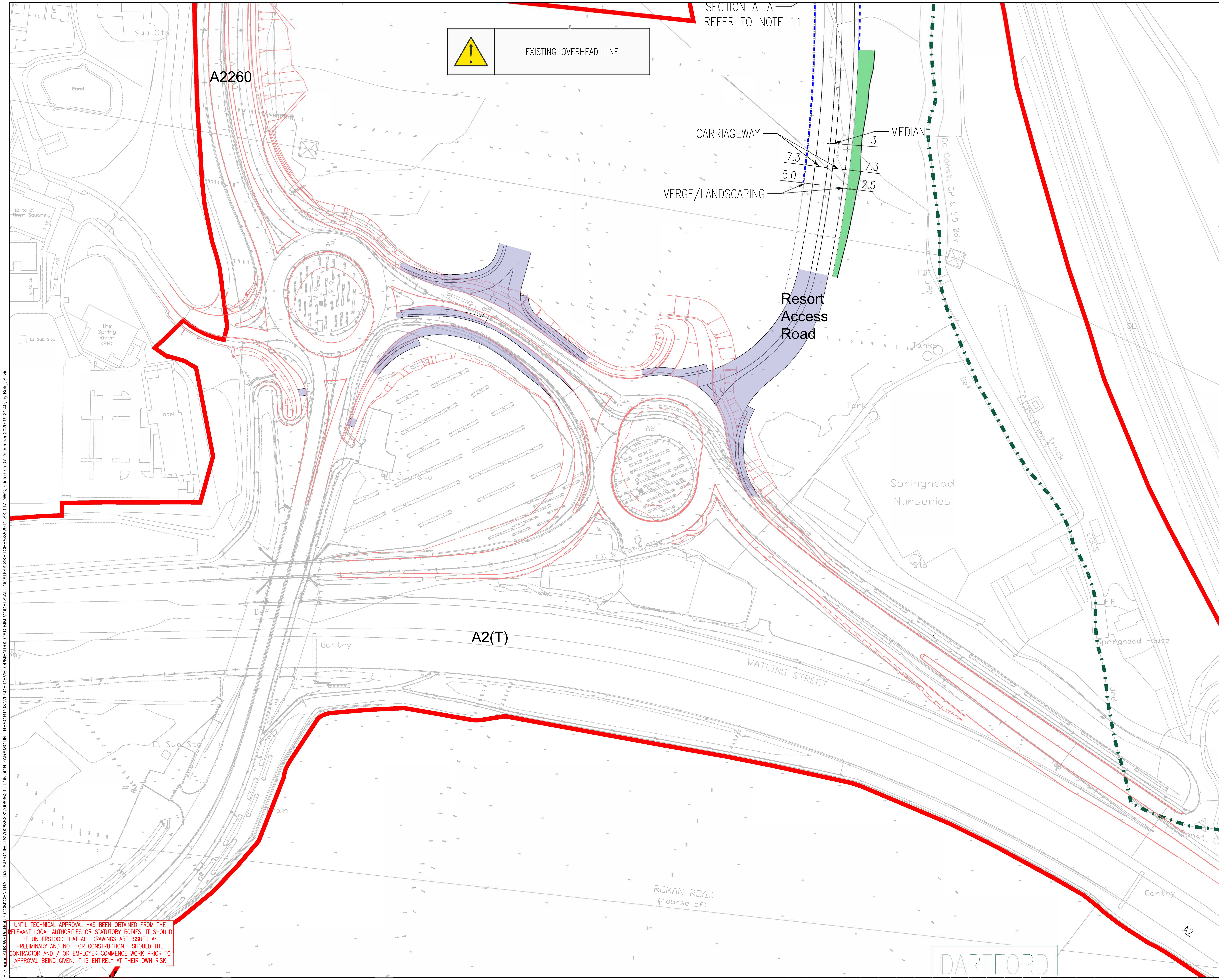

DO NOT SCALE

Figure NTS-4

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	07/12/2020	SB	FIRST ISSUE	SD	SD

DRAWING STATUS: S2 - FOR INFORMATION

wsp

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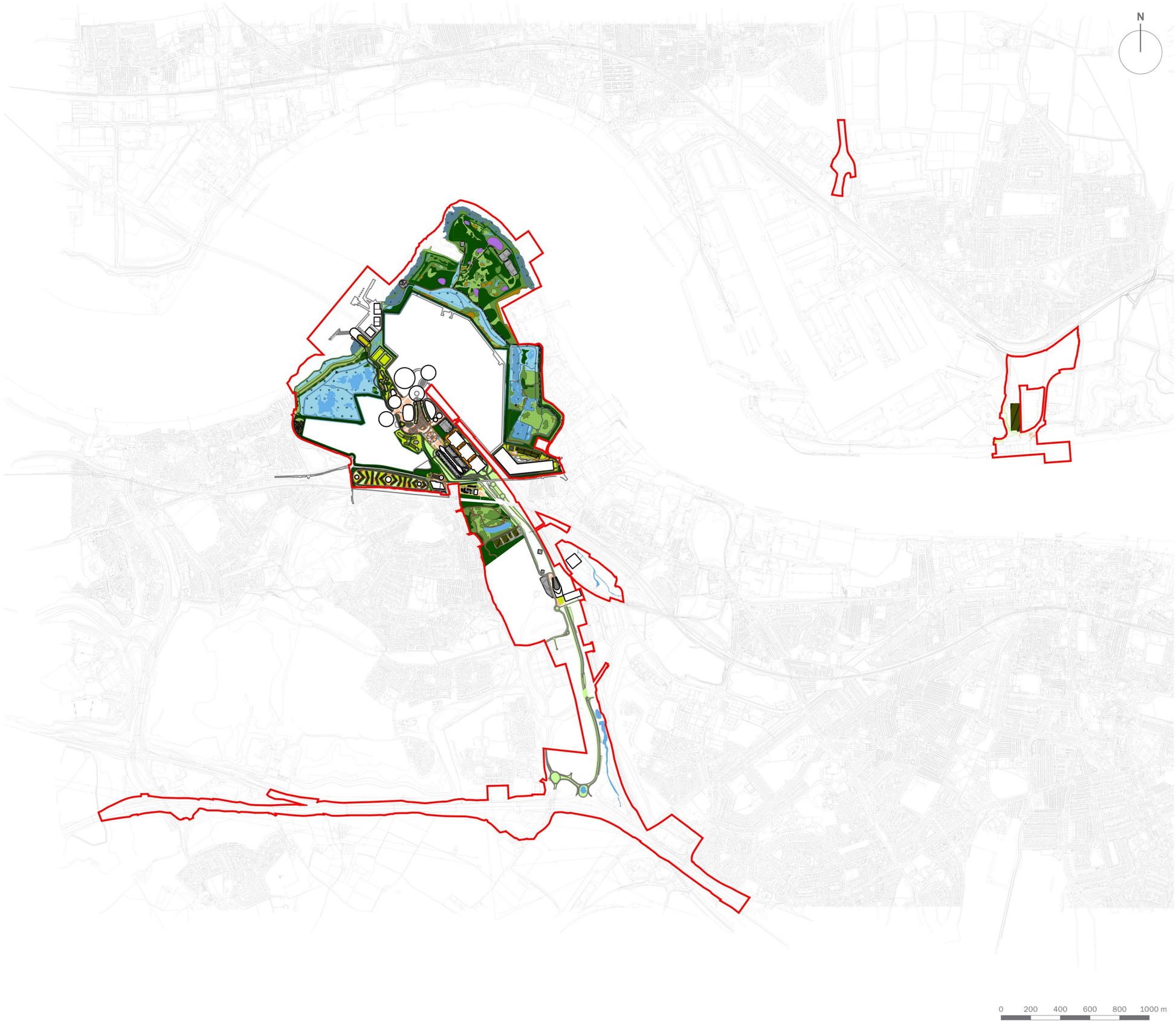
CLIENT: LONDON RESORT

ARCHITECT: APT

SITE/PROJECT: THE LONDON RESORT

TITLE: Proposed junction of the A2(T) and the London Resort Access Road

SCALE @ A1: 1:500	CHECKED: SD	APPROVED: SD
PROJECT NO: 70063529	DESIGNED: SB / DRAWN: SB	DATE: Oct 20
DRAWING No: 3529-DI-SK-117		REV: P01



- Order Limits
- Buildings
- Open Grassland and Sparse Vegetation
- Ornamental Shrub Planting
- Lawn
- Green Roofs
- Brown Roofs
- Hardstanding
- Ditches and Swales
- Leachate Ponds
- Bare/Disturbed Substrate and Hardstanding
- Rain Garden Planting
- Woodland and Dense Scrub
- Reedbeds
- Permenant, Semi-permenant and Ephemeral Water Bodies
- Plaza and Paved Public Open Space
- Salt Marsh
- Scattered Scrub and Rank Grassland
- Wildflower Meadow Verge with Trees
- Highways Land
- Hoggin Path
- Mown Path
- Boardwalk (Width Varies)
- Bird Hide Points

client

London Resort Company Holdings Limited

project title

The London Resort

drawing title

Figure NTS-5: Landscape strategy

date	**18 DECEMBER 2020**	drawn by	**JGo**
drawing number	**edp5988_d100f**	checked	**PW**
scale	**1:25,000 @ A3**	QA	**GY**

the environmental dimension partnership

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