The London Resort Development Consent Order

BC080001

Environmental Statement
Volume 2: Appendices

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London Resort Company Holdings Ltd

THE LONDON RESORT

TRANSPORT ASSESSMENT

70063529
DECEMBER 2020

PUBLIC

London Resort Company Holdings Ltd

THE LONDON RESORT

TRANSPORT ASSESSMENT

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DELIVERY AND SERVICING PLAN

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EXECUTIVE SUMMARY

WSP has been engaged by London Resort Company Holdings Ltd (LRCH) to provide transportation advice and highways input for the London Resort (the Resort; the Project; Proposed Development) on the Swanscombe Peninsula, Kent. WSP, in consultation with world leading resort specialists and experts, has been involved in developing the transport, highway and infrastructure master plan for the Proposed Development. WSP have also prepared the supporting transport documents for the Project which was designated a Nationally Significant Infrastructure Project (NSIP) following direction by the Secretary of State for Communities Housing and Local Government in April 2014 required for the Development Consent Order (DCO) which will cover a variety of matters, including:

- overall transport strategy;
- transport modelling;
- transport assessments; and
- travel demand management.

This Transport Assessment (TA) provides an assessment of the transportation impacts of The London Resort on the highway and public transport networks.

The proposals for the Kent and Essex Project sites are indicatively set out as follows:

- a multi-Intellectual Property (IP) global resort including leading brands related to film television, electronic gaming and toys;
- a leisure core comprising a range of events space, themes rides and attractions, entertainment venues, theatres and cinemas delivered as a phased approach of two unique theme park gates;
- entrance plazas offering ancillary Retail, Dining and Entertainment (RDE) facilities adjacent to and outside the ‘payline’ of the two theme park gates;
- four hotels delivering 3,550 keys providing family, upmarket, luxury and themed accommodation;
- a Waterpark incorporated within one of the hotels;
- a ‘conferention’ centre combined conference and convention facilities capable of hosting a wide range of entertainment, sporting, exhibition and business events;
- a linked building hosting a range of eSports, video and computer gaming events;
- related housing comprising up to 500 dwellings to accommodate approximately 2,000 Resort workers;
- a phased approach to delivering a maximum of 10,000 visitor car park spaces, 25% of which (2,500 spaces) are proposed to be located at the Port of Tilbury, in Thurrock;
- Park and Glide’ ferry provision to transport visitors and employees between the Port of Tilbury and the London Resort jetty; and
- a people mover and transport interchange between Ebbsfleet International Railway Station, the main transport terminal adjacent to the main entrance plaza to the Resort and the London Resort’s ferry terminal adjacent to Bell Wharf on the western side of the Swanscombe Peninsula.

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. It will have supporting transport and visitor reception facilities on the northern side of the river in Essex.

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 visitor ferry terminal connecting to Tilbury.

Given the seasonal variability of visitors at the Resort, the assessment of forecast travel demand is based upon the 85th percentile day for each assessment year

- 2025, the first full operational year after Gate One opening;
- 2029, the year of Gate Two opening; and
- 2038, the year the Resort is forecast to reach maturity.

Research undertaken and compiled by industry experts (LDP, ProFun and Volterra) in respect of determining the visitor numbers that the Resort would attract was provided to WSP to support the assessment of the transport impacts related to the Proposed Development. Information provided by the consultants underpins the trip generation and distribution used to assess the highway and public transport impacts of the visitor and staff demand forecast at the Resort.

Development Consent Order and Consultation Process

A Development Consent Order (DCO) is a mechanism to obtain permission for developments categorised as NSIP; this includes energy, transport, water and waste projects. DCOs are required for designated NSIPs rather than other consents such as planning permission, listed building consent and compulsory purchase order.

The application, once accepted for examination, will then be considered by an Examining Authority comprising either a single Inspector or a panel of Inspectors appointed by the Planning Inspectorate. The DCO, if approved, not only provides planning consent for the project but may also incorporate other consents and include authorisation for the compulsory acquisition of land.

Policy Context

This TA outlines the key national, regional and local policy and guidance documents that have been reviewed in detail and will influence the assessment and strategy in relation to the development proposals. The London Resort will be developed in accordance with local, regional and national policy and will seek to adhere to additional guidance documents.

Existing Conditions

Existing strategic and local highway accessibility has been reviewed north and south of the River and consideration has been given to consented or proposed schemes, such as Tilbury2 and the Lower Thames Crossing (LTC), which will alter the existing conditions prior to and alongside the proposed construction and operational timeline for The London Resort.

The Kent Project Site is within proximity to four railway stations – Ebbsfleet International, Greenhithe, Swanscombe and Northfleet – the accessibility and services at these stations has been reviewed and presented within this document. Dartford and Gravesham are currently served by an extensive range of bus services, include Fastrack which operates between key public transport nodes and the proposed development, as well as Bluewater Shopping Centre.

The Essex Project Site is located in proximity to Tilbury Town Railway station and an existing bus service connects the station to the Port of Tilbury. Jetstream Tours operate an existing foot and bicycle passenger ferry between Tilbury and Gravesend, offering services six days a week all year.

The results of a parking study have been presented to consider the key areas in which off-site parking generated by the Proposed Development might occur and mitigation measures to prevent this occurring.

A detailed review of Personal Injury Access data highlights that generally there are no existing trends on the local highway network which the Proposed Development could exacerbate and the transport strategy has been developed to minimise any increases in accidents that the proposed Resort vehicular trip generation could cause, particularly through the use of the Port of Tilbury to accommodate vehicular traffic with a destination in the north so as to avoid the Dartford Crossing.

Development Proposals

The London Resort is planned to become operational in 2024 with the opening of the main park alongside a Retail, Dining and Entertainment offer and 2,300 hotel keys. The visitor attendance forecasts the total attendance across the various stages between Gate One opening and park maturity. The opening of Gate Two is planned to be approximately 2029.

The access proposals are summarised as follows:

- the primary vehicle access for visitors is via a dedicated Resort road from the A2 at an improved Ebbsfleet Junction with the A2260;
- a significant junction improvement at Ebbsfleet, utilising the existing infrastructure and combine this with the Highways England improvements and minor revisions to provide additional capacity;
- a people mover is proposed to transport visitors and staff between Ebbsfleet International Station, the Resort and the ferry terminal;
- access to the Essex Project Site will be via Ferry Road / Fort Road and the phase 1 car park at the Port of Tilbury will be accessed via Fort Road. Phase 2 of the car park would be accessed via the Ferry Road roundabout;
- cycle and pedestrian access from the west in the vicinity of Titman Avenue and Manor Way;
- pedestrian access via Pilgrims Road;
- the rail strategy will seek to utilise the existing available services and promoting Ebbsfleet International as the primary rail access to the Kent Project Site;
- river-based travel from Central London and the Port of Tilbury via Uber Boats by Thames Clipper; and
- a dedicated off-road walking and cycling connection between Ebbsfleet International Station, The London Resort and the ferry terminal.

Trip Generation

A summary of the methodology behind forecasting the visitor and staff demand at the London Resort has been provided and the visitor demand for all the elements of the London Resort has been provided by ProFun and LDP.

The Resort will operate seasonally with the peak occurring during the traditional summer months. The Resort will reach maturity in 2038 when its annual number of visits is forecast to exceed 18 million. The assessment of travel demand of the Resort has been assessed using the 85th Percentile Day. Staff demand has been based on forecast provided by ProFun. The staff demand will follow the Resort operation with peak staffing naturally occurring during the same time as peak operation. The peak weekday staff levels have been used for the assessments throughout this document, in combination with the 85th Percentile visitor numbers. The site will provide 500 dwellings allocated to staff on-site, that can accommodate up to 2,000 of the staff working at the Resort at any one time.

Trip Distribution

To calculate the likely trip distribution for visitors to the London Resort and ascertain the level of attraction relative to their location from the site, a trip distribution model has been developed and calibrated using population data from the 2011 Census, grouped by distance travelled from home origin to site.

The analysis of Journey to Work (JTW) data to Swanscombe resulted in mainly local trip origins for staff. Comparisons with trip distributions for UK sites which exhibit some similarities suggest that staff may travel from slightly further afield to work at the London Resort.

Mode Shares

To calculate the likely mode shares expected for visitors and staff to the Resort, a number of assessments have been undertaken, ranging from a worst case (in terms of high numbers of vehicles) to those that incorporate travel behaviour as well as other variables, such as cost and travel demand measures.

Further assessment and analysis has been carried to consider the likely modal shift that could occur taking into account the future mobility and accessibility to public transport and active travel. WSP's Future Mobility team has developed a bespoke tool for estimating key mode shares which have been used in the non-vehicular mode assessments, particularly in terms of public transport.

Modelling Methodology

It was agreed with stakeholders that a combined approach of local junction modelling, microsimulation modelling and a spreadsheet based strategic model derived from existing strategic traffic models would be an appropriate approach for assessing the London Resort impacts. For this TA, this approach has dealt with a conventional assessment of the weekday peak hours of 0800 – 0900 and 1700 – 1800.

The methodology, agreed in principle between key stakeholders, used to develop spreadsheet models, microsimulation models and standalone junction model's representative of forecast highway conditions with the inclusion of the London Resort across various assessment years is detailed within this TA.

Walking and Cycling Strategy

A walking and cycling (Active travel) strategy highlights any barriers to and opportunities for active travel, identified through site audits and data analysis. This provides a joined up cohesive route for staff and visitors accessing The London Resort. Where achievable, the active travel strategy proposals for the London Resort follow the design guidance outlined in LTN 1/20 for active travel infrastructure, as noted in the Summer 2020 consultation responses

Public Transport Strategy

The Public Transport strategy seeks to ensure that seamless and co-ordinated connectivity is achieved, as well as addressing capacity requirements and, where appropriate, the introduction of new and/or enhanced services.

Parking Strategy

A car-parking accumulation exercise has been undertaken to inform the worst-case private vehicle mode shares which underpin the highway assessment. An Off-Site Parking Plan has also been developed to address comments throughout consultation on the potential for visitors to park in nearby local streets to access the Site. The purpose of the strategy is to monitor whether off site, on street parking takes place that is attributable to the Resort and if this proves to be the case, provide management measures to prevent this and avoid adverse impacts arising.

Highway Impact

The impacts of The London Resort on the highway network have been assessed in a strategic spreadsheet based model, a microsimulation model south of the River, local junction models for junctions on key transport corridors and merge/diverge assessments. The results of these assessments are presented within this TA.

Travel Demand Management Plan

The Travel Demand Management (TDM) Plan for the London Resort outlines a comprehensive and flexible approach to managing the travel demands of key audiences that will travel to and from the Resort. Collectively visitor and employee trips will represent much of the total travel demand associated with the Resort. Managing this demand and positively influencing travel behaviour in favour of sustainable transport options will be important to manage impacts on transport networks and support wider low carbon objectives at the resort.

The purpose of the TDM Plan is to determine specific measures and techniques that can be applied at a scale to help optimise the people-moving capacity of travel and transport networks.

Construction Traffic Management Plan

A Construction Traffic Management Plan has been developed to limit any impacts of the construction period of The London Resort on the existing highway network within the vicinity of the proposed development.

Delivery and Servicing Plan

A Delivery and Servicing Plan (DSP) has been written to monitor and mitigate against any impacts caused by delivered and servicing to The London Resort.

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CHAPTER 1

INTRODUCTION

1 INTRODUCTION

1.1 INTRODUCTION

1.1.1. WSP has been engaged by London Resort Company Holdings Ltd (LRCH) to provide transportation advice and highways input to the Proposed Development of The London Resort on the Swanscombe Peninsula, Kent. WSP, in consultation with world leading resort consultants and experts, have been involved in developing the transport, highway and infrastructure master plan for the Proposed Development. WSP are responsible for the preparation of the supporting transport documents for DCO application which will cover a variety matters, including the transport strategy, transport modelling, transport assessments, and travel demand management.

1.1.2. This Transport Assessment (TA) provides an assessment of the transportation impacts of the proposed London Resort development on the highway and public transport networks. Throughout this document, WSP present the existing baseline conditions of the project sites, the development proposals together with a robust methodology that has been prepared in order to determine the likely peak hour multi-modal trip generation and its distribution for visitors and staff and, the resulting travel demand based on forecast annual and daily attendance.

1.1.3. This TA forms part of a suite of WSP's technical documents and should be read alongside a number of supporting Technical Notes, detailed within the Appendices listed below and referenced throughout this document.

1.1.4. The following technical document have been prepared and are appended to this Transport Assessment:

- Stakeholder Advisory Technical Document (SATD);
- Technical Note 1 (TN1) – Travel Demand;
- Technical Note 2 (TN2) – Trip Distribution;
- Technical Note 3 (TN3) – Mode Share;
- Technical Note 4 (TN4) – Future Mobility;
- Site Audit Technical Note;
- Access Strategy;
- On-Site Visitor Parking;
- Strategic Modelling Methodology;
- Rail Strategy;
- Bus Strategy;
- River Strategy;
- Car Park Accumulation
- Off-Site Parking Strategy;
- Travel Demand Management Plan;
- Construction Traffic Management Plan; and
- Delivery and Servicing Plan.

1.1.5. Technical analysis listed above, and additional information referenced throughout this TA has also been appended and is listed in full within the Table of Contents.

1.1.6. The Transport Assessment also addresses the transport impacts of the Proposed Development and identifies where mitigation measures are required.

1.1.7. The suite of documents are headed up by the ES Chapter 9 – Land Transport (document reference 6.1.9). **Plate 1-1** shows the relationship between the Land Transport Chapter of the ES, the Transport Assessment and the suite of transport management plans and strategies.

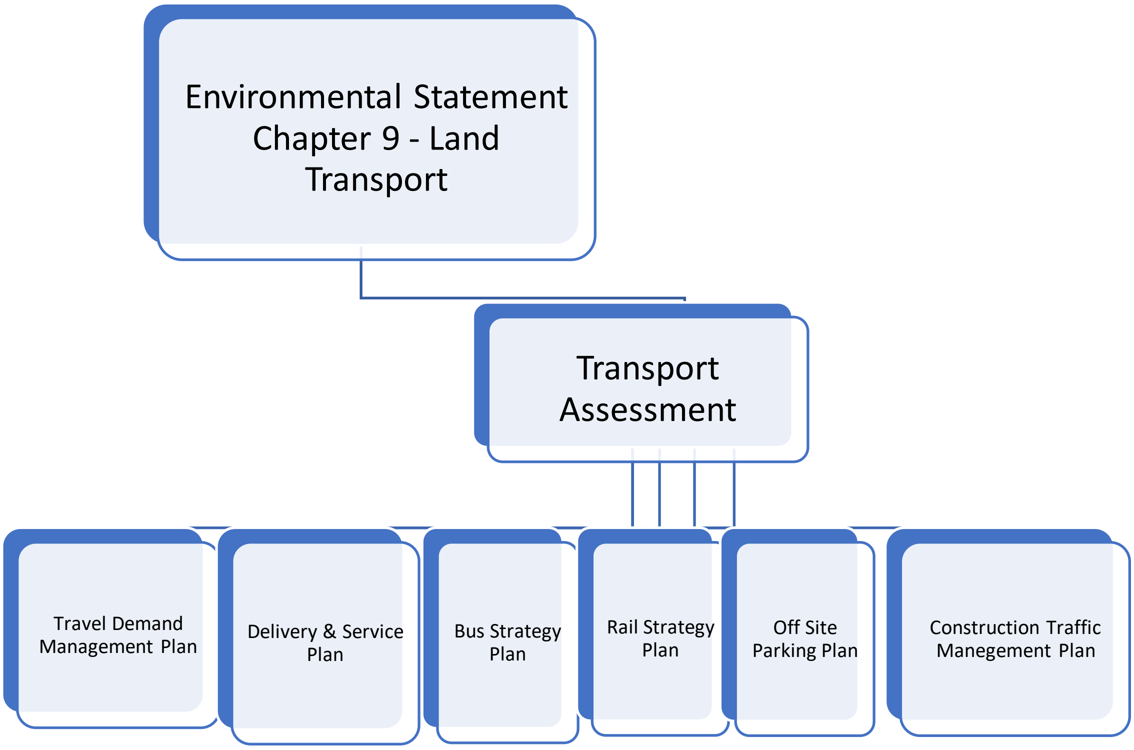


Plate 1-1: Transport Document Hierachy

1.1.8. The ES Chapter 9 – Land Transport (document reference 6.1.9) addresses the environmental impacts associated with changes in traffic flow as a result of the Proposed Development. The Transport Assessment (TA) is included as an Appendix to this and considers the transport strategy for the construction and operation of the Proposed Development.

1.1.9. The TA is supported by additional transport documents. These are the Delivery & Servicing Plan (DSP), Construction Traffic Management Plan (CTMP) the Rail Strategy Plan (RSP), the Bus Strategy Plan (BSP), Off Site Parking Plan (OSPP) and the Travel Demand Management Plan (TDMP). The implementation of these documents will be secured either through the DCO Requirements or the Development Obligation. Copies of these Plans are provided as Appendices to the Transport Assessment.

1.1.10. The CTMP provides details on the requirements for the management of transport impacts associated with the construction phases of the Proposed Development. Once the principal contractor has been appointed there will be opportunity for them to review and adjust the CTMP in agreement with the local authorities. The RSP and BSP set out the strategy to provide rail and bus accessibility to the Proposed Development.

1.1.11. The OSPP sets out the measures proposed to monitor whether on street vehicular parking associated with the Proposed Development occurs on roads and streets surrounding the Site. This document also sets out the proposed strategy to be implemented in the event that on street parking attributed to The Resort is identified in order to prevent stress on the existing level of on street parking serving surrounding residential areas.

1.1.12. The TDMP outlines a comprehensive and flexible approach to managing the travel demands of key audiences that will travel to and from the Resort. Specifically, this focuses on travel demands associated with Resort visitors and those employed at the Resort (employees).

1.1.13. Finally, the DSP sets out the key requirements and management guidance for individual occupiers to follow and implement in terms of the delivery of goods and stock required by The Resort as well as the approach to servicing the Proposed Development once operational.

1.2 THE LONDON RESORT

1.2.1. The proposals of the site are indicatively set out as follows;

- a multi-Intellectual Property (IP) global resort including leading brands related to film television, electronic gaming and toys;
- a leisure core comprising a range of events space, themes rides and attractions, entertainment venues, theatres and cinemas delivered as a phased approach of two unique theme park gates;
- entrance plazas offering ancillary Retail, Dining and Entertainment (RDE) facilities adjacent to and outside the 'payline' of the two theme park gates;
- four hotels delivering 3,550 keys providing family, upmarket, luxury and themed accommodation;
- a Waterpark incorporated within one of the hotels;
- a 'conferention' centre combined conference and convention facilities capable of hosting a wide range of entertainment, sporting, exhibition and business events;
- a linked building hosting a range of eSports, video and computer gaming events;
- related housing comprising up to 500 dwellings to accommodate approximately 2,000 Resort workers;
- a phased approach to delivering a maximum of 10,000 visitor car park spaces, 25% of which (2,500 spaces) are proposed to be located at the Port of Tilbury, in Thurrock;
- Park and Glide' ferry provision to transport visitors and employees between the Port of Tilbury and the London Resort jetty; and
- a people mover and transport interchange between Ebbsfleet International Railway Station, the main transport terminal adjacent to the main entrance plaza to the Resort and the London Resort's ferry terminal adjacent to Bell Wharf on the western side of the Swanscombe Peninsula.

1.2.2. 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.

1.2.3. 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. The access arrangements proposed for The London Resort are detailed within Chapter 5 of this TA.

1.2.4. The London Resort seeks to provide a world class entertainment park with quality and visitor experience at the core of its design and offering a unique global destination that is unrivalled in the UK and across the rest of the World. The leisure core will be built using a phased program with opening of Gate One initially, before the construction and opening of Gate Two – a complimentary area to Gate One, enabling guests to visit two world leading theme parks within the same resort but with each delivering its own unique content and visitor experience.

1.2.5. A destination such as the Resort will see differing travel characteristics at different times of the year as a result of the operational profile and peak/low seasons, which is discussed within chapter 6 of this TA. Given the seasonal variability of visitors at the Resort, it is proposed that the assessment of forecast travel demand is based upon the 85th percentile day for each assessment year

- 2025, the first full operational year after Gate One opening;
- 2029, the year of Gate Two opening; and
- 2038, the year the Resort is forecast to reach maturity.

1.2.6. The development proposals are set out within chapter 5 of this TA and the assessment methodology in relation to Trip Generation, Trip Distribution and Mode Shares are set out in chapters 6 to 8 respectively.

1.3 AGREED TERMINOLOGY

1.3.1. For clarity, throughout this document, and the supporting appendices, the Project Site encompassing both sides of the River Thames will be referred to as 'the London Resort', 'the Resort' or the 'Proposed Development'. The area of the Project Site to the South of the River Thames is referred to in this document as the 'Kent Project Site' and that to the north of the River Thames is identified as the 'Essex Project Site'.

1.3.2. The 'Leisure Core' refers to the range of events space, themed rides and attractions, entertainment venues, theatres and cinemas; 'Gate One and 'Gate Two' are the two phases of the leisure core. 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 RD&E Zone or the Market.

1.3.3. When ranking daily attendance from smallest to largest, WSP has assumed the 85th percentile day to be the 310th day in the list of unique attendance by day for each assessment year. Where the 85th percentile day was a weekend or within the school holidays, WSP has chosen the closest neutral weekday (i.e outside of the school holidays and typically not a Friday). Daily attendance numbers were provided by ProFun and discussed in more detail in Section 1.5; the assessment years and 85th percentile days are outlined in chapter 5.

1.3.4. Where references are made to chapters they are to chapters within this TA. If chapters from other reports are referenced the report will be also be referenced.

1.4 RELEVANT PROJECT BACKGROUND

1.4.1. During the initial phase of the project WSP contributed to the selection of sites, providing a critique of site options relative to forecast travel demand and the existing infrastructure available at each site. The Ebbsfleet site was chosen based on a number of selection criteria, including the accessibility of the site to major European cities, transport and service infrastructure. The selected location is considered to offer significant locational advantages to domestic and international visitors. The Environmental Statement (ES) chapter 4- Project Development and assessment of reasonable alternatives and quantifies the main reasons for the current site location and summarises the other ten locations that were reviewed.

1.4.2. Visitor experience will be consistent although the origin of visitors, length and duration of stay will vary. It is forecast that many people would visit the London Resort as part of a combined trip, short break or holiday staying overnight. The Project Sites are well placed in relation to all of London's airports, where existing and planned guest accommodation make it is possible to stay within the south east region. It is also possible to access the historic and cultural centres of London, Paris and Brussels within a relatively short train journey by way of High Speed One (HS1) and the Channel Tunnel.

1.4.3. The Essex Project Site, an addition to the scheme since the Projects initial statutory consultation, also benefits from being located in proximity to several ports, including Tilbury, which provides commercial cargo services as well as vehicle and passenger services from London's cruise ship terminal at Tilbury Riverside. The potential to exploit the existing links to European cruise liners contributes to the Project Site being able to offer the highest level of accessibility for the development of its kind.

1.4.4. LRCH sought and received an initial Scoping Opinion from the Planning Inspectorate for the project in 2014. A summary of the pivotal transport-related responses received from various stakeholders during the 2014 Scoping Opinion consultation includes:

- a robust trip generation to support technical analysis;
- the consideration of cumulative development within the vicinity of the Resort;
- disaggregation of trips by visitors, staff and servicing;
- consideration of strategic schemes such as Lower Thames Crossing (LTC);
- the assessment of demand impacts on existing public transport provision; and
- parking management in the immediate area surrounding the Site.

1.4.5. WSP has sought to address these key matters as part of the documents submitted within the DCO application and appendices included within this TA.

1.4.6. In 2014/15, The London Resort carried out several stages of statutory consultation. This included general consultation on the scheme, to which the general public was invited, as well as a series of targeted workshop events, which included events related to transport effects. Feedback from the general public was generally in support of the scheme balanced with concerns over the transport impacts on the local highway network and how LRCH intended to mitigate these impacts. Ongoing discussions and consultation with Highways England, Kent County Council and highway authorities is discussed in more detail within chapter 2.

1.4.7. Since the initial scoping opinion in 2014 and as a consequence of responses received following the statutory consultation of 2014/15, there has been a fundamental shift in the transport strategy with the introduction of 25% of visitor car and coach parking at the Port of Tilbury, supported by a Park and Glide ferry operation to transport visitors to the Resort. The River Strategy is presented in detail within chapter 11.

1.4.8. In between the 2014/15 and 2020 consultation, WSP have continued to engage with the relevant stakeholders on the proposals and update them on progress that was being made; a full review of these subsequent discussions is set out within Section 2 of this TA.

1.5 INDUSTRY EXPERTS

1.5.1. The London Resort is a unique project on a scale which has not yet been developed in the UK. LRCH appointed worldwide experts within the entertainment sector to support the development of the concept for the scheme and provide the visitor and staff information, origination and arrival and departure profiles which underpins the Transport Assessment and subsequent Access Strategy.

1.5.2. Research undertaken and compiled by industry experts (LDP, ProFun and Volterra) in respect of determining the visitor numbers that the Resort would attract was provided to WSP to support the assessment of the transport impacts related to the Proposed Development. Information provided by the aforementioned consultants underpins the trip generation and distribution used to assess the highway and public transport impacts of the visitor and staff demand forecast at the Resort. The information received by WSP and subsequently referred throughout this TA and supporting TNs is summarised below.

LEISURE DEVELOPMENT PARTNERS

1.5.3. Leisure Development Partners (LDP) are a leading consulting firm specialising in the feasibility, review and performance improvement of visitor attractions together with leisure / entertainment real estate. LDP's approach relies upon detailed market analysis and the application of carefully chosen real world benchmarks from existing comparable projects. They are considered experts at market and economic testing for both new projects and existing operations. This approach came out of the original feasibility work for Disney and LDP has developed this further over the past 60 years of experience in this niche.

1.5.4. A number of assumptions have been adopted by LDP in order for their assessment to be undertaken and to determine the division of forecast percentage journey origins for UK domestic and international guests visiting the Proposed Development in 2025, 2029 and 2038.

1.5.5. The following main assumptions have been used by LDP in terms of the offer that will be provided in order to inform their visitor forecasts:

- the Resort will consist of a mix of IPs incorporating both global and British brands;
- it will consist of a true destination theme park delivering a highly themed environment;
- it will provide a main park with sufficient content for a day, with a visit averaging around 8 hours; and
- the quality of offer and entertainment assumed to be available is to be more heavily invested and immersive than any non-Disney park in Europe.

1.5.6. To assist with the transport planning for the DCO submission, LDP have provided attendance estimates for all components of the London Resort and estimated the likely overlap, or cross-visitation, between elements of the leisure core to determine the number of visits, visitors and arrivals/departures on each design day and peak day for every year between opening and park maturity. The information provided is based on estimates, assumptions and other information developed by LDP from its independent research effort, general knowledge of the industry and other comparable developments or publicly available data where possible.

1.5.7. The documents provided to WSP by LDP and used to underpin the Transport Assessment and Transport Strategy are listed below and included in **Appendix TA - A**:

- **The London Resort Preliminary Assessment – Physical Planning Parameters** documentation provides attendance estimates for all components of the proposed development and estimates an overlap among uses to determine the number of onsite visits, visitors and arrivals/departures on design day and peak day, for every year between park opening and maturity; and
- **Physical Planning Values Spreadsheet** provides design day and peak day visitors and arrivals for the theme parks, accommodation, waterpark and RDE element of the Resort.
- **The London Resort – Guest Behaviour Note** sets out and supports the notion that a large proportion of visitors to this type of attraction consider convenience a priority when looking to visit a resort over costs. This has been used to support the mode shares contained within this TA and show visitors will consider a higher cost rail travel if this is more convenient to use.

MR PROFUN MANAGEMENT INC

1.5.8. MR-ProFun Management Inc (ProFun) based in California, USA are considered to be theme park and attraction sector experts, having worked with major theme park operators Universal and Disney in addition to their involvement in managing some of the world's largest entertainment attractions and destinations, including: Ferrari World, Abu Dhabi; Yas Island Water Park, UAE; and the Gandia Water and Adventure Park in Spain.

1.5.9. With so many compelling and interactive entertainment destinations on offer, leisure resorts are having to compete more effectively and offer increasingly captivating reasons for people to visit. ProFun have helped a significant number of commercial attractions create unforgettable experiences that encourage repeat visitation time and time again. Daily arrival and departure information for visitors and staff, by area of the Resort, was provided by ProFun to ultimately underpin the trip generation for the proposed development.

1.5.10. The documents provided to WSP by ProFun and used to underpin the Transport Assessment and Strategy are listed below and included in **Appendix TA - B**:

- **MRPF London Resort 2025 Attendance Distribution Model** takes the analysis undertaken by LDP and presents a detailed distribution model for visitors, including comprehensive information on the total attendance for each calendar day within 2025, broken down by sole-purpose arrivals and departures to each element of the London Resort (e.g. Gate One, Waterpark, RDE). Attendance distribution by day of week and month of the year has been applied to the annual attendance numbers to determine daily variation throughout 2025. ProFun have provided illustrative arrival and departure patterns for each hour within the operational day, varying by season type (low season / high season). The spreadsheet details the number of visitors arriving and departing from each area of the London Resort, by hour between 0800 and 0000, for every day in 2025;
- **MRPF London Resort Attendance Distribution Model 2029** mirrors the analysis undertaken for 2025, and detailed above, but for the second assessment year – 2029 – when Gate Two is forecast to open;
- **MRPF London Resort Attendance Distribution Model 2038** presents the number of visitors arriving and departing from each area of the London Resort, by hour, for every day in 2038 – when London Resort is forecast to reach maturity; and
- **MRPR London Resort 2025, 2029 & 2038 Staffing Model** details the annual employee requirements, both full time and part time staff, for each of the assessment years based on the type of jobs available (entertainment, cleaning, retail, security etc). Similar to the visitor attendance distribution models, ProFun have broken down the staff arrivals/departures for each day within the operational year, with hourly profiles.

VOLTERRA

1.5.11. Volterra is a niche consultancy specialising in the socio-economics of transport and property development by applying economic, behavioural and scientific analysis to form new perspectives on business and public issues. Their involvement with the Resort is primarily to ascertain the socio-economic impact of the development proposals at a local, regional and national level.

1.5.12. Analysis undertaken by Volterra, and provided to WSP, included information on the likely distribution of staff working at the Resort and compared forecast distribution to that currently represented in the 2011 Census. Volterra also calculated the number of off-site hotel rooms required to accommodate guests wishing to stay overnight within the vicinity of the development, together with the approximate location that the off-site hotels might be located.

1.5.13. The documents provided to WSP by Volterra and used to underpin the Transport Assessment and Strategy are listed below and included in **Appendix TA - C**:

London Resort: Hotel Distribution Note sets out the methodology and assumptions used to determine the number and distribution of off-site hotel rooms required to accommodate visitors to the Resort. WSP has applied taken Volterra's analysis and applied the likelihood of overnight stay, by visitor type, to the forecast visitor demand on the chosen assessment days. The Hotel Distribution Summary takes the number of forecast overnight visitors, by assessment year, and presents three possible off-site hotel distributions representative of the following three scenarios:

- hotel demand is not constrained by the lack of available rooms and hotel accommodation will respond to the opportunity;
- hotel demand is constrained by the existing availability and demand that exceeds support is reallocated to hotels in the wider area; and
- hotel demand is still constrained but assumes staying in Thurrock is equally attractive to staying in Dartford or Gravesham.

- **London Resort: Staff Distribution Note** describes the method used to estimate the trip distribution of staff employed at the proposed London Resort. The analysis makes used of the Journey to Work (JtW) data available by small geographic area from the 2011 Census.

IN THE ROUND

1.5.14. In the Round are a unique marketing communications, information and outreach agency specialising in transport planning, mobility management, travel demand management, event management and customer experience. With experience in managing travel demand at major events such as the 2012 London Olympics, In the Round have been involved in identifying measures to influence travel behaviours of visitors and staff to the Resort.

1.5.15. An all-encompassing Travel Demand Management Plan has been developed by In the Round in collaboration with WSP and a summary is presented within chapter 14. This sets the overarching arms and objectives of the approach to travel demand management and sets out how travel behaviours can be influenced by time, route, mode, need and location, together with the measures that will be provided by the Resort.

1.6 REPORT STRUCTURE

1.6.1. This TA presents the outputs of the detailed Masterplanning and assessment work undertaken within the Technical Notes on the proposed London Resort. The report structure is as follows:

- **Chapter 2 – Development Consent Order / Consultation Process:** summarises the consultation with stakeholders and key themes arising from the public consultation. This chapter explains the DCO process and records significant meeting attendance or correspondence;
- **Chapter 3 – Policy Context:** describes and reviews the National, Regional and Local Policy that will be considered during the documentation process;
- **Chapter 4 – Existing Conditions:** presents the current observed conditions of the transport infrastructure surrounding the proposed Kent and Essex Project Sites, including consideration of walking and cycling routes, existing public transport provision and the strategic and local highway network;

- **Chapter 5 – Development Proposals:** outlines in detail the Development Proposals at the Resort and includes a description of on-site land uses, operational timeline, proposed access arrangements to the site by active, sustainable, and private vehicle modes, and presents the on-site car parking provision.
- **Chapter 6 – Trip Generation:** presents a methodology to determine the likely multi-modal trip generation and travel demand for visitors and staff, based upon the forecast annual and daily attendance figures;
- **Chapter 7 – Trip Distribution:** outlines evidence and assumptions that have been used to forecast the distribution of visitors and staff to the Resort and presents the trip distribution for each of the future assessment years;
- **Chapter 8 – Mode Share:** sets out the calculations undertaken by WSP and methodology used to determine appropriate mode shares for use in the highway and public transport impact assessments;
- **Chapter 9 –Modelling Methodology:** sets out the proposed methodology for assessing the transport implications of the Proposed Development, using strategic, microsimulation and local junction modelling platforms;
- **Chapter 10 – Walking and Cycling Strategy:** developed to propose a series of opportunities and recommendations, outside of the red line boundary, for the creation of a coherent and resilient street network for walking and cycling to the Resort to accommodate forecast visitor and staff demand;
- **Chapter 11 – Public Transport Strategy:** discusses the rail, bus and river strategies that will be implemented to support the public transport demand in relation to the phased build out of the Proposed Development;
- **Chapter 12 – Parking Strategy:** summarises the car parking strategy north and south of the River in relation to the proposed phasing of build-out of the Resort and the off-site parking strategy;
- **Chapter 13 – Development Impact:** considers the results of the transport modelling and presents the forecast impacts on the highway and public transport networks;
- **Chapter 14 – Travel Demand Management Plan:** describes the operation management analysis undertaken by In the Round and considers how travel demand will be managed during different visitor profiles throughout the year in the form of Event Management Plans;
- **Chapter 15 – Construction Impact Plan:** outlines the construction routing for HGVs and workers for various phases of the build stage and presents the impact assessment;
- **Chapter 16 – Delivery and Servicing Plan:** describes how the site will be serviced and how and when delivery vehicles will access the site; and
- **Chapter 17 – Summary and Conclusions** provides an executive overview of each of the chapters within the Transport Assessment and summarises the impact of the proposed development on highway and public transport networks.

CHAPTER 2

DEVELOPMENT CONSENT ORDER / CONSULTATION PROCESS

PUBLIC

2 DEVELOPMENT CONSENT ORDER / CONSULTATION PROCESS

2.1 INTRODUCTION

2.1.1. LRCH's proposals for the London Resort have been in the public domain for a number of years and since 2015 WSP has been in consultation with a number of statutory stakeholders. This consultation process included the statutory consultation undertaken during 2015 and 2020. This section of the TA sets out the key outcomes of the consultation undertaken.

2.2 DEVELOPMENT CONSENT ORDER (DCO) PROCESS

2.2.1. A DCO is a mechanism to obtain permission for developments categorised as NSIP; this includes energy, transport, water and waste projects. DCOs are required for designated NSIPs rather than other consents such as planning permission, listed building consent and compulsory purchase order.

2.2.2. Introduced by the Planning Act in 2008, a DCO was intended to simplify and speed up the process of obtaining planning permission for large scale developments, designated as NSIP. Obtaining development consent under the 2008 Act involves a front-loaded process where the Applicant consults on a proposed project before submitting a DCO application. The six-stage process of a DCO in the context of the Proposed Development is shown in **Plate 2-1**.

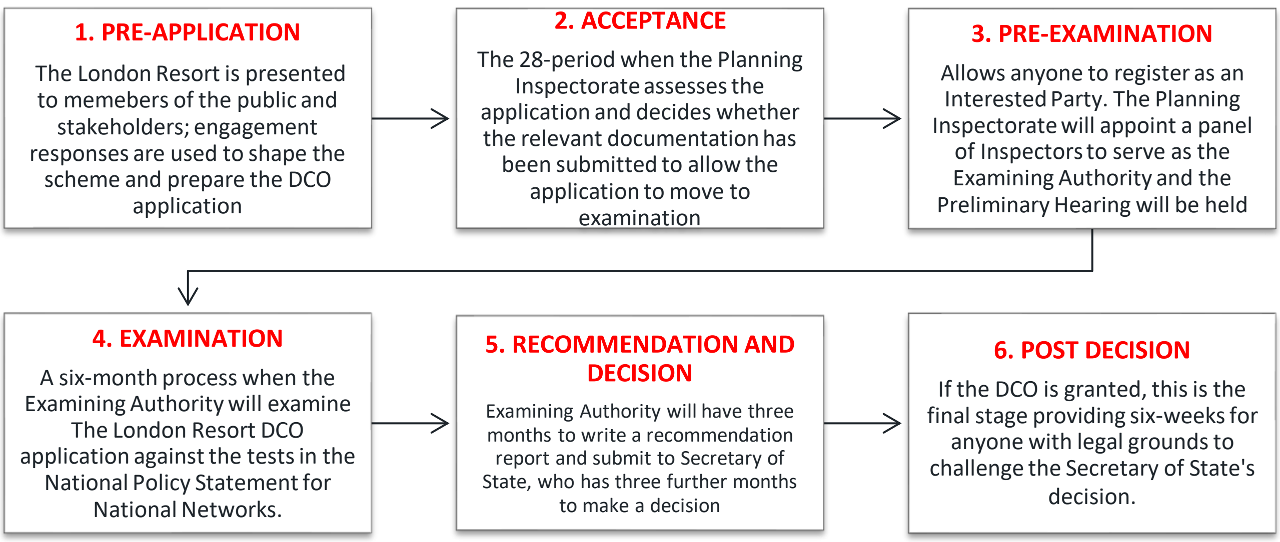


Plate 2-1: The Development Consent Order Process

2.2.3. The application, once accepted for examination, will then be considered by either a single Inspector or a panel of Inspectors appointed by the Planning Inspectorate. The DCO not only provides planning consent for the project but may also incorporate other consents and include authorisation for the compulsory acquisition of land.

2.3 CONSULTATION FEEDBACK

2.3.1. Chapter 9 – Land Transport of the ES provides a detailed breakdown of the consultation that has been undertaken on this project over the last six years and should be read in conjunction with this section.

2.3.2. LRCH sought and received an Environmental Impact Assessment (EIA) scoping opinion from the Secretary of State in 2014 which was accompanied by responses from several stakeholders. For clarity, we have set out the relevant key transport points raised at the time and presented them in **Table 2-1**.

Table 2-1: 2014/15 Statutory Consultation Key Points and Responses

2014/15 Consultation	
Key points raised	**Response**
Balance of views and concerns, for example transport workshops seek to exploit potential of River Thames access whilst ecology seek to minimise disruption to estuary.	Inclusion of a river connection to Tilbury, providing access north of the river for visitors, staff, construction materials and for supply of materials and goods and for the removal of waster during once operational.
Exploit public transport (including river);	Consultation has been undertaken with key operators in the local area looking to enhance bus services, provide new river connections into London and north into Essex, and identify connections to the rail network in the vicinity of the site.
Identify measures to deal with emergencies and other travel time uncertainties, particularly on Queen Elizabeth II (QEII) bridge	Transport Strategy now includes the Port of Tilbury to keep resort traffic off this section of the M25 Since 2014, the Lower Thames Crossing has moved closer to delivery. This is considered to be a significant benefit to the area.
Minimise traffic on local roads, particularly London Road.	No direct access is being proposed onto London Road for Resort visitors. There will be some limited access for local deliveries and public transport. Considerable existing traffic from the current occupiers will be removed from these local roads as well.
Ensure parking is sufficient and identify options for management for off-site demand.	The parking provision has been delivered based upon other leisure developments in the UK and Europe. This has then been considered against the likely attraction of car borne traffic to determine its acceptability. This is covered in significant detail within this Transport Assessment and an Off-Site Parking Plan has been included in **Appendix TA - Y**.

2.3.3. In addition to the significant consultation responses, WSP undertook a number of meetings as set out below:

- meeting with the Highways Agency (HA), 22 July 2014;
- meeting with Highways England (HE) (presentation to Hyder/Halcrow), 24 July 2014;
- meeting with KCC Thameside Strategic Transport, 31 July 2014;
- meeting with the HA, 29 August 2014;
- meeting with Kent County Council (KCC) and Dartford Borough Council, 15 September 2014;
- meeting with KCC and DBC 23 October 2014;
- meeting with HA/ Hyder/Halcrow, 31, October 2014;
- meeting with KCC (Fastrack), 18 November 2014;
- masterplanning workshop with KCC, DBC and Gravesham Borough Council, 3 December 2014;
- meeting with HE, 4 December 2014;
- meeting with HS1, 8 December 2014;
- meeting with the HE and KCC, 12 January 2015;
- Planning Inspectorate (PINS) meeting at Savills 14th January 2015;
- meeting with Thames Clippers, 15 January 2015;
- meeting with Treasury, 19 January 2015;
- air quality meeting with KCC, DBC and GBC, 23 January 2015;
- transport and masterplanning workshop with key transport stakeholders 29th January 2015;
- traffic modelling meeting with KCC, 05 February 2015;
- access design and car parking meeting with KCC, DBC and GBC 12 February 2015;
- meeting with KCC (public transport), 18th February 2015;
- Swanscombe and Greenhithe Town council presentation, 23 February 2015;
- archaeology meeting with KCC, DBC, GBC and English Heritage, 27 February 2015;
- meeting with Department for Transport (DfT), 2 March 2015;
- KCC Major Projects meeting, 3 March 2015;
- meeting with Eurostar, 4 March 2015;
- meeting with Port of Tilbury London Limited (PoTL), 9 March 2015;
- meeting with HA, KCC, DBC and GBC, 10 March 2015;
- access construction logistics meeting with Skanska 12th March 2015;
- meeting with Arriva (buses), 13th March 2015;
- meeting with Wessex Archaeology, KCC (Archaeology) Heritage England 17th March 2015;
- presentation to HS1, 24 March 2015;
- Environmental Agency (EA) Access Road meeting 26th March 2015; and
- meeting with HA, KCC, DBC and GBC, 31 March 2015.

SUBSEQUENT CONSULTATION

2.3.4. Discussions have continued since the 2015 statutory consultation. HE, KCC, Thurrock Council (ThC) and other local highway authorities potentially affected by the proposals have been consulted with the revised transport strategy 2019 and 2020 in advance of the formal scoping opinion being submitted. The consultation process consisted of the submission of technical work and associated feedback from the authorities. The key feedback from these submissions related to:

- the need for robust supporting evidence for the visitor forecasts used;
- further consideration of how the development can support high public transport mode shares;
- a suitable parking management scheme to reduce reliance upon private vehicles; and
- support for the use of river and rail-based travel modes.

2.3.5. Following the earlier consultations and the additional technical work, there has been a fundamental shift in the approach to the accessibility of the Proposed Development, with the introduction of facilities at the PoTL. The PoTL has agreed to accommodate a new car park (plus ancillary visitor services) north of the River Thames and to allow access to the river for a new ferry service connecting the Proposed Development to the PoTL. Furthermore, PoTL would also be the hub for the majority of construction material and operational servicing for the Proposed Development.

2.3.6. An agreement (in principle) has also been reached with a river service operator about the provision of new river-based passenger services, thereafter, referred to as Uber Boats by Thames Clipper, to the Proposed Development from the PoTL and central London.

2.3.7. As part of the ongoing consultation with stakeholders in 2020, a series of Technical Notes (TN) were submitted to the key stakeholders for review in June 2020. These notes included:TN1: Trip Generation, TN2: Trip Distribution; TN3: Mode Share; and TN4: Future Mobility. For clarity, these are described in greater detail within Sections 6,7 and 8.

2.3.8. The Technical Notes form a suite of documents, which inform the modelling strategy, and therefore the modelling outputs used in the assessments of the Proposed Development. Comments received from stakeholders on these documents were addressed and incorporated into the TNs and supporting analysis.

2020 ES Scoping Opinion

2.3.9. The introduction of the facilities north of the River Thames, as well as changes in other aspects of the Proposed Development and changes introduced within Regulation 10(1) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations), resulted in the need for an updated EIA.

2.3.10. As part of the scoping exercise for the London Resort, an EIA Scoping Report was produced and submitted to (PINS as well as to the local authorities in mid-June 2020. The Scoping Report proposed the methods for assessing the environmental impacts of the London Resort, which included, inter alia, the assessment of impacts associated with transport.

2.3.11. The EIA Scoping Report attracted responses from numerous authorities and interest groups. Consideration has been given to all received comments and opinions in detail within the ES chapter 9 - Land Transport. The key comments received from the PINS relating to transport are summarised in **Table 2-2**.

Table 2-2: 2020 Scoping Opinion Key Points and Responses

2020 Scoping Opinion	
Key points raised	**Response**
The ES should include an assessment of the impacts on rail transport, where significant effects are likely to occur.	The TA includes a rail strategy identifying the proposals being put forward to support the London Resort, including the likely numbers of visitors, times of day and stations that will be used. The resultant mitigation, which will still be subject to ongoing consultation with Southeastern, HS1, Network Road and the DfT, seeks to maintain capacity for the additional patronage associated with the London Resort and ensure appropriate connections are available between railway stations and the Proposed Development.
Assess the impacts on sea-related travel where significant effects are likely to occur	The London Resort is not promoting any upgrades or increase in cruise terminal facilities to support any increase in sea liners to the Resort. Notwithstanding this, it is acknowledged that some cruise visitors who stop at Tilbury may want to access the London Resort.
Information on study area and modelling methodology	The TA and the Strategic Modelling Methodology (**Appendix TA-S**) set out in detail the study area contained in the traffic modelling
Explain the extent of the anticipated growth associated with other developments.	This Transport Assessment and the Strategic Modelling Methodology (**Appendix TA-S**) set out in detail the anticipated growth assumptions.

2020 Consultation

2.3.12. Following the scoping opinion, a new round of statutory consultation was undertaken between 27 July and 21 September 2020 with new comments received from the key stakeholders, the full list is contained within the ES chapter 9 - Land Transport.

2.3.13. It was evident in the 2020 consultation process that there has been further support to the Proposed Development from the public, and support for the shift in transport strategy with the PoTL forming part of the proposals.

2.3.14. WSP has responded directly to stakeholders on responses received and where necessary, updates have been incorporated into the Transport Assessment and supporting analysis, underpinning the transport impact assessment. A summary of the key comments raised at this time are set out in **Table 2-3**.

Table 2-3: 2020 Consultation Key Points and Responses

2020 Consultation	
Key points raised	**Response**
Concerned that the development impact assessment does not take into account the impact of the Dartford Crossing and the LTC.	This TA sets out in detail the assessments that are being undertaken to assess the impacts of the London Resort. This includes both the LTC and the Dartford Crossing. Please refer to chapters 9 and 13.
Concerns raised about the various trip generators within the London Resort and how these are considered.	There has been ongoing consultation with KCC and other stakeholders over the various trip generators, with additional information being requested to support the numbers being used. Additional information from LDP and ProFun are contained within this TA (**Appendix TA - A** and **Appendix TA - B**)
It is assumed that details of the Public Rights of Way (PRoW) to be temporarily and permanently stopped-up will be provided as the plans for the Resort are refined.	The details of the PRoW to be temporarily or permanently stopped up are detailed within the DCO and a presented with the DCO drawings [insert document reference]/
HE identified a large number of areas that required additional information for a robust Transport Assessment	This Transport Assessment has looked to address and provide clarity on the range of points raised by HE during the consultation. This includes updates to trip generation, distribution and mode shares and the resulting assessment scenarios covering 2025, 2029 and 2038 for different time periods.
The impact upon the M20 would need to be considered in respect of Traffic Management of freight flows will be via the Kent Resilience Forum's Operation Fennel and Operation Brock on the M20.	This TA considers in detail the level of traffic associated with the London Resort on traffic routing east towards the M20. It is noted that several measures are being considered and without knowledge of the agreements around BREXIT, it is a difficult assessment for LRCH to undertake at this time. However, should more clarity be made on the proposals and subject to ongoing consultation with the HE post December 2020, further sensitivity tests could be undertaken.
LRCH will need to demonstrate that it has taken full account of all committed development and non-committed sites within Local Plan allocations in the vicinity of the site.	Noted. The traffic modelling undertaken has utilised HE's strategic model for the local area, approved in 2020. This has, however, been reviewed with a breakdown of committed development schemes set out in detail in **Appendix TA-S**.
Concern about insufficient mitigation being considered for Strategic Road Network (SRN).	Since the submission of the Preliminary Environmental Impact Report (PEIR; July 2020), LRCH have undertaken additional traffic modelling and junction capacity assessments which are contained within the TA (section 13). In addition, a Travel Demand Management Plan (TDM, Appendix TA-AC) has been prepared, which sets out how visitors will be encouraged to use sustainable modes of transport.
Concern about the cumulative impact of the proposed development in relation to the capacity of the local labour market and labour being drawn from further afield.	In order to make the assumptions on the labour market for the assessments, Volterra have produced several key documents which include London Resort: Staff Distribution Note (**Appendix TA – C**) and the Socio-Economic chapter of the ES (Document Reference 6.1.7). This identifies the labour available in the local area and where additional labour may be required. This has been used to support the distribution of staff trips within the local area.

2.4 2019 AND 2020 STAKEHOLDER ENGAGEMENT

2.4.1. Since November 2019, WSP has engaged with a number of stakeholders that have an interest in the Proposed Development, specifically around transport.

2.4.2. Due to the COVID-19 pandemic, meetings with the key stakeholders has resulted in web-based discussions on the key issues through our submitted technical notes.

2.4.3. The following meetings have taken place;

- meeting with PoTL, 06 November 2019;
- meeting with Thames Clippers, 26 November 2019;
- meeting with Thames Gateway Trams, 05 February 2020;
- meeting with PoTL, 14 February 2020;
- meeting with HE, 02 March 2020;
- The London Resort Transport Vision Workshop, 30 March 2020;
- meeting with HS1, 19 May 2020;
- meeting with HE, 03 June 2020;
- meeting with Port of London Authority (PLA), 19 June 2020;
- meeting with Network Rail, 30 June 2020;
- meeting with Uber Boat by Thames Clippers, 8 July 2020;
- meeting with ThC, 8 July 2020;
- meeting with the Ebbsfleet Development Corporation (EDC), 21 July 2020;
- meeting with DBC, 26 August 2020;
- meeting with EDC, 8 September 2020;
- meeting with ThC, 15 September 2020;
- meeting with KCC, 18 September 2020;
- meeting with Thames Gateway Tram Limited (KenEx Tram), 18 September 2020;
- meeting with EDC, 24 September 2020;
- meeting with PoTL, 28 September 2020;
- meeting with KCC, 7 October 2020;
- meeting with EDC, 7 October 2020;
- meeting with HE, 16 October 2020; and
- meeting with KCC, 27 October 2020.

2.4.4. Key meetings have been held with both KCC and HE who provided transport comments on TNs 1-4 setting out the trip generation, distribution and mode share. These were held as follows:

- KCC - 07 October 2020 KCC; and
- HE - 16 October 2020.

2.4.5. The comments received from HE and associated WSP responses are contained within **Appendix TA - D** and comments and responses to KCC are contained within **Appendix TA - E**. Where required, the TA has set out the updates made in relation to these comments.

2.5 MODELLING APPROACH

2.5.1. The original traffic modelling prepared to support The London Resort DCO application (previously known as London Paramount Entertainment Resort DCO) in 2015/16 was based on an update of HE's M2 Junctions 3 to 5 strategic SATURN model. Following the development by HE of new strategic SATURN models to support their DCO applications (at that time) for both the A2 Bean and Ebbsfleet junction improvements (the A2BE model) and the LTC (the LTAM model) during 2017/18, it was agreed that the traffic modelling to support the London Resort DCO application should be updated using the LTC model as that model covered a wider area than the A2BE model and was considerably more up to date than the M2 Junctions 3 to 5 model.

2.5.2. LRCH and WSP continued to liaise with Highways England regarding the use of the LTC model. In order to progress agreement on traffic modelling, LRCH wrote to Highways England on 9th March 2020 formally requesting Highways England either provide LRCH with a copy of the LTC model or undertake the modelling on LRCH's behalf.

2.5.3. Highways England responded on 26th March explaining they were unable to provide a copy of the LTC model and that unfortunately they did not have the resource to undertake the modelling on LRCH's behalf.

2.5.4. LRCH, WSP and Highways England continued to liaise and on 19th May 2020 Highways England confirmed they would provide traffic data output from both the A2BE traffic model and the LTC model to facilitate LRCH and WSP to undertake their own modelling to support the DCO application for the London Resort. It was on this basis that WSP prepared and submitted on 5th June 2020 a traffic modelling methodology brief to Highways England setting out how the A2BE and LTC data would be used to build a spreadsheet traffic model to support the London Resort DCO application.

2.5.5. Highways England responded to the modelling methodology brief on 15th June 2020 stating, 'We are content that the overall approach in principle is acceptable'. The A2BE traffic modelling data was issued to WSP on 08 September 2020.

2.5.6. The modelling methodology report is set out in detail within chapter 9 of this TA.

2.6 SUMMARY

2.6.1. This chapter has provided an overview of the DCO process and the six key stages that the London Resort is be required to go through. Outlined within this chapter are the key meetings at which WSP has been in attendance throughout both 2014/15 and more recently in 2019/20.

2.6.2. The consultation responses received in 2014/15 and 2020 have been addressed and wherever possible, amendments have been made within the TA and over-arching strategy to take on-board comments and responses; where relevant, these changes have been clearly identified in the supporting information within the Appendices – most notably: the SATD, TN1, TN2, TN3 and TN4.

2.6.3. Following engagement with HE, WSP has been provided with data from the A2BE strategic model to inform a spreadsheet-based strategic assessment. The modelling methodology is discussed in detail within chapter 9 and the results of the strategic modelling are presented in chapter 13.

CHAPTER 3

POLICY CONTEXT

3 POLICY CONTEXT

3.1 INTRODUCTION

3.1.1. This chapter outlines the key national, regional and local policy and guidance documents that have been reviewed in detail and will influence the Transport Assessment and Transport Strategy in relation to the development proposals. The London Resort will be developed in accordance with local, regional and national policy and where possible will seek to adhere to additional guidance documents that will impact the assessment and strategy.

3.1.2. It is noted that there are further policy and guidance documents, such as those from the DfT and Transport for London (TfL), which haven't been presented in detail within this chapter but have been reviewed and used where appropriate as best practice guidance.

NATIONAL POLICY AND GUIDANCE

- National Planning Policy Framework, (MCLG), (June 2019);
- National Policy Statement for National Networks, Department for Transport (December 2014);
- DfT Gear Change: A Bold Vision for Cycling and Walking (July 2020); and
- Cycle Infrastructure Design, Local Transport Note (LTN) 1/20.

REGIONAL POLICY AND GUIDANCE

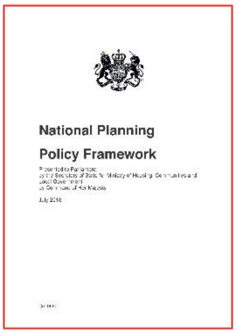
- TfL Freight and Servicing Action Plan, TfL, (March 2019); and
- TfL Making Freight Work for You: Delivery and Servicing Plans.

LOCAL POLICY AND GUIDANCE

- KCC 'Local Transport Plan 4: Delivering Growth without Gridlock' 2016 - 2031 (2016);
- Freight Action Plan for Kent (2016);
- Kent and Medway Growth and Infrastructure Framework (2018);
- Gravesham Local Plan Core Strategy adopted version (2014);
- Dartford Core Strategy (2011);
- Thurrock Local Development Framework: Core Strategy and Policies for Management of Development (2015);
- Thurrock Transport Strategy (2011); and
- Ebbsfleet Implementation Framework (2017).

3.2 NATIONAL POLICY AND GUIDANCE

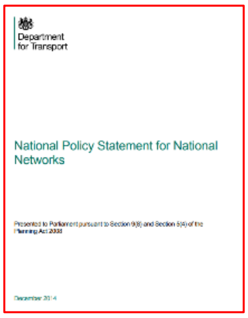
National Planning Policy Framework, MHCLG, February 2019



Policy Content	Relevance to this Assessment
The NPPF paragraph 10 states *"so that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development."* Specifically, from a highways and transportation perspective, chapter 9 (paragraphs 102 to 111) of the NPPF is titled *Promoting Sustainable Transport*. In paragraph 104 the NPPF states that *"Planning Policies should:* ▪ support an appropriate mix of uses across an area, and within larger scale sites, to minimise the number and length of journeys needed for employment, shopping, leisure, education and other activities; and ▪ provide for high quality walking and cycling networks and supporting facilities such as cycle parking (drawing on Local Cycling and Walking Infrastructure Plans). *…"* and also, that the quality parking should be *"…convenient, safe and secure, alongside measures to promote accessibility for pedestrian and cyclists."* Paragraph 108 outlines the requirements for a development that should be considered during the assessment of the proposals stating: *"It should be ensured that:* a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location; b) safe and suitable access to the site can be achieved for all users; and c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree." Paragraph 110 considers that applications for development should: *"a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible –*	Although the NPPF states at paragraph 5 that it does not contain specific policies for NSIPs, WSP considers that it is nevertheless important and relevant to the project. The London Resort is founded on sustainability and low carbon principles. The aim of the Resort is to create the most sustainable theme park destination in the world and net carbon neutral in operation. The London Resort will be a world class destination. It will be a mixed-use site, that will maximise linked trips between different parts of the Resort The London Resort will provide a walking and cycling strategy that promotes active travel modes. The London Resort will provide a Travel Demand Strategy encouraging sustainable travel to and from the Resort. This will encompass a TDM plan and a strategy to mitigate the impact of the Resort on the highway network. The development will propose significant highways improvements to mitigate the impact on the network. The London Resort will mitigate the impact of the Proposed Development on the highway network to avoid a severe impact occurring such that paragraph 109 will not be triggered. The mitigation will be through a

to facilitating access to high-quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use” and *e) be designed to enable charging of plug-in and other ultra-low emission vehicles* *in safe, accessible and convenient locations.* Paragraph 111 requires that *“…All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.”* Importantly, NPPF states in paragraph 109 that *“…Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.”*	mixture of hard and soft measures including junction improvements and a travel demand strategy.

National Policy Statement for National Networks, Department for Transport, December 2014



Policy Content	Relevance to this Assessment
The strategic and vision of the document is outlined below *The Government will deliver national networks that meet the country’s long-term needs; supporting a prosperous and competitive economy and improving overall quality of life, as part of a wider transport system. This means:* • *networks with the capacity and connectivity and resilience to support national and local economic activity and facilitate growth and create jobs.* • *networks which support and improve journey quality, reliability and safety.* • *networks which support the delivery of environmental goals and the move to a low carbon economy.* • *networks which join up our communities and link effectively to each other.*	The London Resort is not a project specifically covered by this National Policy Statement as it is not a highway, railway or rail freight project; however, it will have a connection to the A2 trunk road and so WSP considers the NPS to be important and relevant to the project. The London Resort will provide a boost to the economy in the region as well as providing an enhancement to the Public Transport systems in the area. The Resort will promote low carbon transport and will be net carbon neutral in operation.
Paragraph 3.16 *As part of the Government’s commitment to sustainable travel it is investing in developing a high-quality cycling and walking environment to bring about a step change in cycling and walking across the country*	The London Resort will provide a walking and cycling strategy which will provide a series of links to improve walking and cycling

<table>
<tr><td>Paragraph 3.17

… The Government expects applicants to use reasonable endeavours to address the needs of cyclists and pedestrians in the design of new schemes...</td><td>conditions in the vicinity of the Resort and nearby towns.</td></tr>
<tr><td colspan="2">Gear Change: A Bold Vision for Cycling and Walking, Department for Transport, July 2020

</td></tr>
<tr><td>Guidance Content</td><td>Relevance to this Assessment</td></tr>
<tr><td>
The Gear Change: A Bold Vision for Cycling and Walking was published by the DfT in July 2020 and set outs the need for a step-change in cycling and walking. The guidance document outlines a clear vision for a transformation in the transport system that will benefit all and see England as a ‘great walking and cycling nation’.
The Gear Change guidance document focuses on the need to take action to tackle the main barriers to active travel by attracting people to walking and cycling through building better quality infrastructure, making streets better for everyone and ensuring people feel confident. Three overarching key themes within the document are summarised as follows:

better streets for cycling and people;
putting cycliing and walking at the heart of transport, place-making and health policy; and
Eempowering and encourage local authories.

In order to achieve better streets for cycling and people, it is advised that developments provide ‘safe, continuous, direct routes for cycling, physically separated from pedestrians and motor traffic, serving places that people want to go’ and that ‘Cycle, bus and walking corridors will be created, closing a limited number of main roads to through access except for buses and access’.
Key design principles have been outlined within Gear Change to accommodate cycling becoming mass transit, re-enforcing the idea that routes must be designed for larger numbers of cyclists, for users for all abilities and disabilities. The principles include:

cyclists must be separated from volume traffic, both at junctions and on the stretches of road between them;
cyclists must be separated from pedestrians;
cyclists must be treated as vehicles, not pedestrians;
routes must join together; isolated stretches of good provision are of little value;
routes must feel direct, logical and be intuitively understandable by all road users;
routes and schemes must take account of how users behave;
purely cosmetic alterations should be avoided;

</td><td>
The London Resort will seek to deliver a cohesive walking and cycling network, joining existing routes and infrastructure to improvements identified within the development proposals and the wider Active Travel Strategy.
Where possible, the London Resort will improve conditions for cyclists and pedestrians within the vicinity of the Kent and Essex Project Sites; where constraints are identified along direct routes, suitable signage, upgrades and wayfinding will be implementing along alternative routes and promoted through the Travel Demand Management Plan.
</td></tr>
</table>

▪ *barriers, such as chicane barriers and dismount signs should be avoided; and* ▪ *routes should be designed only by those who have experience of the road on a cycle.*	

Local Transport Note (LTN) 1/20 Cycle Infrastructure Design, July 2020

Guidance Content	Relevance to this Assessment
Following the government's ambitious Gear Change plans, the LTN 1/20 guidance was developed to reflect the latest developments in cycle infrastructure design since LTN 2/08 was published a decade ago and reflects current best practice, standards and legal requirements. The LTN 1/20 provides guidance and good practice for the design of cycle infrastructure in support of the Cycling and Walking Investment Strategy and replaces previous guidance LTN 2/08 and LTN 1/12: Shared Use Routes for Pedestrians and Cyclists. There guidance outlines the five core design principles representing the essential requirements to achieve more people travelling by cycle or on foot. Networks and routes should be: ▪ **Coherent:** connected routes that are simple to navigate and of a consistently high quality; ▪ **Direct:** routes should be as least as direct, if not more direct, than those available for private vehicle; ▪ **Safe:** a narrow advisory lane next to a narrow traffic lane is not an acceptable offer; ▪ **Comfortable**: well-maintained smooth surfaces, adequate width for the volume of users, minimal stopping and avoid steep gradients; and ▪ **Attractive**: cycle infrastructure should help deliver public spaces are well-designed and finished in attractive materials.	The London Resort Active Travel strategy will set out proposals to development a cohesive walking and cycling network that links existing routes and infrastructure to new proposals. Where possible, proposed routes will be in line with the LTN 1/20 guidance and provide segregated, direct and safe provisions for pedestrians and cyclists to access the Resort as well as benefitting the local population.

3.3 REGIONAL POLICY AND GUIDANCE

TfL Freight and Servicing Action Plan, TfL, March 2019

Policy Content	Relevance to this Assessment
The Freight and Servicing Action Plan was published by TfL in March 2019. The overall aim of the document is to provide clarity on future policies and outlines the actions and will allow for safe, clean and efficient freight operations. The document provides a series of Actions to improve servicing those particularly relevant to the London Resort are outlined below. Action 12 *We will share the learnings from successful trials of last-mile initiatives so that these practices become widespread and more impactful.* Action 13: *We will promote consolidation as one of a combination of measures that support safe, clean and efficient freight by:* Action 14 *We will help the drivers and logistics professionals navigate regulations and restrictions, and plan more efficient routes.*	The London Resort will be designed and operated in accordance with the Freight and Servicing Action Plan. The Resort will look to implement a number of Action's outlined in the document including the Consolidation Sites, efficient routes, and looking into some last mile initiatives.

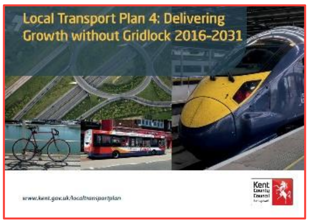
Making Freight Work for You: Delivery and Servicing Plans, TfL

Policy Content	Relevance to this Assessment
TfL provide additional guidance on the production of Delivery and Servicing Plans within their document entitled Making Freight Work for You. The document identifies that the plan needs to be tailored to the specific requirements of the building, but outputs can include: - a plan identifying where the servicing can occur on-site; - an agreement for occupants to use freight operators who can demonstrate their commitment to following best practice guidance;	The Delivery and Servicing Plan, as set out in chapter 16 of this TA, will produce a strategy that provides a plan on where servicing can occur on site, provide a set of best practice guidance for all operators to follow and outline the monitoring and updating process of the Plan.

▪ proactive management of deliveries to reduce the number of unnecessary journeys and increase the use of more sustainable modes, where possible.	

3.4 LOCAL POLICY AND GUIDANCE

Local Transport Plan 4: Delivering Growth without Gridlock 2016 – 2031, Kent County Council (2016) (LTP 4)



Policy Content	Relevance to this Assessment
The aims of Kent County Council's LTP 4 include: ▪ delivering of resilient transport infrastructure that reduces congestion and improves journey time reliability; ▪ promotion of affordable, accessible and connected transport to enable access for all to jobs, education, health and other services; ▪ to provide a safer road, footway and cycleway network to reduce the likelihood of causalities; ▪ to deliver schemes that reduce the environmental footprint of transport and enhance the historic and natural environment; and ▪ to provide and promote active travel choices for all members of the community to encourage good health and wellbeing and implement measures to improve local air quality.	The London Resort will promote a new Fastrack link to The Resort. To reduce the impact of The Resort upon the highway network with Kent, it is proposed to provide construction, operational and visitor access using the Thames, via the PoTL. The Proposed Development will provide enhancements to local walk and cycle routes.

Freight Action Plan for Kent (2016)

Policy Content	Relevance to this Assessment
The Freight Action Plan (FAP) is a supporting policy document complementing the LTP4 and aims to:	The construction and servicing strategy will take account of this policy document. The Resort will require HGV traffic to stay on the SRN for as much as possible and ensure the effective routing of

▪ tackle the overnight lorry parking in Kent (as a result of Kent's linkages to continental Europe); ▪ find a long-term solution to Operation Stack (as a result of disrupted services at the Eurotunnel and Port of Dover); ▪ effectively manage the routeing of HGV traffic so that it remains on the SRN as much as possible; ▪ impose restrictions for HGV traffic travelling on the local road network; and ▪ ensure effective use of planning and development control powers to reduce the impact of freight traffic. *The document ties the above aims to strategic transport priorities which include LTC, the bifurcation of port traffic (i.e. dividing it between the A2/M2 and A20/M20) and port expansion amongst others.* *The FAP acknowledges that up to 41% of all vehicles on the SRN within the county is HGV traffic on M2/A2 and M20/A20 corridors. KCC fully supports the modal shift from road to rail as well as continuing use of the River Thames and Thames Estuary to transport waste, construction materials and containerised goods. This modal shift would reduce HGV movements throughout the county and significantly reduce carbon dioxide emissions.*	HGVs to avoid peak periods on the highway network. LRCH understands that a portion of the Ebbsfleet International Station Car Park will be used by HMRC as an Inland Border Facility. The Delivery and Servicing Plan will be a live document and will be secured through the DCO process.

Kent and Medway Growth and Infrastructure Framework (GIF) (2018)	
Policy Content	**Relevance to this Assessment**
In the period from 2011 to 2031, the GIF identified a requirement of inter alia 170,300 new jobs in order to support the growth in the area.	The London Resort will provide significant employment opportunities for the area as well as ancillary employment opportunities that are associated as a result of a World Class Theme Park.

Gravesham Local Plan Core Strategy, adopted version (2014)

Policy Content	Relevance to this Assessment
▪ **Strategic Objective - SO1:** Make the most efficient use of land by concentrating development on underused, derelict and previously developed land in the urban area of Gravesend and Northfleet, in particular former industrial sites along the Thames Riverside and Gravesend town centre, and at Ebbsfleet. ▪ **Strategic Objective - SO3:** Ensure that the right amount, size and type of employment sites are available in Gravesend and Northfleet to diversify and strengthen the local economy and reduce out commuting. ▪ **Strategic Objective - SO7:** Enhance the Borough's public transport network to serve existing and new neighbourhoods and communities in Gravesend, Northfleet and Ebbsfleet. ▪ **Strategic Objective - SO11:** Seek to retain and improve the provision of existing services and facilities and ensure that sufficient facilities are provided to meet the needs arising from new development. ▪ **Policy CS03**: Northfleet Embankment and Swanscombe Peninsula East Opportunity Area ▪ **Policy CS07**: Economy, Employment and Skills ▪ **Policy CS11**: Transport *The Core Strategy recognises the development potential of the Swanscombe Peninsula and Ebbsfleet, which will enable the regeneration process to continue beyond the plan period. Paragraph 4.4.4 of the Core Strategy states:* *"The Council considers that there is development potential at Swanscombe Peninsula. However, the constraints and the absence of any definitive proposals showing how they could be overcome suggest that any development in this area is only likely to be deliverable in the longer term. As a result, any development should come forward using a comprehensive masterplan approach that has regard to proposals for the Dartford part of the peninsula, development phasing and the possible need for a new highway link to relieve the existing A226 and improve accessibility to the peninsula. The presumption is that any development in this sub-area is most likely to comprise industrial/commercial uses together with greenspace to protect the biodiversity of the area. Residential development is not ruled out as part of a mixed-use development of the site but would need to overcome the constraints and provide a sustainable form of development that integrates well with the adjoining urban areas"*	In accordance with paragraph 4.4.4 of the core strategy, The Resort will relieve the pressure on the A226 and improve accessibility for all users to the peninsula. The Resort will improve the public transport network forming part of the Fastrack network. The Resort will provide a sizeable amount of employment for the area. This is in accordance with Policy CS11 on Transport. In relation to SO1 and SO3 the London Resort will develop land that is currently underused and will provide significant employment to the area. The London Resort will promote travel via public transport where possible, which includes a new Fastrack link to the Resort. This will improve the linkage between the existing neighbourhoods and communities across Gravesend, Northfleet and Ebbsfleet. This is in accordance with Strategic Objective 7 and 11.

Dartford Core Strategy (2011)

Policy Content	Relevance to this Assessment
The Dartford Core Strategy acknowledges the development opportunities available at the Swanscombe Peninsula while recognising that the area lies within both Dartford and Gravesham Boroughs. The Core Strategy suggests that joint working between the two boroughs will be required to maximise the potential of the area. Any development will need to relate well to existing and proposed communities and other development while addressing constraints as well as the opportunities offered by the riverside location and natural environment. ***Strategic Objective 5** outlines that a key goal is '…to provide an accessible and enticing Thames Waterfront with a high quality built and natural environment, offering a range of leisure and recreational activities.'* ***Policy CS6** outlines that the '…Council will promote the creation of a vibrant mixed-use riverfront, incorporating sustainable communities, new employment opportunities, leisure use of the river/riverside and use of the river for sustainable transport.'* ***Policy CS6** conjoins a series of policy objectives to exploit the potential of the Thames waterfront. Part H of the Policy CS6 goes on to say that Proposals '…which maximise the tourism potential of Ebbsfleet and provide fast and convenient public transport links to Ebbsfleet International Station as part of the scheme will be particularly encouraged.'*	In accordance with Strategic Objective 5 and Policy CS6, a mixed-use development such as the London Resort would exploit the value of the riverfront. It would enhance sustainable transport access to the area through enhanced infrastructure linking Ebbsfleet with London Resort jetty and water-ferry connections into London.

Thurrock Local Development Framework: Core Strategy and Policies for Management of Development (2015) and Thurrock Transport Strategy (2011)

Policy Content	Relevance to this Assessment
The Core strategy acknowledges Tilbury as a key location for employment in the borough providing employment in logistics, port and riverside industries. It also highlights the importance of infrastructure and transport links to increase the connectivity and accessibility in the area stating that 'the connectivity of the transport system as a whole in Thurrock is therefore critical in enabling people to get to work and the freight sector to deliver goods.' Policy TTS1: Delivering sustainable growth *'Thurrock Council will prioritise accessibility improvements by sustainable transport in areas accommodating significant new housing and jobs growth.'* Policy TTS2: Improving access by sustainable transport to key services and facilities *'There will be an emphasis on delivering accessibility improvements by sustainable transport modes…'*	The London Resort is founded on sustainability and low carbon principles. The Resort will improve the ferry terminal at Tilbury and enhance the existing connections between Tilbury Town Railway Station and the Port. The Proposed Development will also provide enhancements to local walking and cycle routes in Tilbury. The construction of The Resort will be in accordance with the policies outlined by Thurrock in reducing the adverse effect of

Policy TTS3: Integrating with other service providers *'Thurrock Council will provide accessibility planning expertise to other service providers to enable them to more accurately consider accessibility when making decisions such as where to locate or how to deliver new services.'* Policy TTS4: Walking and Cycling *'Priority will be given to providing high quality walking and cycling infrastructure…* Policy TTS7: Transport Interchange *'Improved capacity and connections between modes of transport will be delivered at key transport interchanges, such as rail and bus stations, on the network of interurban public transport routes.'* Policy TTS10: Smarter Choices *'…measures to encourage a modal shift to public transport, walking and cycling will be prioritised.* Policy TTS17: Public Transport *'Thurrock Council will develop a high-quality network of public transport linking Thurrock with other Regional Transport Nodes and linking the urban areas within Thurrock. Routes will connect town centres, key strategic economic hubs, further education, and hospitals.'* Policy TTS19: Freight *'to reduce the adverse impacts of road freight. '* Policy TTS20: Reducing Emissions from Transport *'The Council will work to deliver transport improvements aimed at reducing emissions from transport. To increase value for money, transport measures that reduce both greenhouse gas and air pollution emissions will be prioritised for action.'* Policy TTS24: Reducing Freight Emissions *'The Council will work with freight associations and operators to mitigate the adverse impacts of freight operations by reducing emissions from Heavy Good Vehicles in Thurrock and encouraging the use of rail and water freight where feasible.'*	freight on the highway network and emissions.

Ebbsfleet Implementation Framework (EIF) (2017)

Policy Content	Relevance to this Assessment
The EIF document, developed by EDC aims to bring together 20 years of master planning in the area to deliver the first Government sponsored Garden City. EDC pledges to prioritise walking and cycling, to support healthy living and develop a cohesive network in the area. Within the document it outlines a defined street hierarchy allowing for greater shared space to accommodate walking and cycling trips. Ebbsfleet Garden City will directly respond to the challenges of the existing topography in the area and establish new vertical connections to negotiate steep level changes ensuring improved pedestrian and cycle links between existing areas and ultimately into the London Resort. The EIF outlined the following approach when working with developers and partners to deliver an integrated walking and cycling network that will: ▪ re-open and upgrade historic underpasses and tunnels where feasible; ▪ investigate new vertical connections (e.g. elevators, ramps and stairs) to negotiate dramatic changes in level and establish a landmark suite of iconic interventions within the Ebbsfleet landscape; ▪ re-develop bridges and underpasses to negotiate infrastructural barriers; ▪ improve existing pedestrian and cycle links within existing local communities; ▪ establish cycling and walking networks that provide direct routes to local centres and facilities; ▪ support infrastructures for cycling, such as cycle-share facilities and cycle hubs at major transport interchanges; and	The London Resort Active Travel Strategy seeks to ensure provision of a connected and cohesive network, joining proposed walking and cycling routes both to existing connections and joining up with routes identified by EDC for improvement.

CHAPTER 4

EXISTING CONDITIONS

4 EXISTING CONDITIONS

4.1 INTRODUCTION

4.1.1. The location of the Proposed Development was chosen based on its relative location and accessibility to European cities, transport and service infrastructure. The accessibility of the planned location for the London Resort provides a unique opportunity for a development of this type. The existing highway network, public transport, walking and cycling options available within the vicinity of the Kent and Essex Project Sites have been reviewed within this chapter and will be used to inform the Active Travel Strategy (chapter 10), Public Transport Strategy (chapter 11), Parking Strategy (chapter 12) and Travel Demand Management Plan (chapter 14) of this TA document.

4.1.2. The Kent Project Site is located on the Swanscombe Peninsula, and it is highly accessible to the strategic road network (SRN), including the A2(T), M2, M25 and the Queen Elizabeth II, Dartford Crossing. The road network provides the ability for local visitors and staff, as well as those from further afield, to access the London Resort by car, bus or coach.

4.1.3. To support the delivery of this significant attraction, the Essex Project Site has been identified for its proximity to several ports, including Tilbury, and its ability to exploit links to existing cruise liners which will enable the Resort to offer the highest level of accessibility for a development of its kind by this mode.

4.1.4. The location of the London Resort will enable the development to capitalise on the proximity of public transport networks by providing effortless and efficient access from the local rail, bus and coach stations. The Kent and Essex Project site locations are discussed in detail within this chapter with information on the existing accessibility levels via active, sustainable and private modes of transport presented.

4.2 SITE LOCATION

4.2.1. The Project Site lies approximately 30 km east-south-east of central London on the south (Kent Project Site) and north (Essex Project Site) banks of the River Thames, in the ceremonial counties of Kent and Essex. The Resort location is presented in **Figure 4-1** and identified in red to the north and south of the River Thames respectively.

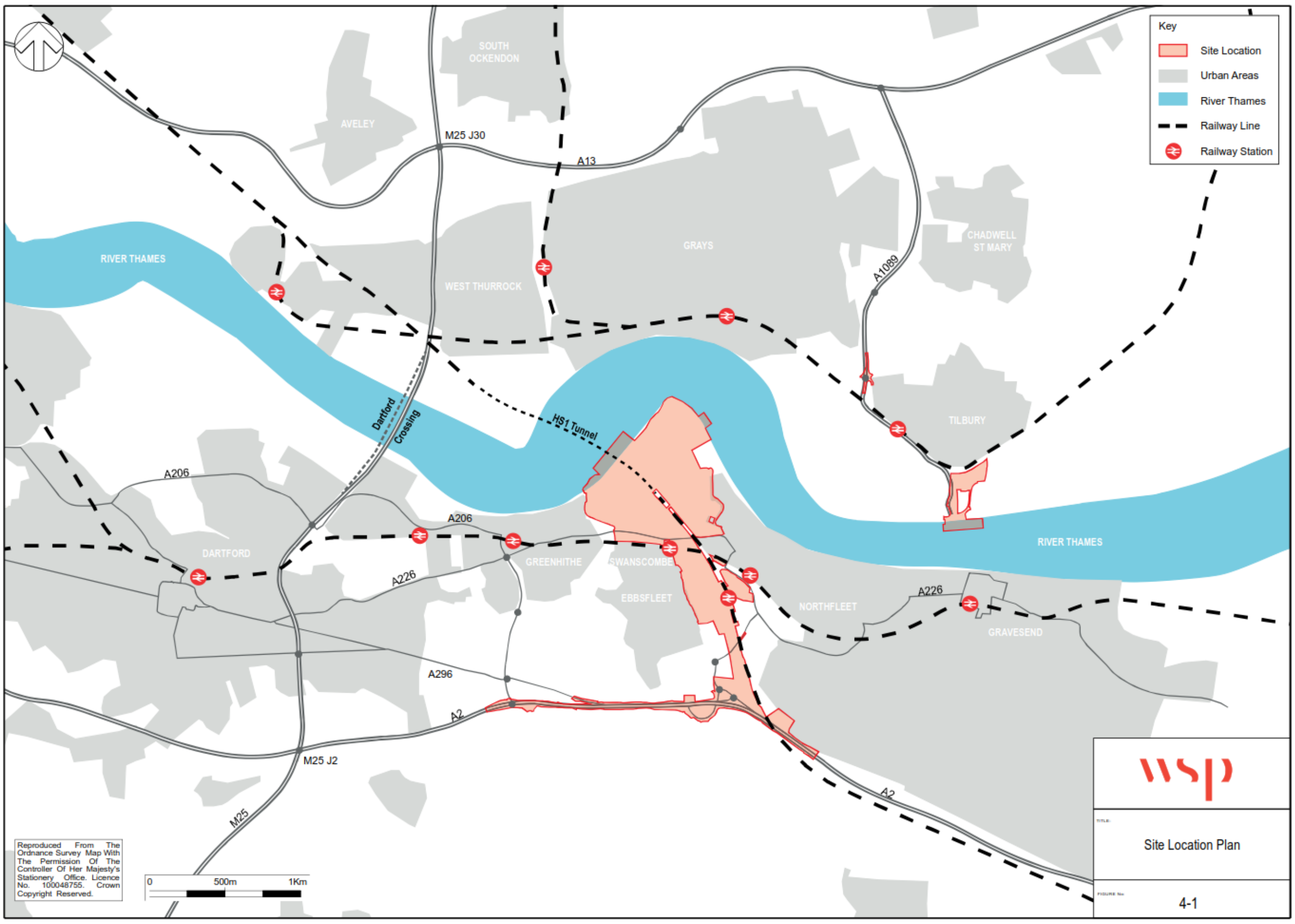


Figure 4-1: The London Resort Site Location

4.2.2. The Kent Project Site occupies most of the Swanscombe Peninsula and includes a corridor for transport connections generally extending southwards to the A2 trunk road; the site also includes a section of the A2 corridor approximately 3.5km in length between the existing Bean junction and Pepper Hill. The Kent Project Site occupies 387.53ha of land in a complex shape – demonstrated in **Figure 4-1.**

4.2.3. The Kent Project Site includes land falling within the jurisdiction 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.

4.2.4. High Speed 1 (HS1) and North Kent railway lines, which operate from nearby Ebbsfleet International, Greenhithe, Swanscombe and Northfleet stations, bisect the Kent Project Site. The rail accessibility of the Site is discussed in detail within Section 4.4 in this chapter.

4.2.5. The London Resort is highly accessible and its proximity to the SRN provides connections to all London airports within 120-minute driving times. Existing rail connections from local railway stations to central London also provide connections between the Resort and London airports via public transport.

4.2.6. The Resort also benefits from being located adjacent to the River Thames, providing a waterborne network not only for commercial and construction traffic arriving via the port at Tilbury but also for visitors and employees via water taxis from both London and Tilbury.

4.2.7. The Site location south of the river is home to the leisure core and will incorporate (but not limited to):

- Gate One and Gate two – two unique theme parks;
- a range of events space, theme rides and attraction, entertainment venues, theatres and cinemas;
- entrance plazas to Gate One and Gate Two which offer ancillary retail, dining and entertainment (RD&E);
- a range of hotels providing 3,550 rooms and suites with an associated waterpark,
- a 'conferention centre'; and
- a linked building hosting a range of eSports, video and computer gaming events.

4.2.8. The Kent Project Site will also include 75% of visitor car parking and coach parking, all on-site hotel parking and all staff parking. The development proposals, in addition to the access arrangements for highway, public transport and sustainable modes, are discussed in detail within chapter 5. Full sized plans are appended to this document.

4.2.9. 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.

4.2.10. The Essex Project Site falls within the jurisdiction of Thurrock Council, a unitary authority, and lies immediately to the east of the existing port of Tilbury and to the west of Tilbury2, a new port currently under construction. The proposals consented as part of Tilbury 2 are discussed in more detail within Section 4.6 and as part of the mitigation considered in chapter 13.

4.2.11. At the south-east corner of the Port lies the Tilbury Ferry Terminal incorporating the London International Cruise Terminal. The Asda roundabout is located to the north of the port of Tilbury and incorporates highway land – the impacts of The London Resort trip generation at this roundabout have been assess in detail and methodology and results are presented in chapter 9 and 13 respectively.

4.2.12. The Essex Project Site will provide 25% of visitor car and coach parking as part of the '*Park and Glide*' River Strategy, to allow visitors travelling from north of the River to park in Tilbury and use a ferry service to access the Swanscombe Pier; a people mover will then transport visitors and staff from the ferry terminal to the leisure core.

4.3 EXISTING HIGHWAY CONDITIONS

STRATEGIC ROAD NETWORK

4.3.1. **Figure 4-2** shows the SRN within the vicinity of the Kent Project Site and Essex Project Site. The strategic routes in the vicinity of the Kent Project Site include the A2(T) connecting to the M25 at Junction 2 to the west with Junction 1 of the M2 to the southeast of Gravesend. Other key routes include the A282 which provides a link between Junctions 2 and 31 of the M25, where it essentially forms part of the M25 motorway.

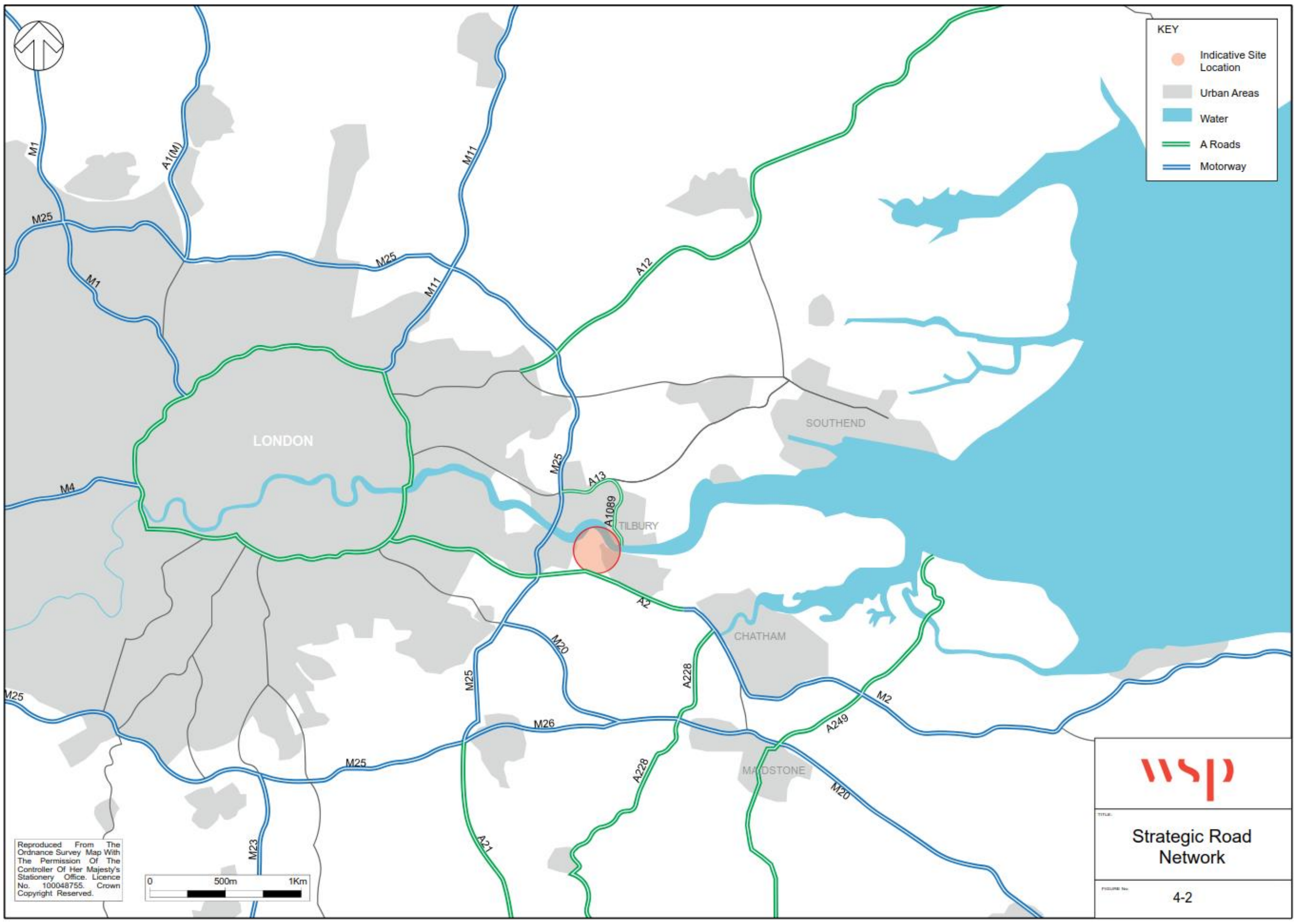


Figure 4-2: Strategic Road Network

M25

4.3.2. The M25 (including the A282 section) is a dual three to six-lane road that is subject to motorway regulations. The motorway circumscribes London and provides direct access to it and other major roads and motorways serving the South East, the East and other UK regions. The M25, as a motorway-standard road, is not provided with cycle or pedestrian facilities along its length, but in many cases, these are available on parallel routes. At junction 2, it joins with A2(T), which provides an east – west link towards Kent.

4.3.3. The M25 J30 is a four-arm signalised roundabout junction that allows connections between the M25 and A13, which in turn connects to the A1089 trunk road to Tilbury; the roundabout is a three-lane circulatory and is subject to 50mph speed limits with no stopping regulations.

A282

4.3.4. The section of the A282 between Junction 1a and 2 of the M25 follows a north-south alignment. To the north of A282 Junction 1a, the A282 deviates slightly to the east while approaching the River Thames. The A282 crosses the Thames from Dartford to Thurrock via Dartford Tunnel, with traffic in the opposite direction (i.e. Thurrock to Dartford) utilising the Queen Elizabeth II bridge. Both the tunnel and the bridge, commonly known as the Dartford Crossing, form a crucial gateway carrying up to 160,000 vehicles a day.

A13

4.3.5. The Essex Project Site in Tilbury is accessed from the M25 Junction 30 to the north of the River Thames, the A13 and then A1089.

4.3.6. The A13 is a dual three to four lane road subject to 50mph speed limits between M25 J30 to A1202 where the speed limit increases to 70mph until it connects to the A1089. The M25 J30 provides access to the A13 and further connects with the A1089 in an east-west alignment towards the Essex Project Site. Subject to motorway regulations, this road does not provide pedestrian or cycle facilities along the length. It provides connections west towards Basildon and east to Dagenham.

A1089 Dock Road approach/ Dock Road/ St Andrew's Road/ Ferry Road

4.3.7. The A1089 will be the main access point for the Essex Project Site, the Tilbury car park situated close to Tilbury Docks. The A1089 is 6km dual carriageway, that follows a north-south alignment and provides a connection to the north with the A13 and Tilbury Docks to the south. The road is accessed from the A13 to the north using the A13/ A1089 junction using the priority two lane off-slip/on-slip alignment. Approximately one mile from the Port of Tilbury, access is provided via a four-arm roundabout to an ASDA superstore and an Amazon Fulfilment Centre. This junction is known as the ASDA Roundabout.

4.3.8. The A1089 Dock Road/ Dock Approach Road between the Asda roundabout and A13 is a dual lane road subject to national speed limits along the length, with a footway on the western side of the carriageway between the Asda roundabout and the Marshfoot interchange off slip where the footway facilities then link with Old Dock Approach.

4.3.9. A1089 St Andrew's Road between the Asda roundabout and Tilbury Docks is a dual lane road subject to 40mph speed limits with a footway on the western side of the carriageway. After Tilbury Docks the A1089 is a single carriageway two-way road with a speed limit of 40mph, with a shared cycle and pedestrian pathway along both sides of the road before reaching the Ferry Road roundabout.

A2

4.3.10. The A2(T) is a dual four-lane road that runs approximately 2km to the south of the Kent Project Site and parallel to the A226 (details of which are provided in the next sub section) in an east-west alignment. It provides a connection to the west, to locations such as Dartford and east London, and the east to locations such as Gravesend and Chatham from where it then operates as the M2 to Faversham. From Faversham, the M2 then reverts to the A2 as far as Dover. To the west, the A2 connects to the M25 at Junction 2, from where further strategic road connections are available to the north and south.

4.3.11. The main access point to the Kent Project Site is obtained from the A2/ A2260 (Ebbsfleet) junction; a dual lane off slip/ on slip alignment met by a double priority roundabout arrangement. Traffic egressing from the A2 east use the southern off slip before travelling north to the A2260/ Ackers Drive four arm priority roundabout with a pedestrian crossing on the A2 and A2260 eastern arm. Traffic from the A2 west use the eastern A2260 roundabout; a three-arm priority junction subject to 50mph speed limits.

4.3.12. In addition to the key routes outlined above, from the regional perspective, the wider SRN also comprises the M2, M20, M26, A249, A299, A12, M11, A1(M), M1 and M23.

LOCAL HIGHWAY NETWORK

4.3.13. The local highway network review has been compiled using information from the 2017 and 2020 Site visit observations and a comprehensive desktop study. **Figure 4-3** demonstrates the local highway network within the vicinity of the Kent and Essex Project Sites.

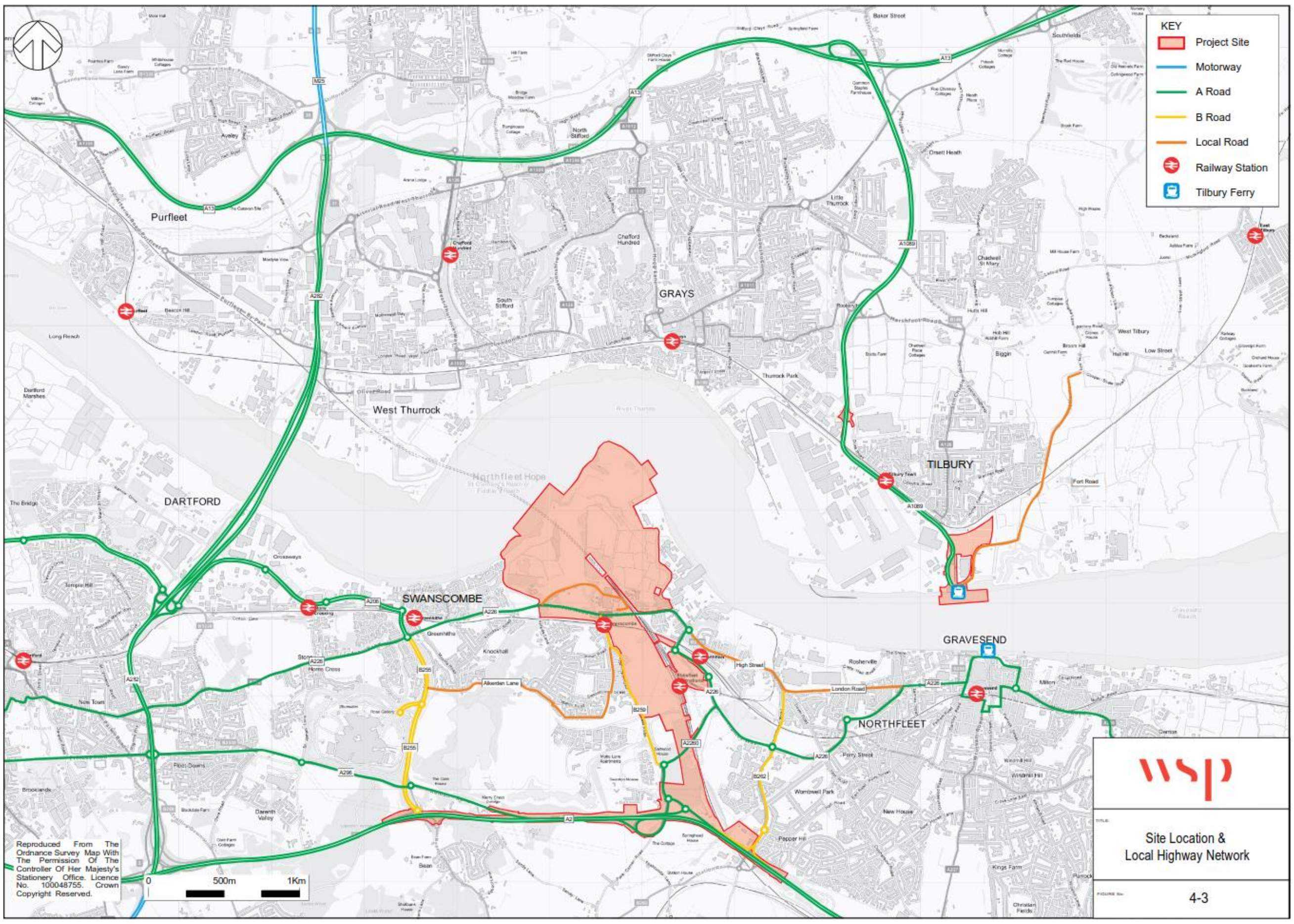


Figure 4-3: Local Highway Network

A226

4.3.14. The A226 London Road/Thames Way is one of the principal local roads running in the east-west direction separating the Swanscombe Peninsula and the local centre of Swanscombe. It is a single carriageway road with a speed limit of 30mph. Short sections of on-road cycle lanes and parking bays are provided along some parts of the route, and a mix of land uses are present along its length, including schools, commercial activity and residential areas.

A206

4.3.15. A206 Crossways Boulevard is a local road that joins the A226 London Road and links to Dartford through to the M25/A282 via the Littlebrook Interchange (M25 Junction 1a). The road is a suburban dual carriageway with two lanes operating in each direction, and it is subject to a 40mph speed limit. Off-road shared pedestrian/cycle facilities are provided to both sides of the road.

B255

4.3.16. The B255 St. Clements Way/High Street/The Avenue is also a principal local road that continues from the A206 southwards to the A2(T) at the Bean Lane roundabout. It is a dual carriageway with a 40mph speed limit from the A226 to the Bluewater roundabout, where the speed limit increases to 50mph until the B255 reaches the A2(T). The road has a continuous, good quality off-road shared pedestrian/cycle lane along its east side.

B259

4.3.17. B259 Stanhope Road/Southfleet Road is situated directly to the south of the Kent Project Site location in a north-south alignment linking the A226 London Road to the A2(T) at a double roundabout arrangement. The road is a narrow single carriageway, with one lane in each direction and it is subject to a 30mph speed limit. Some sections of the road are designated 20mph zones, coupled with other traffic management measures, such as kerb buildouts for single-vehicle widths. Parking bays, parking spaces marked on-road and a mix of footways at one or both sides of the carriageway are seen along this, mainly residential, road.

B2175

4.3.18. B2175 Stonebridge Road/High Street/A226 London Road is approximately 2.5km long section of road to the east of the Kent Project Site, bounded by residential properties and local shops. The B2175 is a single carriageway road with one lane in each direction. Footways are provided to both sides of the road, and intermittent on-road and shared off-road pedestrian/cycle facilities are also provided. Furthermore, sheltered bus stops and signalled crossings are located along the road. A 30mph speed limit applies to most of the road. However, there is a 40mph section between Rosherville Way, that crosses under the B2175, and its junction with Springhead Road.

B262

4.3.19. B262 Springhead Road is approximately 2km long section of road that extends from the B2175 London Road to the A2(T). It is a 30mph two-way single carriageway road, linking through a residential area to the north of the railway line and a mix of land uses including the industrial, cemetery, colleges and community services to the south of Thames Way.

International Way

4.3.20. International way is 30mph two-way single carriageway road, providing access to Ebbsfleet International station and carparks from access points on the A2260 Ebbsfleet Gateway and the B259 Southfleet Road.

Fort Road

4.3.21. The Essex Project Site in Tilbury is separated from the existing settlement by the railway line serving both the docks as well as Tilbury Town. The railway line creates a physical barrier between the Port of Tilbury and residential parts of Tilbury. The area is accessible predominantly by the A1089 described in 4.3.8, with only limited connections to the local highway network.

4.3.22. Fort Road runs parallel to the existing railway line and meets the A1089 at a priority-controlled junction approximately 800m east of Tilbury Town station; at the new junction, A1089 south to/from the Port forms the minor arm, with the new Fort Road infrastructure forming the major arm and main through route from the A1089 north.

4.4 SUSTAINABLE TRANSPORT MODES

4.4.1. One of the significant advantages of the project site is the wide availability of public transport options. The proximity of the Proposed Development to available rail services, location adjacent to the River Thames and nearby Fastrack bus services provides a unique opportunity for the accessibility of the Resort by sustainable modes.

RAIL

4.4.2. The Kent and Essex Project Sites benefit from proximity to the rail transport network providing efficient connections to the Greater London area. The Proposed Development will be accessible from High-Speed Rail (HS1) at Ebbsfleet International Station, connecting London St. Pancras to European destinations via the Channel Tunnel. Journey times from Ebbsfleet International to London St Pancreas average 17 minutes. In addition, the North Kent Line (NKL) provides frequent train services to/from central London as well as eastwards to key destinations in Kent and can be accessed via several local stations. Journey times from Swanscombe to London Bridge average 47 minutes. Rail services to the Essex Project Site are provided by c2c (Capital to Coast), which provide train services to the nearby Grays and Tilbury Town railway stations. Journey times from London Fenchurch Street to Tilbury Town average 41 minutes.

4.4.3. It should be highlighted that the operation of public transport is currently disrupted by the COVID-19 global pandemic. As a result, detailed timetable information, including service frequencies, are accurate as of the time of writing but are expected to resume to pre-COVID level of service prior to the opening of The London Resort.

4.4.4. There are four railway stations in proximity of the Kent Project Site and one station serving the Essex Project Site, which all form the basis of the assessment and have been reviewed in detail within this chapter. The stations, and the lines that serve them, are demonstrated in **Figure 4-4.** These railway stations are:

- Ebbsfleet International (Kent Project Site);
- Greenhithe (Kent Project Site);
- Swanscombe (Kent Project Site);
- Northfleet (Kent Project Site);
- Grays (Essex Project Site) and
- Tilbury Town (Essex Project Site).

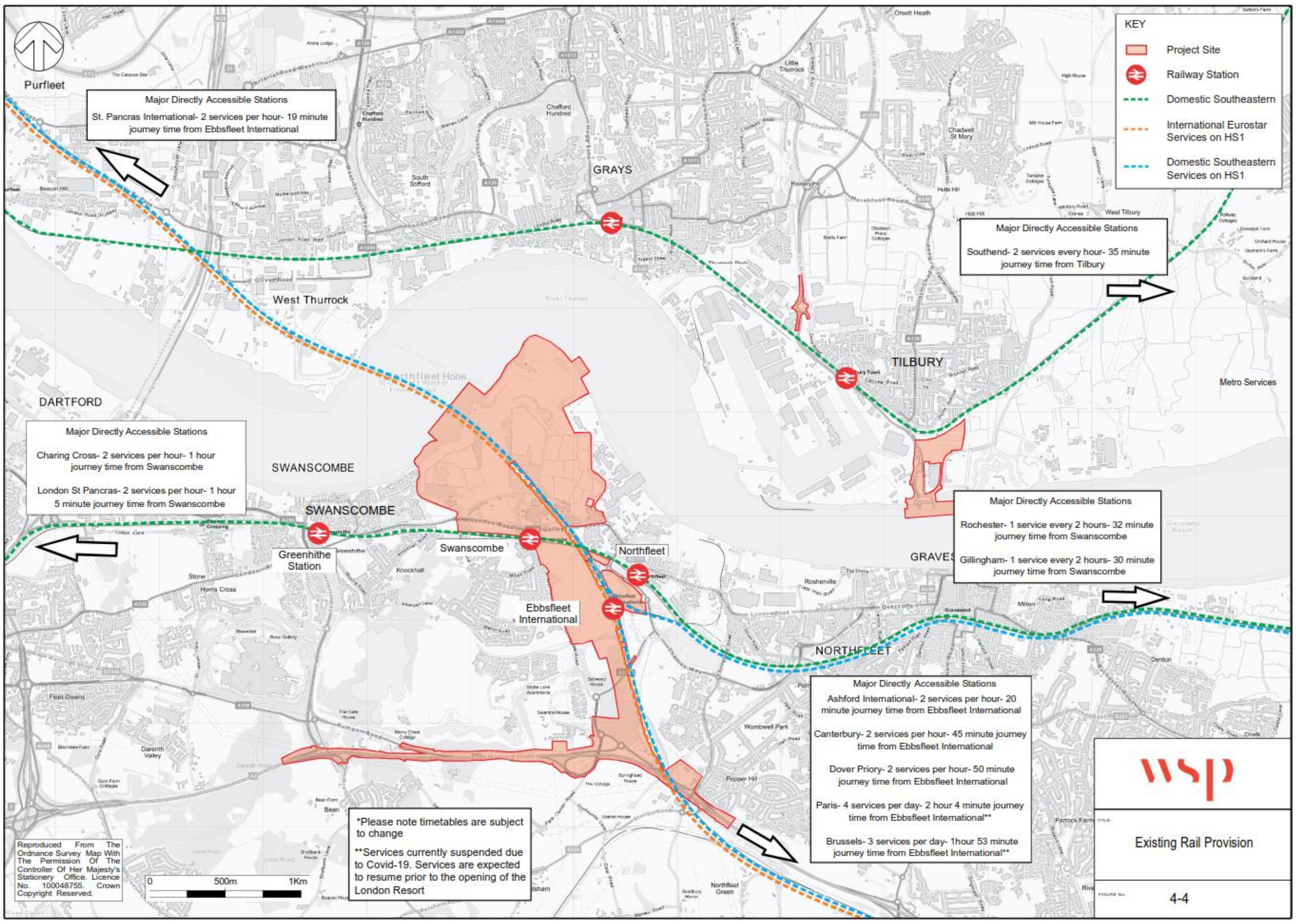


Figure 4-4: Existing Rail Provision

Ebbsfleet International Station

4.4.5. Ebbsfleet International railway station is situated on HS1 which provides connections to St Pancras International Station, in the heart of London, within a journey time of approximately 17 minutes. The domestic services at Ebbsfleet operate at a high frequency throughout the typical day; the standard hourly frequency (at the time of writing) of various domestic routes via Ebbsfleet are displayed in **Table 4-1**, alongside the key calling points, or destinations, of the service.

Table 4-1: Domestic routes serving Ebbsfleet International, per day

Route	Frequency	Last Train Time	Destinations
London St Pancras International to Faversham via Ebbsfleet and Chatham	2 trains per hour (from London St Pancreas) 1 train per hour (direct towards London St Pancreas)	23:55 (Ebbsfleet to Faversham) 22:47 (Ebbsfleet to London St Pancreas)	Stratford International, Ebbsfleet International, Gravesend, Strood, Rochester, Chatham, Gillingham (Kent), Rainham (Kent) and Sittingbourne
London St Pancras International to Dover Priory via Ebbsfleet, Ashford and Folkestone and return via Margate and Faversham	1 train per hour (in each direction)	23:55 (Ebbsfleet to Dover Priory) 23:35 (Ebbsfleet to London St Pancreas)	Stratford International, Ebbsfleet International, Ashford International, Folkestone West and Folkestone Central
London St Pancras International to Margate via Ebbsfleet, Ashford and Canterbury West	1 train per hour (in each direction)	23:30 (Ebbsfleet to Margate) 23:02 (Ebbsfleet to London St Pancreas)	Stratford International, Ebbsfleet International, Ashford International, Canterbury West, Ramsgate and Broadstairs

*Train frequencies are the same on weekdays and weekend.

4.4.6. International Eurostar services previously operated throughout the year from Ebbsfleet station, however it is noted that due to the impacts of the COVID-19 global pandemic, International Eurostar services will no longer be stopping at Ebbsfleet International, until 2022 at the earliest. Prior to this, Eurostar offered daily direct services to Brussels, Paris, Disneyland Paris and Amsterdam in 2-4 hours respectively. The typical daily number of Eurostar services to/from various destinations is provided in **Figure 4-2**.

Table 4-2: International routes serving Ebbsfleet International, per day

Route	Weekday	Saturday	Sunday	Duration
To Paris	4	3	3	2h 05m
From Paris	6	5	6	
To Brussels	3	2	2	1h 53m
From Brussels	3	3	2	
To Disneyland Paris*	1	0	1	2h 35m
From Disneyland Paris*	1	0	1	
To Amsterdam	3	2	2	3h 55m
From Amsterdam	2	1	1	

Source: Eurostar (accessed 29 June 2020) and port freight statistics (August 2019)

**seasonal service; operates with varying frequency throughout the year*

4.4.7. Whilst Eurostar trains do not currently visit Ebbsfleet International, it has been assumed that services will resume prior to the opening of The London Resort (partly due to its existence) and delivery of the Resort will help to support the re-introduction of the stopping service. The transport impact assessment, detailed within this TA, has therefore included the international stopping service as a point of access/egress to the Resort and a similar timetable to **Figure 4-2** has been assumed.

4.4.8. Cycle parking for approximately 100 bikes was observed at Ebbsfleet station during the September 2020 site visit and is dispersed between two of the station's car parks and the main station itself.

Greenhithe Station

4.4.9. Greenhithe Railway Station is located approximately 2km south-west of the Swanscombe peninsula and the Kent Project Site. This previously small village Railway Station was upgraded in 2008 to improve accessibility and support growth in the area with the opening of Bluewater Shopping Centre. Train services calling at Greenhithe are operated by Southeastern and Thameslink, served by the NKL between London and Kent. The current routes, and their frequency, are summarised in **Table 4-3**.

Table 4-3: Greenhithe Rail Station routes

Route	Frequency	Last Train Time	Destinations
London Charing Cross via Swanscombe, Dartford and Lewisham	2 trains per hour (in each direction)	21:57 (Greenhithe to London Charing Cross) 23:50 (London Charing Cross to Greenhithe)	Swanscombe, Greenhithe, Stone Crossing, Dartford, Lewisham, Waterloo East and London Charing Cross. (typical journey time approx. 55 – 60 minutes)
London St Pancras via Swanscombe and Dartford	2 trains per hour (in each direction; changing at London Bridge)	22:38 (Greenhithe to London Charing Cross) 2300 (London Charing Cross to Greenhithe)	Swanscombe, Greenhithe, Stone Crossing, Dartford, Slade Green, Abbey Wood, Plumstead, Woolwich Arsenal, Charlton, Westcombe Park, Maze Hill, Greenwich, Deptford, London Bridge, London Blackfriars, City Thameslink, Farringdon (typical journey time approx. 1 hour 10 minutes)
Rainham	2 trains per hour (in each direction)	23:04 (Greenhithe to Rainham) 23:30 (Rainham to Greenhithe)	Gravesend, Higham, Strood, Rochester, Chatham, Gillingham (typical journey time approx. 32 minutes)

*Train frequencies are the same on weekends and weekdays

4.4.10. During the September 2020 site visit and audit, it was noted that station facilities at Greenhithe include sheltered cycle stands with approximately 10 spaces, a ticket office at the entrance to Platform 1, together with wayfinding information and timetables for both trains and onward travel (such as local bus connections) displayed on information boards outside the main entrance. Greenhithe railway station is served by approximately seven local bus services, include Fastrack A and B, and four dedicated sheltered bus stops are located outside the main entrance; a number of these services operate along A226 London Road within 50 metres of the proposed Resort.

Northfleet Station

4.4.11. Northfleet Railway Station is located approximately 400 metres north-east of Ebbsfleet International station and is served by the NKL between London and Kent, on the same line as Greenhithe. The station offers services to a variety of destinations with the current routes from the station summarised in **Table 4-3**, together with Swanscombe Station which is also located on the NKL between Greenhithe and Northfleet.

4.4.12. Platform 1 and platform 2 at Northfleet station are accessed via Station Road, where a supervised ticket office is open during the weekday AM peak period. Self-service ticket machines, wayfinding information and onward travel guidance is provided outside the main entrance. Cycle parking facilities are not provided at the station. Clear route signage outside the station directs walkers and cyclists to Ebbsfleet International Station.

4.4.13. The nearest bus stop to Northfleet Station is on B2175 High Street, approximately 100m east of the station, which is served by three different bus routes offering connections along London Road and to destinations such as Dartford, Gravesend Town Centre and Greenhithe.

Swanscombe Station

4.4.14. Swanscombe Station is located around 650m South of the Kent Project Site and is the closest station, as the crow flies, to the Resort. Swanscombe is situated between Greenhithe and Northfleet railway stations and is served by the NKL. The typical off-peak services offered at the station are summarised in **Table 4-3**.

4.4.15. Swanscombe station is located in a deep cutting between the chalk spine which carries the North Kent Railway Line in a deep cutting railtrack and the northern spine the existing A226 highway. The geographical constraints effect the existing accessibility of the station.

4.4.16. The station is situated on the High Street, 110 metres south of a signalised junction with London Road, and pedestrian access to the platforms is via a ramp either side of the railway bridge, for EB and WB services respectively. There is no pedestrian footway on the eastern carriageway of the High Street across the railway bridge; a zebra crossing is provided opposite the Platform 2 entrance/exit, north of the railway bridge, but not to the south (Platform 1) making the southern station entrance less accessible. A small ticket office is provided at the entrance to Platform 1, with 6 cycle storage spaces available.

4.4.17. Swanscombe station is served by several Arriva bus services, connecting the railway to nearby residential areas as well as Bluewater Shopping Centre and Ebbsfleet International Station. Bus services operating within the vicinity of the proposed development are discussed in later in this Chapter.

Tilbury Town Rail Station

4.4.18. Tilbury Town Railway Station is located north of the River Thames in Thurrock, Essex and is the closest station to the Essex Project Site. The station sits on the c2c railway line and provides access to services towards London and Southend, Essex. The current routes offered from the station are summarised in **Table 4-4**. On Saturdays and Sundays, the services run approximately every 30 minutes in both directions.

Table 4-4: Tilbury Town Rail Station

Route	Frequency	Last Train Time	Destinations
London Fenchurch Street via Purfleet and Barking	2 trains per hour (in each direction)	23:44 (Tilbury Town to London Fenchurch) 23:41 (London Fenchurch to Tilbury Town)	Grays, Purfleet, Rainham, Dagenham Dock, Barking, West Ham, Limehouse (typical journey time approx. 40 minutes)
Southend Central via Pitsea and Chalkwell	2 trains per hour (in each direction)	23:50 (Tilbury Town to Southend Central) 23:12 (Southend Central to Tilbury Town)	East Tilbury, Stanford-le-Hope, Pitsea, Benfleet, Leigh-on-Sea, Chalkwell, Westcliff (typical journey time approx. 35 minutes)

4.4.19. The Railway Station is situated to the west of Tilbury town centre, between A1089 St Andrew's Road and Dock Road. Tilbury Town is located approximately 800m to the northeast of the Essex Project Site and approximately 1.3 km from the proposed London Resort Tilbury Terminal. An existing bus link, Ensign bus route 99, operates between Tilbury Town station, from the bus stop outside Platform 1 on A1089 St Andrew's Road, and the Port of Tilbury, where Jetstream Tours run a ferry service between Tilbury and Gravesend.

4.4.20. Approximately 38 cycle racks are available at Tilbury Town station and are located outside the station entrance to platforms 1 and 2. On-street vehicle parking is available along the NB carriageway on Dock Road, to the east of the station. Ensign bus serve also serve bus stops outside Tilbury Town station on Dock Road, offering connections to Grays and residential areas of Tilbury.

Grays Rail Station

4.4.21. Grays Rail Station is also located north of the River Thames, being the next station to Tilbury, also sitting on the Coast to Coast railway line offering the same service availability. Grays Rail Station is situated immediately to the south of the centre of Grays. Immediately to the north of Grays Rail Station are bus stops serving the town centre, which are also operated by Ensign. These services provide connections to intu Lakeside Shopping Centre, West Thurrock and the wider Grays area.

COACH

4.4.22. Several UK-based coach operators serve both Kent and Essex. Although primarily aimed at long-distance travel, National Express services are also available for local travel within Kent. The only National Express service currently available serving the Kent Project Site is at Bluewater Shopping Centre, being service 022. This provides connections in both directions between London Victoria via Bluewater Shopping Centre, Canterbury, Ramsgate and Margate.

BUS

4.4.23. A comprehensive network of bus routes is available in the locality of the Project Site (both Kent and Essex Project Sites). The bus routes in the area offer a range of local and interurban services and are presented in **Figure 4-5**.

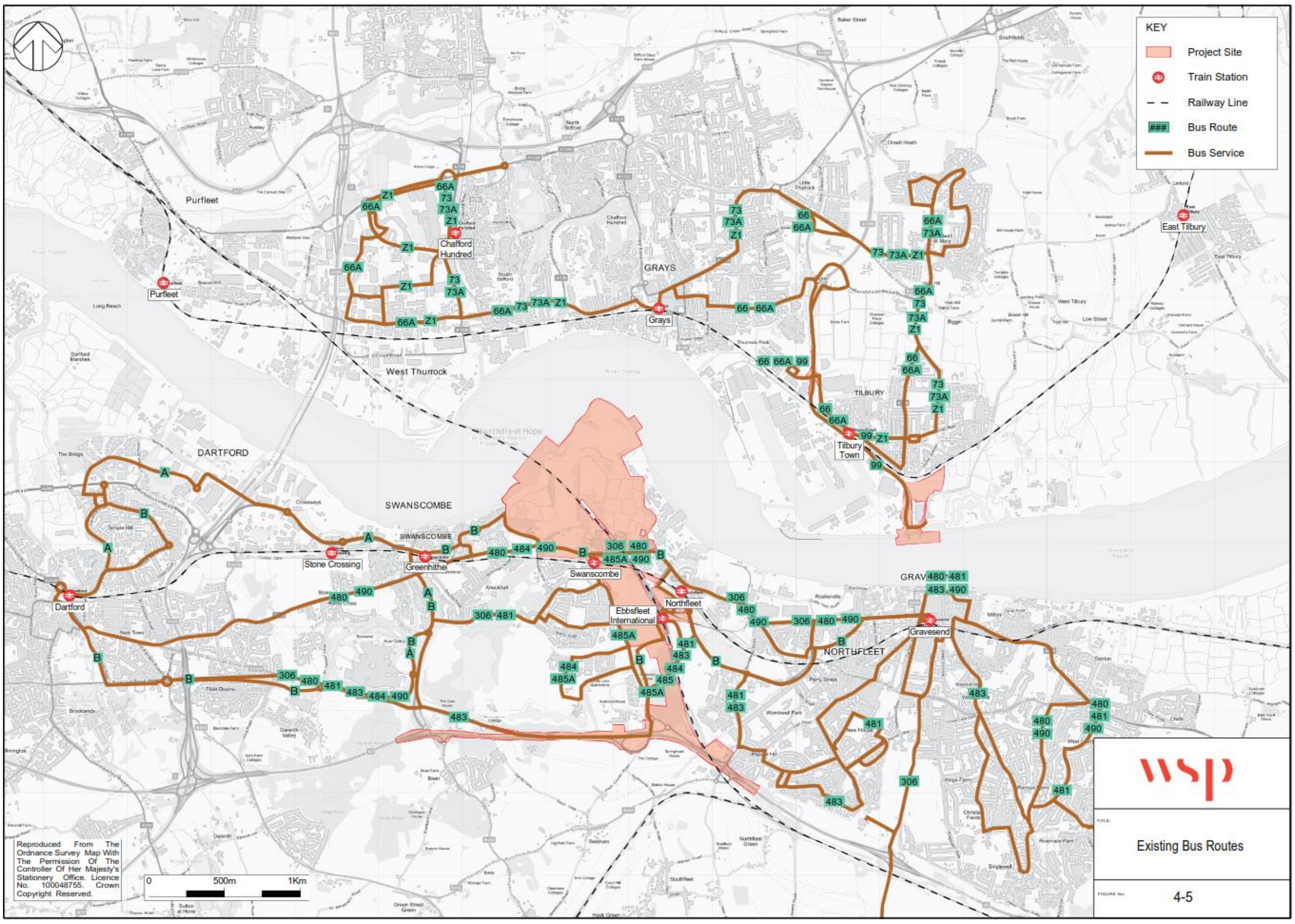


Figure 4-5: Existing Bus Routes

4.4.24. The Kent Project Site is situated to the north of the A226 London Road, which is the principal main road between Dartford and Gravesham town centres, via Greenhithe and Northfleet. As such, it is well placed relative to the existing bus network, which offers frequent services in the locality, including connections to key destinations such as Bluewater Shopping Centre and Darent Valley Hospital via Fastrack. Bus stops are mainly sheltered except for those to the east of the HS1 railway line.

4.4.25. The bus services operating in the immediate vicinity of the Kent Project Site are presented in **Table 4-5**. It should be highlighted that the operation of public transport is currently disrupted by the COVID-19 global pandemic. As a result, detailed timetable information, including service frequencies, are accurate as of the time of writing but are expected to resume to pre-COVID level of service prior to the opening of The London Resort. The services are all provided on a commercial basis by Arriva Kent Thameside.

Table 4-5: Bus Services, Kent Project Site

Route	Principal locations served	Days of operation	Monday to Friday daytime frequency	Weekend Frequency / Notes
Fastrack	Gravesend - Ebbsfleet International - Swanscombe - Ingress Park - Greenhithe - Bluewater - Darent Valley Hospital - Dartford - Temple Hill	Monday to Sunday	10 to 12 minutes	Sat: 10 to 12 min Sun: 20 min
306	Bluewater - Swanscombe - Northfleet - Gravesend - Istead Rise - Meopham - Vigo - Wrotham - Borough Green	Monday to Saturday	5 return journeys from 1900	
480/490 Saphire	Valley Drive - Denton - Gravesend - Northfleet - Swanscombe - Greenhithe - Bluewater (490) - Horns Cross - Dartford (480 daytime; 490 evenings/Sundays)	Monday to Sunday	Combined 12 minutes	Combined 10 min on Sat Combined 15 min on Sun
481	Riverview Park – Gravesend – Northfleet – Swanscombe – Bluewater	Monday to Sunday	20 minutes	Sat: 20 min Sun: 60 min
483	Kings Farm – Gravesend – Bluewater	Monday to Sunday	20 Minutes	Sat: 30 Min Sun: 30 min
484	Ebbsfleet Station –Castle Hill – Swanscombe – Greenhithe – Bluewater	Monday to Saturday	Hourly	9:00 to 1700 weekday, extended to 1900 on Saturday
485/A	A Castle Hill – Ebbsfleet Station – Castle Hill	Monday to Saturday	Hourly peaks and evening only	

4.4.26. The Essex Project Site is directly accessible by bus route 99 running between the Tilbury Ferry Terminal and Tilbury Town railway station at an approximate 30-minute frequency to coincide with the ferry arrivals and departures. Despite this being the only direct bus link to / from the Essex Project Site, there are other bus services available at Tilbury Town Railway Station. **Table 4-6** illustrates the service of interest in relation to The Essex Project Site.

Table 4-6: **Bus Services, Essex Project Site**

Routes	Principal locations served	Days of operation	Monday to Friday daytime frequency	Weekend Frequency / Notes
66/ 66A	Lakeside – Grays – Tilbury – Chadwell – St MaryS1	Monday to Sunday	20 minutes +1 extra in AM peak	Sun: Hourly
73/73A	Lakeside – Grays – Chadwell – St Mary	Monday to Sunday	12 minutes in peaks Every 20 minutes	
Z1	Aveley – South Ockenden – Lakeside – Grays – Socketts Heath – Chadwell – Tilbury	Monday to Sunday	Additional peak and off-peak Journeys on route 73/A alignment	Omits Chadwell area
99	Tilbury Ferry Terminal and Tilbury Town railway station	Monday to Saturday	30 min to coincide with Ferry arrival/departure	

4.4.27. Similar to the Kent Project Site, the operation of public transport is currently disrupted by the COVID-19 pandemic. As a result, detailed timetable information, including service frequencies, for the services listed above are not provided at this stage.

4.4.28. The services are all provided on a commercial basis by Ensign Buses. These services also connect with other local services in and around Tilbury providing connections to the wider area.

Fastrack

4.4.29. The ‘Fastrack’ service is part of a longer-term strategy for the regeneration of Kent Thameside, which aims to support new housing and jobs. As a reliable and high-quality transport mode to encourage sustainable travel habits, ‘Fastrack’ has been developed as a Bus Rapid Transit (BRT) service, with branded, reliable and frequent bus services that operate high frequency services on dedicated bus ways, bus lanes and using other junction priority measures such as ‘green-wave’ technology.

4.4.30. The ‘Fastrack’ network has been planned and funded by both public sector and private sector developer contributions and in time it is expected that the network will include four routes, extending over 40km and offering bus priority for around 75% of the routes. ‘Fastrack’ to date has achieved a high profile both locally and nationally and has won many awards, but more importantly, it has achieved higher patronage in the first few years than originally forecast.

4.4.31. The Fastrack network is due to be retendered in 2022 and there is an intention to make optional provision for up to 30% of the more capacity along the contract length. The expansion of the Fastrack network is discussed in detail with the Public Transport Strategy and supporting information in chapter 11.

RIVER

4.4.32. The Port of Tilbury is London’s major port and the largest multi-modal port in the South East. As part of a review of the existing travel conditions within the vicinity of the Kent and Essex Project Site’s, WSP has undertaken a high-level review of the current river movements at the Port of Tilbury.

4.4.33. As the only deep-sea terminal within proximity to London utilising the River Thames, the Port of Tilbury is home to an International Cruise Terminal that, under normal conditions, would see approximately 100,000 passengers travel through it each year. There are two regular cruises from Tilbury, which operate all year round around the British Isles and Northern Europe; in the summer months, up to five additional operators depart from Tilbury to destinations as far as the Caribbean, Canaries and Central and South America.

4.4.34. The Port of Tilbury is also one of the UK’s major ports for cargo and freight vessels, connecting London to Europe and the rest of the world. Daily movements at the Port are tracked and monitored within a vessel schedule and vary between 1-5 arrivals and departures per day (taken from *https://www.londoncontainerterminal.com/full-schedule/* in November 2020.

4.4.35. Jetstream Tours currently operate a passenger foot and bicycle ferry service, on behalf of KCC and Thurrock Council, between Tilbury and Gravesend. The service operates 6 days a week (Monday – Saturday) all year round and provides a two-way service approximately twice an hour between 5am and 7pm.

4.5 ACTIVE MODES

4.5.1. An active travel audit is a qualitive analysis of the walking and cycling provision surrounding the existing Site. In 2017, an initial site audit was undertaken to determine the existing conditions of highway network and analyse the safety and comfort levels for pedestrians and cyclists using the local walking and cycling network.

4.5.2. Following the 2015 Statutory Consultation, there has been a fundamental shift in the Transport Strategy with the introduction of 'Park and Glide' facilities located north of River Thames, at PoTL). PoTL has agreed to accommodate a new car park (plus ancillary visitor services) north of the river and to allow access to the river for a new ferry service connecting The London Resort to PoTL.

4.5.3. In September 2020, a supplementary site visit and active travel audit was undertaken by bike to review the observations noted in 2017 and to incorporate Tilbury into the walking and cycling audit. The site audit route is shown in **Figure 4-6**.

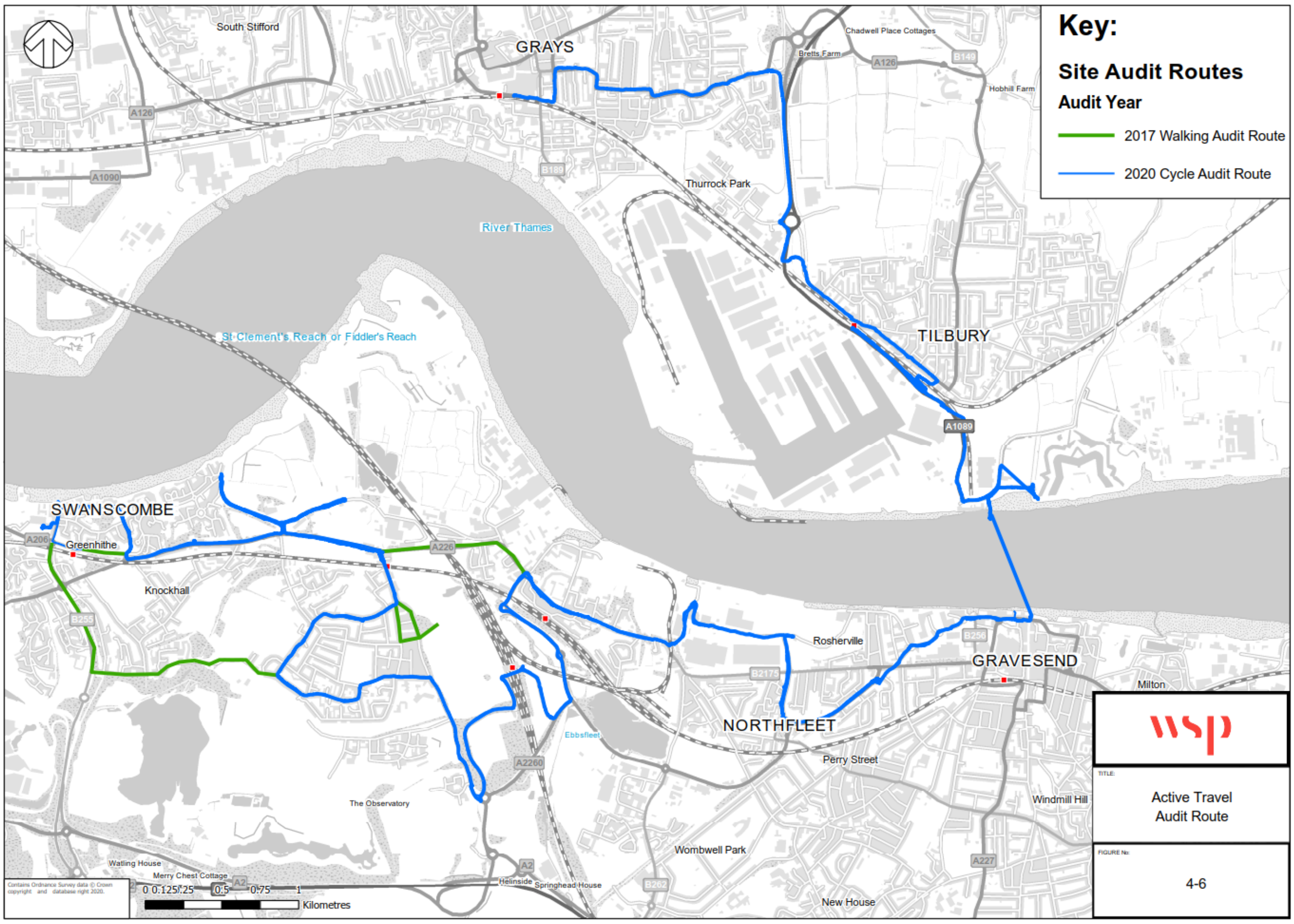


Figure 4-6: **Active Travel Audit Route**

4.5.4. In addition to observing the access arrangements and operation at nearby sustainable transport interchanges, such as Ebbsfleet International, Tilbury Town Railway stations and local bus stop facilities along A226 London Road, the project team travelled along existing cycle routes to determine the accessibility between towns and onward travel.

4.5.5. The existing walking and cycling route provision is shown in **Figure 4-7** and demonstrates the existing pedestrian and cycling facilities within the vicinity of the Resort. London Resort proposes to provide a network of pedestrian and cycle routes that combine and connect to exist routes within the vicinity of the Kent and Essex Project Sites. The Proposed Development will connect to the adjacent residential areas of Greenhithe, Swanscombe and Northfleet. As is set out later in this document, this will improve connectivity through existing neighbourhoods and create linkages with the network of green spaces in the area to The London Resort.

4.5.6. However, it is first necessary to consider the existing context in terms of the availability of routes for active modes of travel. Given that the Proposed Development consists of two strategic locations, these being the Kent and Essex Sites, each has been considered on their own merits in terms of the existing opportunities to travel by active modes, together with the quality of the network available.

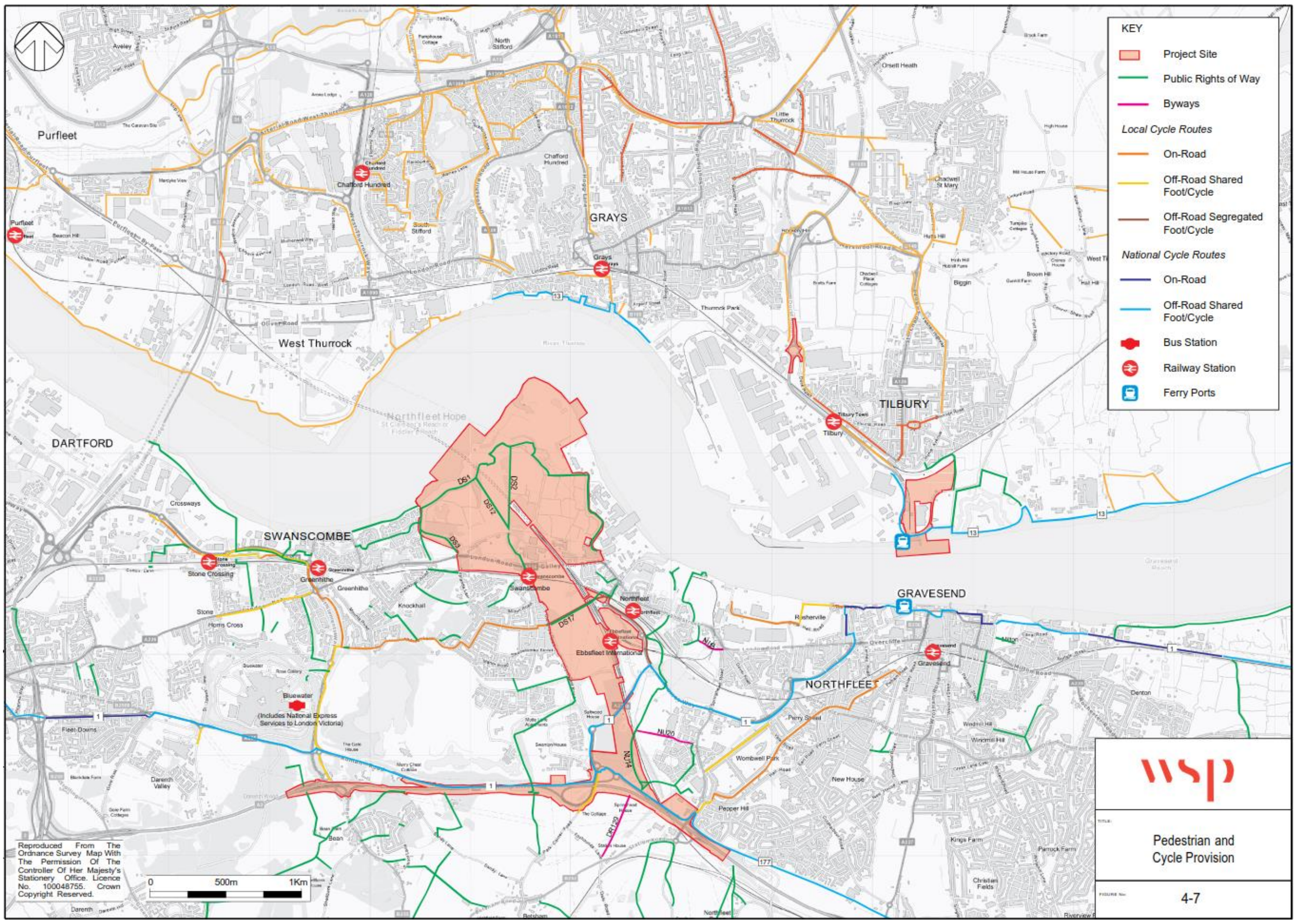


Figure 4-7: Existing Walking and Cycling Network

4.5.7. The walking and cycling audits were carried out at locations expected to have a high demand for cycling and walking trips in order to travel to and from the Site. The audits reflect on the existing provision and the Active Travel Strategy (chapter 10) discusses the existing barriers to active travel and how the cycling and walking environment could be improved with measures such as:

- lighting and surfacing;
- reallocation of road space for cyclists;
- wider footways;
- dropped kerb crossings and safe crossing points; and
- reduced traffic speeds in order to make a safer environment for people travelling by active modes.

WALKING

Kent Project Site

4.5.8. A combination of PRoWs, local footpaths and shared or segregated footways are available in the vicinity of the Kent Project Site. PRoWs around the area and through the Proposed Development (Kent Project Site) area are comprised mainly of footpaths (DS1, DS2, DS3 and DS12) and three byways (DR129, NU20 and NU8) as shown in **Figure 4-7**.

4.5.9. Pedestrian isochrones demonstrating the walking accessibility of the existing Kent Project Site are presented in **Figure 4-8**; the assessment assumes a walking speed of approximately 4.8km per hour, based on TfL's Connectivity assessment (based on *http://content.tfl.gov.uk/connectivity-assessment-guide.pdf*) and shows residential areas of Ingress Park, Knockhall and Swanscombe, including Swanscombe Railway Station, are within a 30-minutes walking time of the peninsula, using existing walking infrastructure and provision, including footpaths, parks and roads. A 30-minute walking time was chosen for the assessment as it is believed that if the journey would take longer people are likely to use a different means of transport.

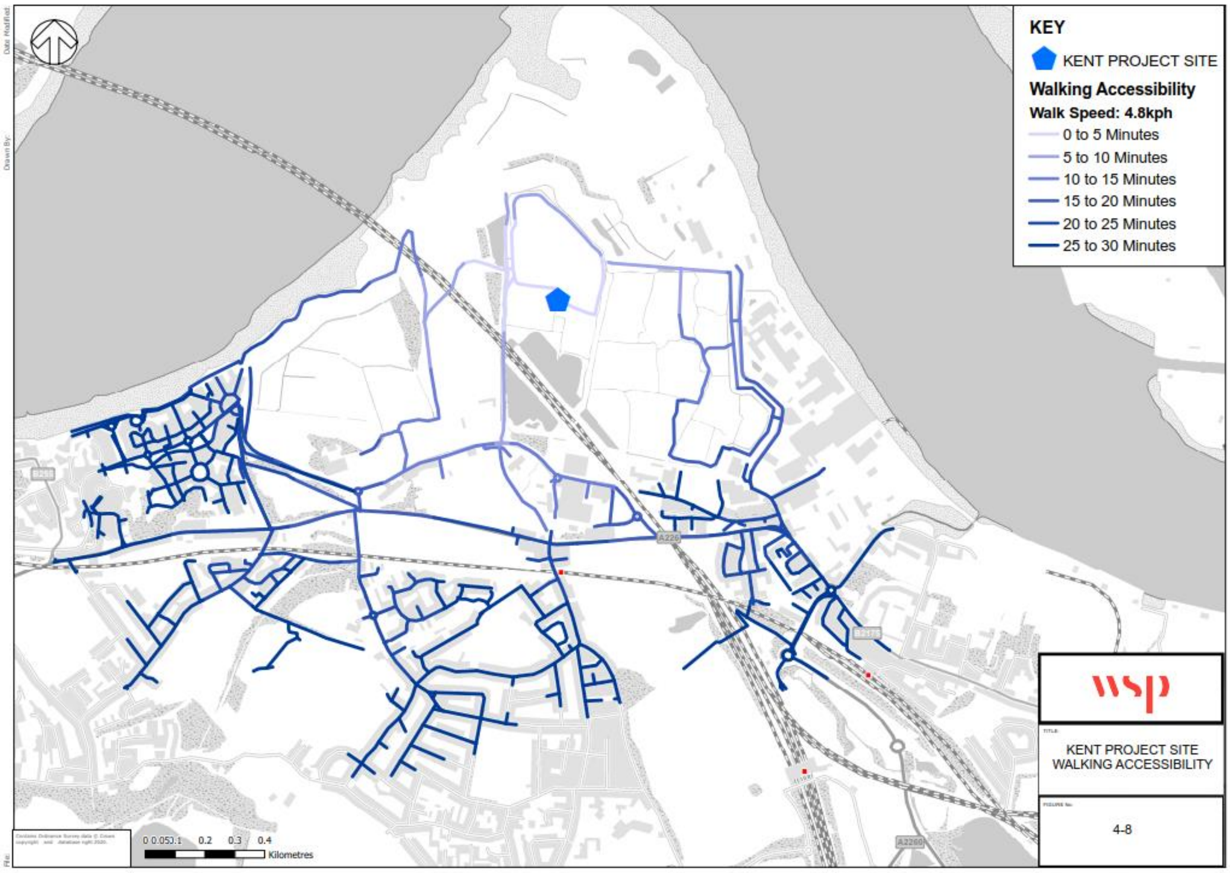


Figure 4-8: Kent Project Site Walking Accessibility

4.5.10. The area surrounding the Kent Project Site benefits from a wide range of pedestrian facilities as detailed below. The A226 London Road offers standard continuous footways mostly of 1.5m to 2m with some narrower sections on the southern side of the road. Footways along the A226 London Road bridge over the HS1 are provided to the northern side of the carriageway only. The A226 London Road is the main local road along the Southern border of the Kent Project Site and connects Greenhithe, Swanscombe, Ebbsfleet International and Northfleet stations to the site, with suitable zebra and signalled crossings provided at different points along the road.

4.5.11. Footways along the B259 / High Street / Stanhope Road are of standard quality, generally around 1.7 metres with some narrow sections and absence of footways on the eastern side of the road adjacent to Swanscombe railway station. There are two suitable zebra crossings provided on the High Street to enable crossing onto the western side of the road in absence of the eastern footway.

4.5.12. The A206 Crossways Boulevard provides footways on both sides of the carriageway along its section between the junctions with Anchor Boulevard and the Fastrack bus lane. A shared use footway/cycleway is provided along both sides of the carriageway from that point to the junction with Quadrant Court where the cyclist facilities re-join the carriageway in the form of a mandatory cycle lane. The on-road cycle lane terminates at the roundabout with the B255 Station Road, where new off-road facilities are provided for connections to the A226 Knockhall Chase towards Swanscombe, Ebbsfleet Station with the route terminating at Chatham Riverside.

4.5.13. The B255 has a continuous, good quality off-road shared pedestrian/cycle lane along its east side between the McDonalds Roundabout and Bluewater Shopping Centre.

4.5.14. B2175 Stonebridge Road/High Street/The Hill Northfleet/London Road offers footways on both sides of the carriageway and shared off-road pedestrian/cycle facilities. The B2175 Stonebridge Road footways are generally 1.7 metres in width, with localised reductions due to obstructions. The B2175 The Hill, Northfleet and High Street do not have tactile paving at any of the pedestrian crossing points except for those at a zebra crossing adjacent to the Lawn Primary & Nursery School. Footways along the B2175 London Road towards Thames Way, although mostly over 1.8m, have poor surface quality with uneven paving.

4.5.15. In general, the local area benefits from a relatively well-connected non-motorised user (NMU) network with the various PRoWs allowing further direct segregated access to local communities and neighbourhoods. PRoW DS17 provides good access segregated from traffic between Ebbsfleet International railway station and the main street in Swanscombe (B2175). Further north, DS1, DS2, DS3 and DS12 provide access to the riverside.

4.5.16. There are several bridges and underpasses over the railway line(s) in the area providing crossing opportunities for active travel trips. The crossing points further enhance the accessibility in the local area.

Essex Project Site

4.5.17. Given the industrial nature of the area adjacent to the Essex Project Site, the NMU routes are limited to Public Footpaths around the Tilbury Fort (FP144, FP146 and FP193) complemented by Public Byway BWY98 and Thames Estuary Path running from the Tilbury Town railway station along the A1089 towards the riverside and Tilbury Ferry Crossing. The path then continues further to the east along the river.

4.5.18. Pedestrian isochrones demonstrating the walking accessibility of the existing Essex Project Site are presented in **Figure 4-9**; the assessment assumes a walking speed of approximately 4.8km per hour. Unlike the isochrones produce for the Kent Project Site, isochrones for the Essex Project Site have been produced for up to 15-minutes walking time only. The average wait time for a 'Park and Glide' ferry crossing, discussed in detail within the River Strategy in Chapter 11, is expected to be 6-8 minutes and the crossing time is expected be approximately 5-7 minutes, therefore walking accessibility from the Port of Tilbury has been assessed up to 15-minutes to allow for a further 15-minutes to utilise the ferry services across The Thames to The London Resort.

Figure 4-9: Essex Project Site Walking Accessibility

4.5.19. The walking accessibility isochrones, presented in **Figure 4-9**, demonstrate that the Fort can be reached within 5-minutes walking time and access to the shared pathway facilities and footbridge over the railway line towards Tilbury Town can be obtained within 15 minutes of walking. There is limited access to Tilbury town and residential streets, however the 99 bus service operates between Tilbury Ferry Terminal and Tilbury Town approximately every 30 minutes, connecting the port to the Town centre, as detailed in Section 4.4.26.

CYCLING

Kent Project Site

4.5.20. In addition to the existing facilities for pedestrians as set out above, both the Kent and Essex Project Sites are accessible to several cycle routes forming part of the National Cycle Network (NCN). These are shown in **Figure 4-7**.

4.5.21. Cycling isochrones demonstrating the cycling accessibility within the vicinity of the Kent Project Site, shown in **Figure 4-10**; the assessment assumes a cycling speed of approximately 16km per hour for up to 30-minutes cycling time. The isochrones show that using existing cycle infrastructure, Swanscombe and Northfleet railway stations can be reached within 10-minutes cycle time; Ebbsfleet International and Greenhithe are within the 10-15 minutes cycle time radius. Residential areas of Gravesend and Dartford are accessible within a 30-minutes cycle time.

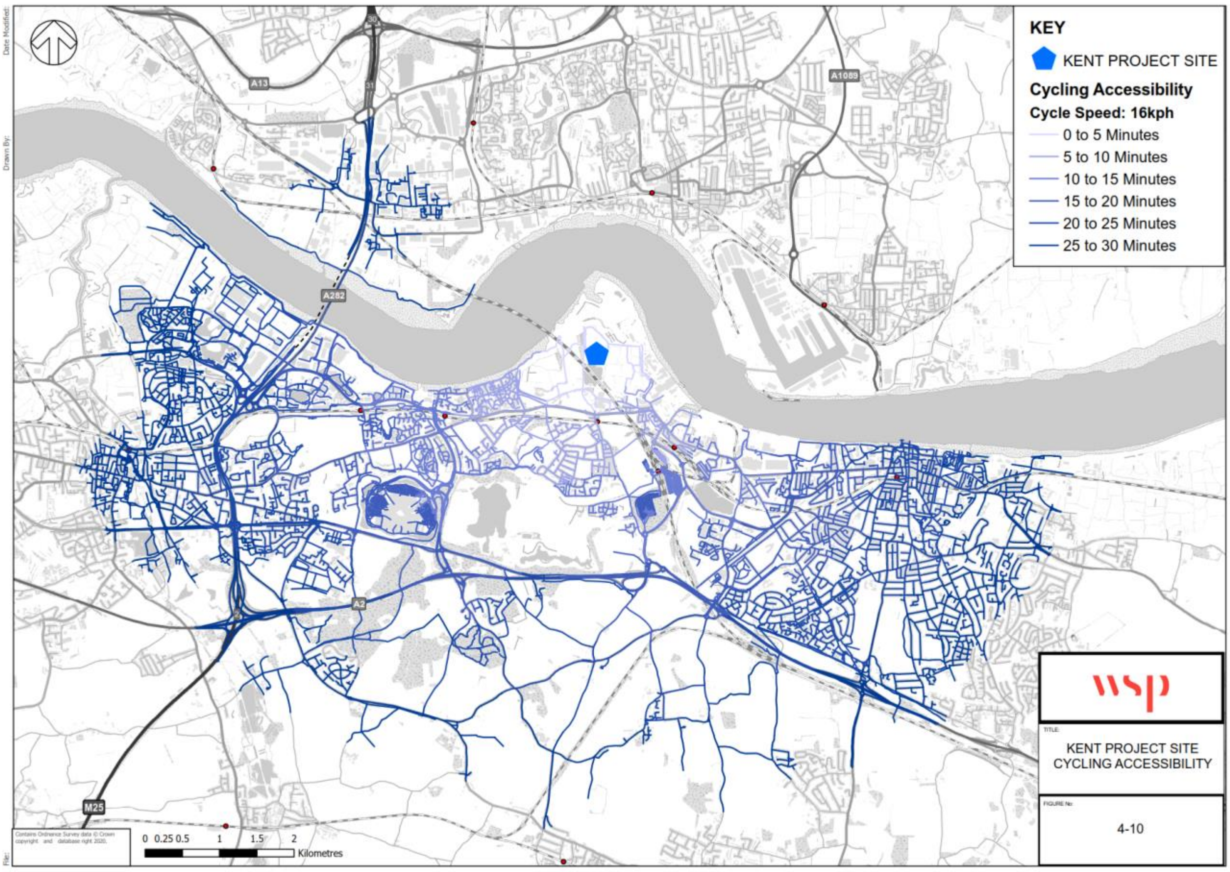


Figure 4-10: Kent Project Site Cycling Accessibility

4.5.22. There are sections of the NCN Route 1 immediately to the south and west of the Kent Project Site, which in combination with NCN Link Routes and the local cyclist facilities available provide connections to either the main NCN Route 1 or NCN Route 177.

4.5.23. The NCN Route 1 is a long-distance route connecting Dover and the Shetland Islands. In the locality of the Kent Project Site, NCN Route 1 connects Dartford town centre (with a connection to the NCN Route 125) with Gravesend and beyond. In the vicinity of the Site, NCN Route 1 then runs from Dartford in the eastern direction towards the A282, which it crosses north of M25 Junction 2 at the A225 Princes Road interchange using a footbridge to cross the A282 before continuing parallel to the A296 Princes Road and A2(T) towards the A2260 to the south of Ebbsfleet. From there it deviates to the north/northeast and follows the A2260 and subsequently, the A226 Thames Way to Gravesend.

4.5.24. The NCN Route 177 connects with NCN Route 1 at the junction of the A2(T) and the A2260 and broadly follows the A2(T) towards the southeast. Both NCN routes provide a combination of traffic-free and on-road sections along their routes with toucan crossing facilities and provide connections to the major towns and cities along the coast.

4.5.25. B2175 Stonebridge Road/High Street/The Hill Northfleet/London Road has intermittent on-road (mandatory cycle lane) and shared off-road pedestrian/cycle facilities.

Essex Project Site

4.5.26. The Essex Project Site is also accessible via the NCN in combination with the local cycle routes along the A1089 and other local roads. The Thames Estuary Path forms part of the NCN Route 13, which, when fully completed, will provide a connection between Tower Bridge in London and Fakenham in Norfolk. Further to the north, NCN Route 137 can be utilised for trips between Little Thurrock (just to the north of Tilbury) and

NCN Route 13 in Purfleet. Alternatively, NCN Route 13 can be accessed from NCN Route 1 via a ferry across the River Thames and vice versa.

4.5.27. The Essex Project Site in Tilbury is separated from the existing settlement by the railway line serving both the docks as well as Tilbury Town. The railway line creates a physical barrier between the Port of Tilbury and residential parts of Tilbury. The Port itself is served by National Cycle Route 13 accommodating trips from Tilbury Town Centre to the Port; consisting of an off-road route comprising of a shared-use path.

4.5.28. Cycling isochrones demonstrating the cycling accessibility within the vicinity of the Essex Project Site, shown in **Figure 4-11**; the assessment assumes a cycling speed of approximately 16km per hour and similar to the walking accessibility assessment, isochrones in Tilbury extend to a 15-minutes cycling time to allow for a further 15-minutes to utilise the ferry services across to The London Resort. The isochrones show that using existing cycle infrastructure, Tilbury Town railway station is within a 5-10 minutes cycle and most residential areas of Tilbury town can be reached within the same time.

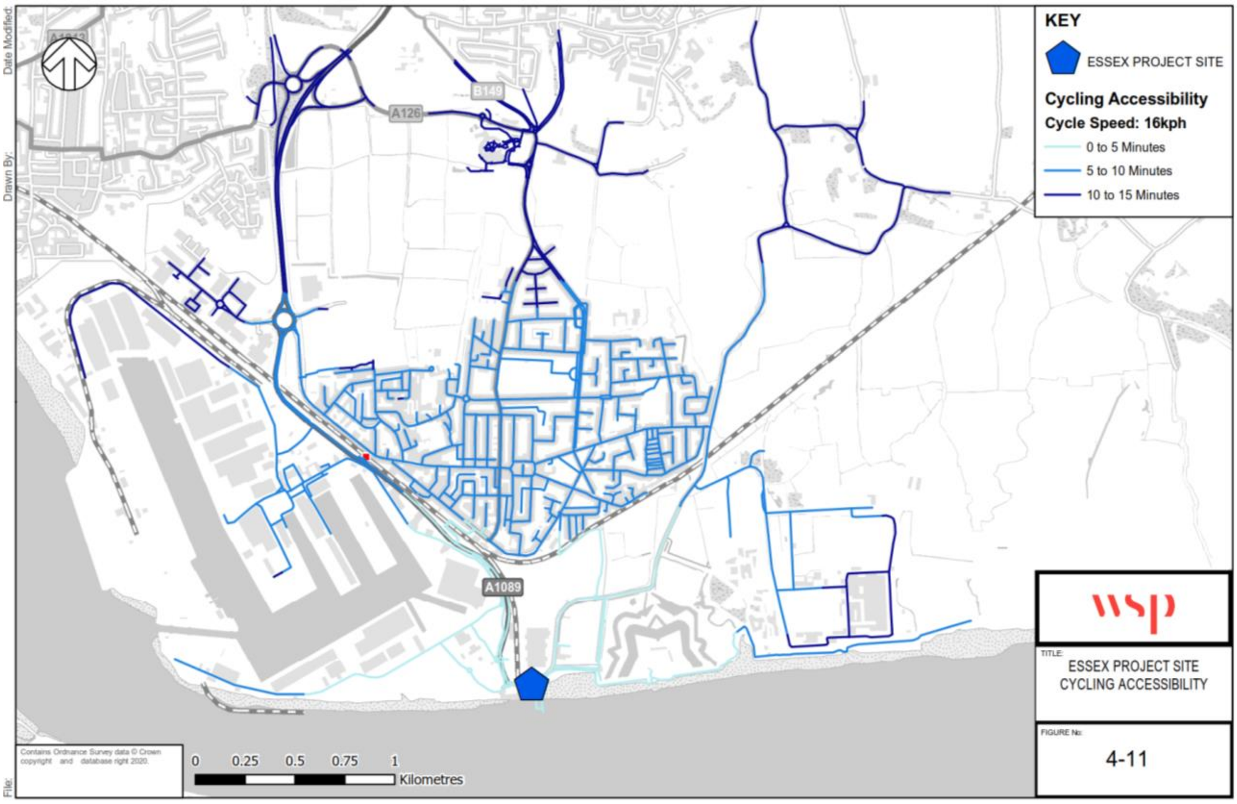


Figure 4-11: Essex Project Site Cycling Accessibility

4.5.29. Chapter 10 picks up on any identified existing barriers to active travel within the vicinity of the Kent and Essex Project Sites and uses observations from the active travel audit to develop a Walking and Cycling Strategy.

4.6 FUTURE BASELINE

4.6.1. Alongside the principal and associated development at The London Resort, WSP acknowledge that significant infrastructure changes and local development are proposed within the vicinity of the Kent and Essex Project Sites. Whilst this chapter reviews the active modes, sustainable transport links and highway network accessibility in the area surrounding the existing Site, it is important to note that the analysis presented within chapter 4 has been undertaken on current observed conditions and does not account for, or rely upon, proposed changes outlined as part of committed or proposed infrastructure schemes including those discussed below.

LOWER THAMES CROSSING

4.6.2. The LTC is also a NSIP which is seeking to obtain consent through a DCO application. Whilst the application was submitted by Highways England on October 23rd, 2020, it was subsequently withdrawn, albeit that the intention is to resubmit as soon as possible. If consented, the LTC would be the longest road tunnel in the UK, stretching 2.4 miles and would include the implementation of 14.3 miles of new highway connecting the M2 / A2, A13 and M25.

4.6.3. Whilst the existing conditions within this chapter review the current provision and accessibility of the Kent and Essex Project Sites by active travel, sustainable modes and the highway network, the LTC is an important strategic consideration when developing the transport strategy for the London Resort as its potential implementation by 2027 has been considered in the transport modelling assessment of the London Resort proposals. If the LTC proposals are consented, the scheme will cause significant re-distribution of vehicles on the existing highway network within Kent, Thurrock and ultimately seek to reduce traffic levels as well as congestion at the Dartford Crossing. The modelling methodology, incorporation and consideration of LTC as a major scheme within the vicinity of The London Resort has been discussed in further detail within chapter 9 – Modelling Methodology, the indicative route of the LTC is detailed in **Figure 4-12**.

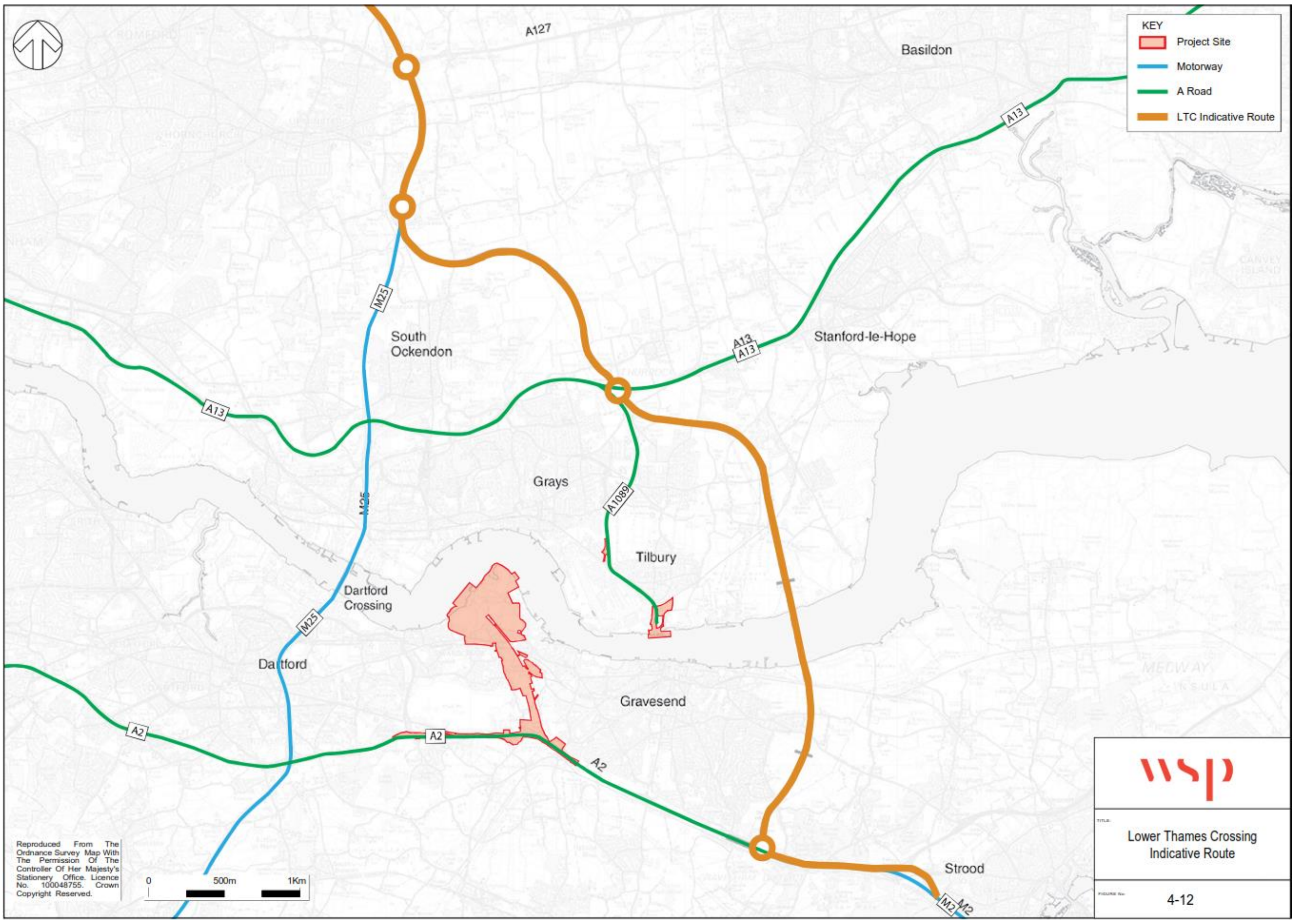


Figure 4-12: LTC Indicative Route

TILBURY2

4.6.4. Tilbury2 refers to the proposals by PoTL to build a new port terminal and associated facilities on the land at the former Tilbury Power Station. The DCO application to extend the operations at the existing Port and allow for the growth of the Port was submitted in October 2017 and in February 2019, received development consent from the Secretary of State for Transport.

4.6.5. The proposals include building a terminal for importing and exporting containers and trailers, warehouse floor space, a construction materials and aggregates terminal and storage facilities for bulk goods or vehicles – similar to the uses seen at the existing Port. Construction at the site since 2019 has involved the building and construction of the new infrastructure corridor, including the Fort Road Bridge and new link road (Ford Road), which was formally opened to traffic and pedestrians on 04 July 2020.

4.6.6. During the September 2020 site visit and travel audit, highway conditions and driver behaviour were observed at the recently opened junction and road, as presented in the Site Audit Technical Note in **Appendix TA - F**.

4.6.7. Furthermore, as outlined in the Tilbury2 DCO Transport Assessment, mitigation improvements to the ASDA Roundabout (A1089 St Andrews Road, Dock Road, Thurrock Park Way) were submitted. Tilbury2 acknowledge that their development proposals would result in an increase in traffic through this junction which, in the PM peak hour, is likely to have an impact upon its operation.

4.6.8. The mitigation improvements to the junction set out in the Tilbury2 TA and shown in the associated drawing. ITL11323-SK-034 were considered to provide operational benefits to the existing Port's operations and would mitigate the limited predicted operational impact from Tilbury2. The Tilbury2 mitigation proposals at the ASDA roundabout seek to achieve the following;

- reduce traffic speeds on St Andrews Road – through reduction of the entry path radius;
- increase traffic capacity on St Andrews Road – by providing separate approach lanes;
- improve safety on St Andrews Road – by removing pedestrian vehicle conflict with the alternative route now available beneath St Andrews Road;
- improve lane utilisation – the separate approach lanes will enable both lanes to be better utilised with reduced vehicle interaction at the entry to the roundabout; and
- improve capacity and safety on Thurrock Park Way – through the reduced speed of vehicles from St Andrews Road, the secondary impacts will be to increase the gaps between vehicles on the circulatory carriageway past Thurrock Park Way.

4.6.9. As Tilbury2 DCO has been granted, the mitigation measures at the ASDA Roundabout are a material consideration that should be taken into account in the further analysis. Section 13.4 below will consider The London Resorts impacts at the junction, which will include sensitivity tests to account for Tilbury2 and the mitigation strategy presented in the Tilbury2 DCO.

EBBSFLEET GARDEN CITY

4.6.10. Ebbsfleet Garden City is the first in a generation of new sustainable developments which will embrace neighbouring communities and towns to create a community offering a diverse range of opportunities to live, work and play. The delivery of Ebbsfleet Garden City seeks to provide homes and neighbourhoods, an enterprising economy, connecting people and places, healthy environment, civic communities and integrated utilities and services. The corporate plan outlines the ambition to have completed at least 5,100 new homes between April 2016 and March 2023 across four key development areas. Part of the planning proposals include the development of an urban centre within Ebbsfleet that provides jobs, homes, community and cultural facilities.

ELIZABETH LINE (CROSSRAIL)

4.6.11. The London Resort proposals will not impact or prejudice the Elizabeth Line extension safeguarded route from Abbey Wood to Hoo Junction.

MOBILITY AS A SERVICE

4.6.12. Reducing reliance away from private vehicle, improving travel options for residents and improving public health and wellbeing by reducing air pollution and improving air quality are all key drivers for KCC in the introduction of Mobility as a Service (MaaS) in Ebbsfleet.

4.6.13. The multi-modal transport integration proposed by KCC will seek to include train travel (to/from London and Kent), Fastrack electric bus services, local Arriva bus services, bike and e-bike hire as well as electric car club hire. If the Ebbsfleet trial is successful, MaaS will be rolled across Kent between 2023 and 2025 and will allow residents of Ebbsfleet Garden City, and the wider areas, to live without the need for a private car.

4.6.14. KCC intend to work with MaaS technology to develop an app and website which will deliver integrated journey planning, ticketing and payments; it will support origin to destination travel for a wide range of transport modes and will offer multimodal subscription as well as Pay as You Go (PAYG).

4.6.15. If implemented within KCC's outlined project milestones, MaaS technology will go live in Summer 2022 and with Fastrack, Bus Rapid Transit (BRT) and the local rail provision at the heart of the strategy, MaaS will help to encourage active and sustainable travel within the vicinity of the Kent Project Site, offering residents access to bus links, last mile solutions and reduce reliance on private vehicles. The project aims to be a KCC facilitated, sustainable multi-modal MaaS framework to ensure transport is fully integrated, providing seamless travel options and connections.

SUMMARY

4.6.16. This section has sought to outline consented and proposed strategic schemes within the vicinity of the Kent and Essex Project Site which will impact the existing conditions and operation of the local and strategic highway networks. In addition to LTC, Tilbury2 and Ebbsfleet Garden City, committed developments have been included within the modelling and are discussed in more detail within chapter 9, Modelling Methodology.

4.7 PARKING RESTRICTIONS

4.7.1. In order to understand the existing level of on-street parking in the nearby vicinity of London Resort, a large-scale car parking survey was undertaken by Streetwise Services in April 2015 to determine the type and duration of stay, focussing on the minor roads adjacent to the Kent Project Site. The area included in the survey is shown in **Plate 4-1**.

4.7.2. The Essex Project Site, and the area surrounding, was not included in the 2015 survey as it did not form part of the 2014/2017 proposals that were the subject of Statutory Consultation at that time. To have surveyed this area as well as a re survey of the area surrounding the Kent Project Site as part of the DCO submission would currently not be representative due to the COVID-19 pandemic.

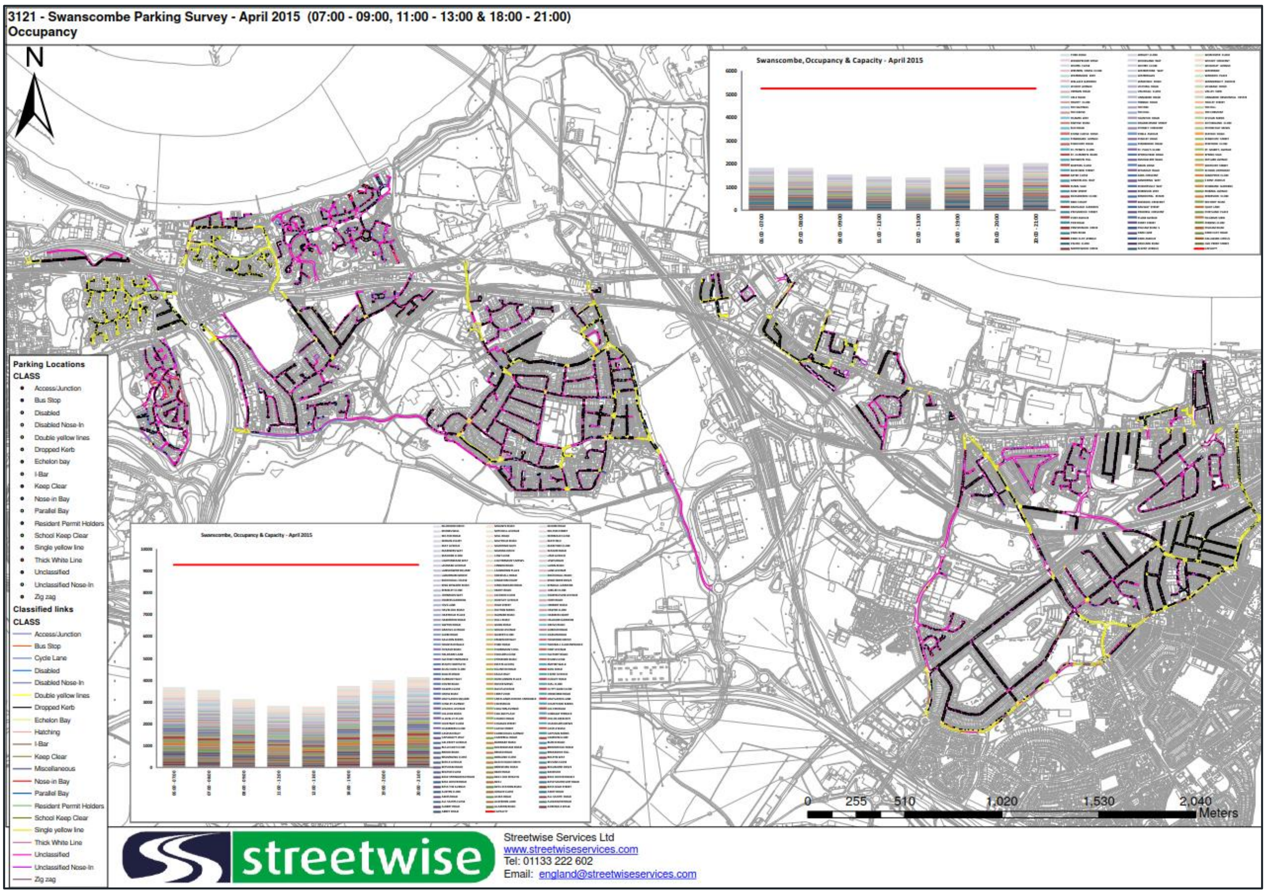


Plate 4-1: Car Parking Survey Locations

4.7.3. Notwithstanding the absence of survey information, to inform the submission, a site visit was undertaken in September 2020 to understand the current parking conditions in the vicinity of the Kent and Essex Project Sites. This audit, alongside a desktop study, have allowed for an update to the previously surveyed areas and provided additional background information on specific areas with on-street parking stress.

4.7.4. The on-street parking survey, undertaken in 2015, split locations into four separate zones at 500m intervals based on their walking distance from the proposed London Resort, walking time and a convenience factor. It is considered that a 20-minute walking journey is likely to be the upper limit for visitors parking nearby and walking to the Resort, as a walk journey beyond this distance is likely to negate any convenience or cost saving from parking away from the dedicated car parks. A graphical representation of the zones is shown in **Plate 4-2.**

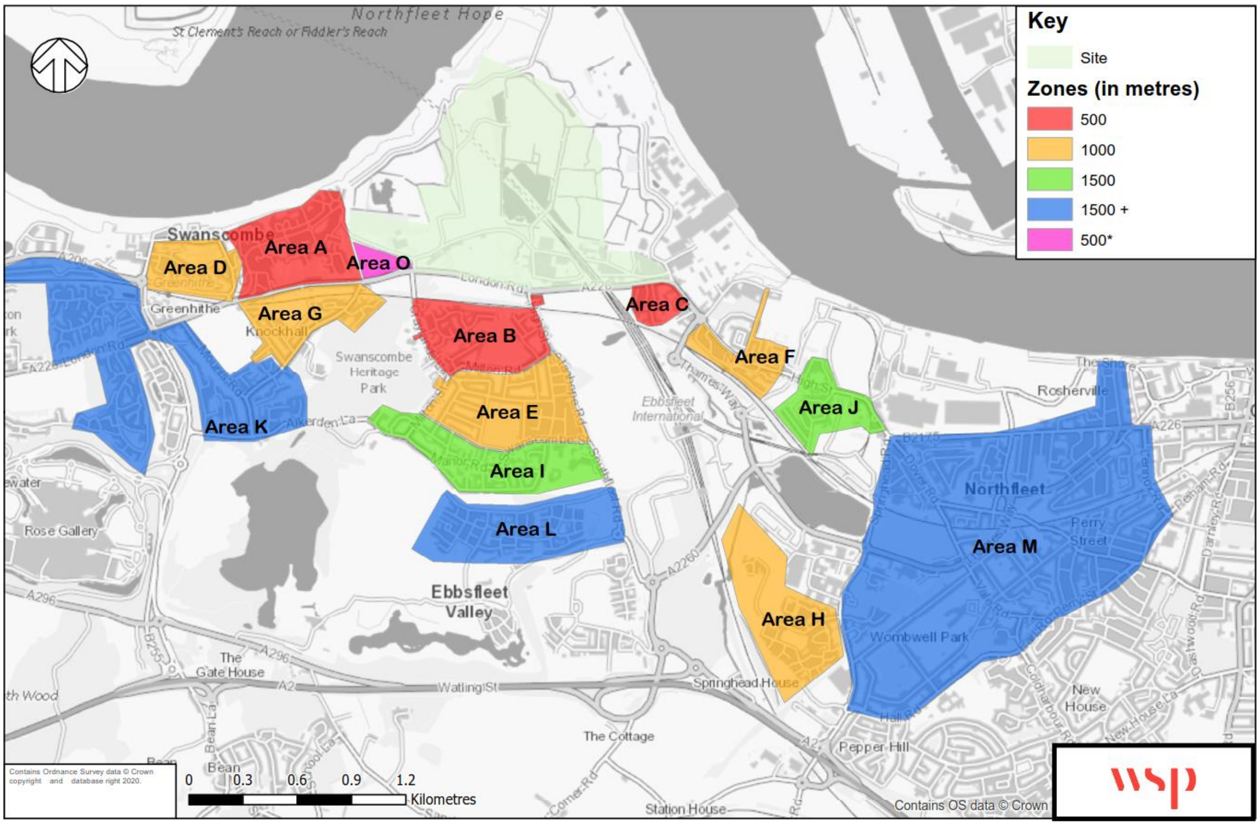


Plate 4-2: Parking Survey Zones

4.7.5. A focussed review of existing parking conditions in each zone is provided in Off-Site Parking Strategy, included in **Appendix TA - Y**, whilst a summary is provided below:

- **Area A – Ingress Park:** this area has been identified by residents during the public consultation process as an area that already suffers from parking stress; observations have demonstrated that existing impacts are a result of limited parking provision associated with each dwelling and the limitation of 'on-street' parking available. The parking survey did not indicate a high level of on street parking within Ingress Park;
- **Area B – North Swanscombe:** the majority of roads do not have parking restrictions, and the 2015 survey highlighted significant levels of on-street parking on residential roads due to the proximity of Swanscombe station for commuting, with around 60% of the area occupied during the day;
- **Area C – North West Northfleet:** largely residential area with limited parking restriction, except for a small number of formalised parking bays; the parking study noted that the area suffers from high levels of on-street parking in the morning and evenings – likely to be attributed to residents;
- **Area D – Eagles Road:** the area is largely residential and has parking restrictions, such as double yellow lines, throughout most of the area with a few on-street parking bays. There is very little available on-street parking during the day due to parking restrictions currently in place;
- **Area E – Gunn Road:** very few parking restrictions on residential roads within Swanscombe leading to an abundance of available on-street parking throughout the day. However, it was noted during the September 2020 site visit that any capacity during the day has been absorbed by local residents – most likely due to the COVID-19 'work from home where possible' message. Any long-term changes to working patterns or a

reduced need to travel, albeit to a lesser extent, could mean residents absorb any available daytime capacity;

- **Area F – Northfleet Station:** there are a number of single yellow lines located throughout the area although the survey observed that vehicles continue to park here, suggesting the restrictions are not enforced;
- **Area G – Knockhall Road:** this is a residential area with a mixture of on and off-street parking. The 2015 survey identified limited duration stay, suggesting that many of the parked vehicles belong to residents and therefore the area has space available during the day;
- **Area H – Springhead park:** this new residential estate is still under construction. The completed part of the development has some parking restrictions on the minor roads;
- **Area I – South Swanscombe:** a residential area with few parking restrictions except for a section of double yellow lines on Manor Road and Swanscombe Street. On roads without parking restrictions, there is capacity for on-street parking;
- **Area J – North of Sawyer's Lake:** this area is predominantly residential and does not have any parking restrictions, with on-street parking taking place on Factory Road, Bankside, Huntley Avenue and South Kent Avenue;
- **Area K – North of Bluewater:** this large area covers north and south of London Road and has significant on-street parking available throughout the day; however, there are considerable parking restrictions in the area south of the A206 with double yellow lines and on-street parking bays restricted to 4 hours only;
- **Area L – Ebbsfleet Valley:** this large new residential estate has a mixture of unallocated parking bays and parking restrictions Monday to Friday, for a maximum of 4 hours;
- **Area M – Northfleet / Springhead / Gravesend:** there are few parking restrictions within Northfleet and a large number of residential areas in Northfleet and Gravesend with on-street parking provisions; however, most spaces were observed to be used throughout the day;and
- **Area O – Croxton and Garry:** this residential development is currently under construction and no detail has been provided on the parking restrictions that will be introduced;

4.7.6. Whilst the 2015 parking survey did not include Tilbury and the Essex Project Site, an audit undertaken as part of a September 2020 site visit identified a significant number of parking restrictions in the residential areas closest to Tilbury Town Station, primarily in the form of parking permits. The Tilbury Fort car park is located less than 500m east of the Tilbury ferry terminal and could provide visitors with another option to park north of the river. The car park can accommodate approximately 50 vehicles and will be included as part of an ongoing monitoring process with LRCH.

4.8 PERSONAL INJURY ACCIDENTS

4.8.1. Personal Injury Accident (PIA) data has been obtained from KCC, Essex County Council (ECC) and TfL for the most recent five-year period available . KCC and TfL provided data between January 2015 to December 2019, and ECC between July 2015 to June 2020. A full accident report detailing these accidents can be made available upon request.

4.8.2. For the purposes of assessing The London Resort, WSP has considered accidents on key transport corridors that are likely to see increases in vehicular volumes as a result of the development proposals. WSP devised a detailed study area to assess the PIA impacts along key transport corridors routes such as, but not limited to; the A2, A13, A226 London Road and Thames Way. These were deemed the critical roads for assessment as these are the likely roads used when accessing The London Resort. The final study area considered and assessed is detailed in **Figure 4-13**.

4.8.3. Accidents on the M25 north of the A13 junction (Junction 30) and south of the A2 (Junction 2) have been analysed in detail; accidents on the M25 between these two junctions, including the Dartford Crossing have been omitted from the detailed technical review. The provision of 25% visitor car and coach parking at Tilbury significantly reduces the need for any vehicles to use the Dartford crossing, as vehicles travelling clockwise around the M25 anticipated to park in Tilbury, with vehicles travelling anticlockwise around the M25 parking at the main Kent Project Site. The access strategy for the Proposed Development is reflective of this approach. The provision of the Park and Glide and entrance ticketing will reduce any vehicle movements on the Dartford Tunnel.

4.8.4. In order to undertake the highway impact assessment, WSP have assumed that both visitor car and coach car parks accumulate and disperse at the same rate; therefore, in any single hour of an assessment day, 25% of visitor arrivals by private vehicle and coach (excluding those to on-site hotels) will be in Tilbury and the remaining 75% (plus all arrivals to on-site hotels) in Swanscombe. This means that on occasion, the assessment demonstrates vehicles from north of the River travelling across the Dartford Tunnel to access the car parking facilities at the Kent Project Site. In reality, the Travel Demand Management Plan (Chapter 14) will manage the demand and ticketing strategy, in particular combined parking, Ride and Glide and entrance ticketing will help to reduce any vehicle movements on the Dartford Tunnel.

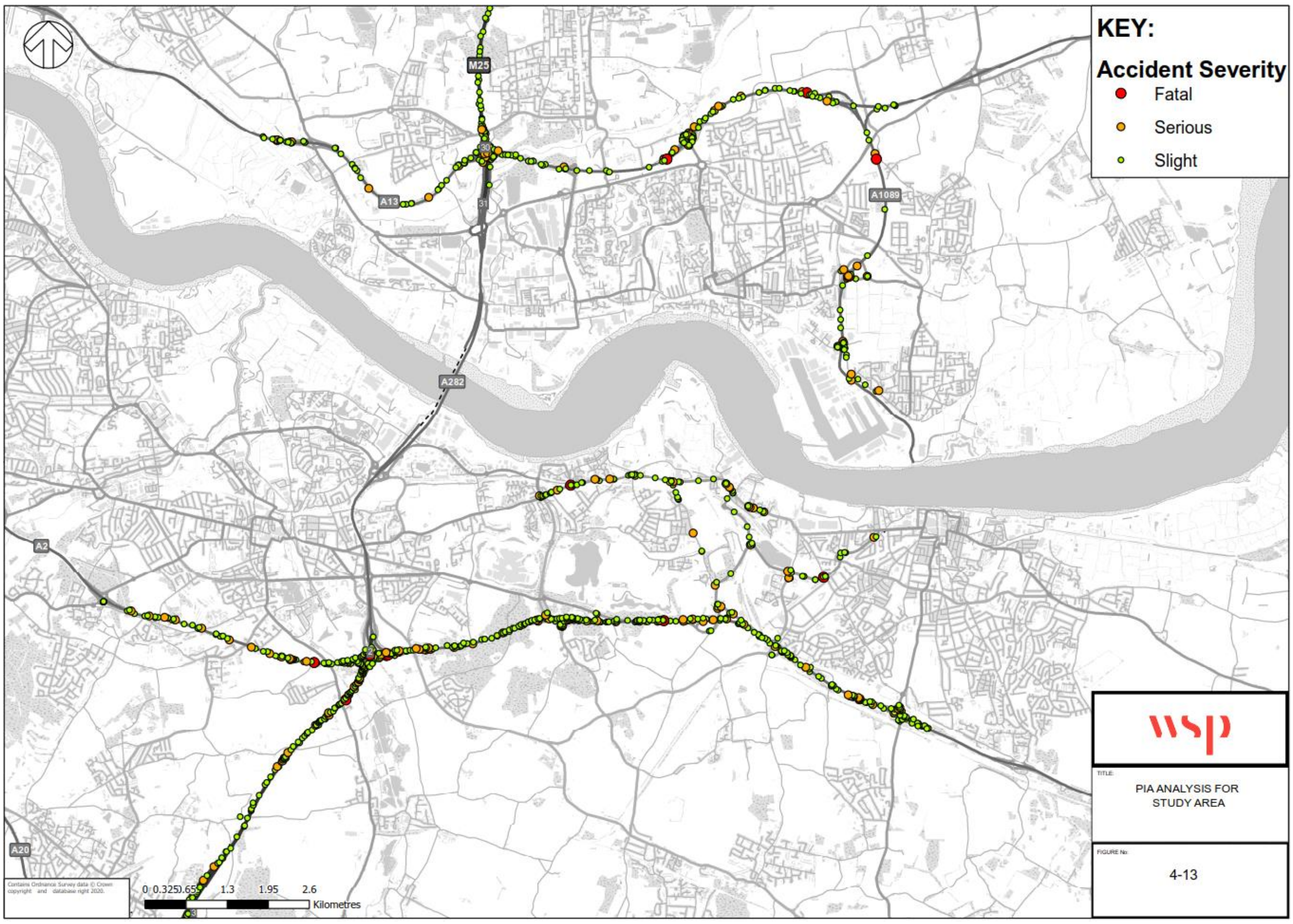


Figure 4-13: PIA Analysis for Study Area

4.8.5. The analysis conducted on key links and junctions within the Study Area used data provided by KCC, ECC and TfL; there totalled 1,155 PIAs during the respective five-year study period for each council, of which twelve were classified as fatal, 160 as serious and 1078 as slight.

4.8.6. A more detailed summary of the PIAs and their locations (junctions followed by highway links) is provided in **Table 4-7**; there were 139 PIAs involving vulnerable road users, 98 of the PIAs involved a motorcyclist, 17 involved a pedal cycle and 24 involved pedestrians.

Table 4-7: Summary of Personal Injury Accident

	Junction/ Link	Severity			Vulnerable Road Users		
		Slight	Serious	Fatal	Peds	P/C	M/C
Junctions	Darenth Interchange: M25 J2/ A2 (RBT)	15	2	2	0	0	3
	Bean Lane: A2/B255 (Rbt Gyratory)	29	8	0	0	0	5
	A2/A2260 (Off slip/ On slip)	6	2	0	0	0	1
	A2260 Double Roundabout	7	3	0	0	1	3
	A2260 Ebbsfleet Gateway/ B259 Roundabout	1	1	0	0	0	1
	A2/B262 (Off slip Rbt)	9	0	0	0	0	0
	A2/ A227 Wrotham Rd (Offslip/Onslip)	17	2	0	0	1	1
	A206/ A226 London Rd Rbt	7	1	0	2	0	1
	The Avenue/ Knockhall Chase/ London Rd (Staggered priority junction)	10	0	1	1	1	1
	Ingress Park Avenue (Signal Controlled)	2	1	0	0	0	0
	Knockhall Rd/ London Rd (Priority junction)	2	0	0	0	0	0
	Craylands Lane/ London Road/ Manor Rd (Signal controlled junction)	3	1	0	2	0	0
	London Rd/ High Street (signal-controlled junction)	6	2	0	3	0	0
	Thamesway/ Stonebridge Rd Rbt	4	0	0	0	2	0
	Thamesway/ B261/ Rosherville Rd	4	0	0	0	1	0
	Thames Way/ Vale Rd Priority controlled junction	4	2	1	5	0	0
	Thames Way/ Springhead Rd (roundabout)	3	1	0	0	1	1
	Thames Way / Gateway Priority controlled junction	3	1	0	1	1	1
	Thames Way Rbt (north of A2260)	1	0	0	1	0	0
	Mar Dyke interchange: M25 J30/ A13 Roundabout	68	9	0	0	0	0
	A1012/ A13 Roundabout	38	10	0	0	0	5
	A13/ Dock Road Approach interchange	10	2	1	0	0	1
	Asda Road/ Dock Road Approach Rbt	12	3	0	1	1	0
	Dock Road/ Marshfoot Road/ Old Dock Road Rbt/ Interchange	8	2	0	0	0	0
	Dock Road/ Calcutta Road (mini roundabout)	3	1	0	1	0	2

Junction/ Link		Severity			Vulnerable Road Users		
		Slight	Serious	Fatal	Peds	P/C	M/C
	Dock Road/ Church Rd (mini roundabout)	1	0	0	0	0	0
Links	A2: Between Old Bexley Lane and M25 J2, Darenth Interchange	88	13	1	0	0	15
	A2: Between M25 J2, Darenth Interchange and B260	10	3	0	0	0	3
	A2: Between B260 and B255 Bean Lane	83	17	0	1	0	8
	A2: Between Bean Lane and A2260	34	8	1	2	0	7
	A2: Between A2260 and B262 Hall Rd/Station Rd	18	2	0	0	0	2
	A2: Between B262 Hall Road/ Station Rd and Wrotham Rd	62	9	0	0	0	5
	A2: Between Wrotham Rd and East A2	13	0	0	0	0	2
	M25: M25 J3 and M25 J2, Darenth Interchange	114	12	1	0	0	8
	M25: M25 J30, Mar Dyke and M25 J29/ A127	91	3	0	0	0	1
	A13: Between M25 J30 and A1202	19	1	1	0	0	3
	A13: Between A1202 and A1089	29	3	0	0	0	3
	A13: Wennington and M25 J30, Mar Dyke Interchange	31	6	0	0	0	2
	A1089: Between Asda Rbt and Marshfoot Rd Rbt	6	3	1	0	0	0
	A1089: Between Marshfoot Rd Rbt and A13	4	1	1	0	0	0
	A226 London Road: Between B255 and Mounts Road	4	0	0	1	1	1
	A226 London Road: Mounts Rd to The Avenue	1	1	0	0	0	0
	A226 London Rd: Between The Avenue and Craylands Lane	4	1	0	0	1	0
	A226 London Rd/ Galley Hill Road: Between Craylands Lane and Northfleet Station	13	6	0	2	5	4
	Swanscombe High Street	7	1	0	0	0	1
	Thames Way Road	14	2	0	1	1	0
	Dock Road	3	1	0	0	0	0

4.8.7. Detailed analysis of the PIAs is included **Appendix TA - G**. A high-level summary of the trends presented on key roads within the study area is summarised below.

JUNCTION AND LINK PIA ANALYSIS

A2: Old Bexley Lane to M25 J2, Darenth Interchange

4.8.8. There were one fatal and thirteen serious accidents reported along the A2 between Old Bexley Lane and the M25 roundabout, seven involved a motorcyclist as a result of losing control of their vehicle or filtering between slow moving traffic. One incident was reported to have occurred due to the driver being intoxicated.

A2: M25 J2, Darenth Interchange to Wrotham Road

4.8.9. There were 260 PIAs reported along the A2 between Darenth Interchange and Wrotham Road over the five-year study period, one was reported as fatal, 39 were serious and the rest were slight. The fatal accident was reported when the passengers of a broken-down car began to push the vehicle in lane 3 or 4 of the A2, when a car travelling behind struck the passengers, causing two fatalities.

4.8.10. A further 39 serious accidents were reported, of which 28 involved motorcyclists and occurred when surrounding vehicles misjudged the path of travel resulting in a collision. Overall it is evident that accidents on the A2 between Darenth interchange and Wrotham road have been largely due to driver error.

M25: M25 J3 and M25 J2, Darenth Interchange

4.8.11. The accidents reported on the M25 between the M20 and A2 were largely due to driver error; of those recorded six were collisions with the rear of the vehicle in front due to lack of stopping distance.

M25: M25 J30, Mar Dyke Interchange to M25 J29, A127

There were 94 PIA accidents reported along the M25 between the A127 and the Darenth interchange; of which three were recorded as serious. One serious PIA was recorded due to the driver being intoxicated, one was due to a car entering the path of an HGV and the final one occurred for unknown reasons.

A226 London Road

4.8.12. London Road documented twelve incidents involving pedal cyclists caused by when motorists overtaking did not leave adequate clearing space and collided with the cyclist. This is evidenced as a recurrent issue with cyclists using this road.

A13: M25 J30, Mar Dyke Interchange to A1089

4.8.13. There were 53 PIAs reported on the A13 between M25 J30 and the A1089, of which one was recorded as fatal and four were recorded as serious. The fatal accident reported on the A13 occurred when a driver reported to have illicit substances in their system collided with the rear of car, crushing the car. The four serious accidents reported were due to loss of control of the vehicle.

A13: Wennington to M25 J30, Mar Dyke Interchange

4.8.14. There were 37 PIAs reported on the A13 between Wennington and the Mar Dyke interchange, there were six serious incidents noted, with the overarching cause driver error in failing to judge the speed or path of another vehicle.

A1089 Dock Approach Road

4.8.15. There were sixteen accidents along the A1089 between the Asda Roundabout and the A13, two of which were fatal accidents. One fatal accident occurred after the driver of a car lost control after clipping a kerb before their car caught fire. The second fatal accident occurred when an LGV collided with a stationary car. Four serious accidents were also reported; two were due to driver error; two involved entering another vehicles path, one was as a result of the driver being intoxicated and the final accident occurred for unknown reasons.

4.8.16. The accidents reported on the A1089 were attributed to the driving behaviour rather than the conditions of the road.

Dock Road

4.8.17. There were four incidents along Dock Road over the five-year study period, two of which were recorded as serious. One serious incident happened when a vehicle entered the path of an oncoming car, the second occurred when two cars collided after the car behind failed to leave adequate stopping distance. There was one slight incident on this road recorded when a pedestrian failed to look properly when crossing the road. There was no trend evident in the cause for accidents on Dock Road as all were due to human error.

PIA SUMMARY

4.8.18. Several accidents have been highlighted along London Road, twelve of which involve pedal cyclists colliding with a car however these are predominantly accredited to poor driver behaviour, not allowing enough space between the vehicle and the cyclist when overtaking.

4.8.19. There were two fatal accidents and two serious accidents that occurred at the Darenth Interchange, when a collision with the Armco barrier occurred, however it was driver error as a cause of these accidents rather than the road conditions.

4.8.20. New junction design schemes and a dedicated Resort Access Road, that will be implemented prior to opening, will reduce the impact that the development will have on the highway network and the potential for accidents to occur. The Active Travel strategy, in Chapter 10, seeks to propose improvements within the vicinity of the Kent and Essex Project Sites to provide a safer, more cohesive walking and cycling network that is accessible for all road users. The Public Transport Strategy, in collaboration with the Demand Management Plan and proposed Ticketing Strategy, will incentivise travel by visitors and staff by active and sustainable modes, so as to reduce impacts on the highway network and the potential for increased accidents as much as realistically possible.

4.9 SUMMARY

4.9.1. This chapter has sought to outline the existing conditions in the vicinity of the proposed Kent and Essex Project Sites which has included investigating the current active travel accessibility, public transport connections and services, conditions of the strategic and local highway networks, analysing the parking restrictions and presenting a summary of accident data.

4.9.2. Existing strategic and local highway accessibility has been reviewed north and south of the River and consideration has been given to consented or proposed schemes, such as Tilbury2 and LTC, which will alter the existing conditions prior to and alongside the proposed construction and operational timeline for The London Resort. Where relevant, these schemes have been discussed in more detail within the Modelling Methodology in chapter 9.

4.9.3. The Kent Project Site is within proximity to four railway stations – Ebbsfleet International, Greenhithe, Swanscombe and Northfleet – the accessibility and services at these stations has been reviewed and presented within this chapter. Dartford and Gravesham are currently served by an extensive range of bus services, include Fastrack which operates between key public transport nodes and the proposed development, as well as Bluewater Shopping Centre.

4.9.4. The Essex Project Site is located close to Tilbury Town Railway station and an existing bus service connects the station to the Port of Tilbury. Jetstream Tours operate an existing foot and bicycle passenger ferry between Tilbury and Gravesend, offering services six days a week all year.

4.9.5. A site visit and transport audit were undertaken in September 2020 to observe existing walking and cycling conditions, identify opportunities and recommendations for inclusion in the transport strategy and review the public transport accessibility of the Kent and Essex Project Sites.

4.9.6. The results of a parking study have been presented to demonstrate the key areas in which off-site parking might occur. An off-site parking strategy has been developed to manage the impacts of visitors or staff parking locally; this is presented in chapter 12.

4.9.7. A detailed review of PIA data has been undertaken and is included in Appendix TA - G; the analysis highlights that generally there are no existing accident trends on the local highway network which the proposed development could exacerbate and the transport strategy has been developed to minimise any increases in accidents that the proposed Resort vehicular trip generation could cause.

CHAPTER 5

DEVELOPMENT PROPOSALS

5 DEVELOPMENT PROPOSALS

5.1 INTRODUCTION

5.1.1. The London Resort is proposed to provide a truly world class entertainment resort that will be built using a phased program, opening Gate One initially before construction Gate 2. There are no comparable visitor attractions in the UK and few comparable examples across Europe and the World, meaning that The London Resort will benefit from delivering its own unique content and exceptional visitor experience. The London Resort is forecast to attract in the order of 12 million visitors per year when the theme park reaches maturity in 2038. The Resort will attract visitors from around the world and will be seen globally as a Tier 1 Resort. The illustrative masterplan for the proposals of The London Resort are presented in document reference 2.21.

5.1.2. The proposed London Resort site will have quality and visitor experience at the core of its design and will provide an experience that is unrivalled in the UK and across the world. The introduction of the Proposed Development will invigorate not only the local and regional economy but will have wider reaching benefits for the UK. This coupled with the benefits in terms of improvement of a post-industrial area of land and of employment opportunities during construction and operation stages will create a legacy for the site.

5.1.3. 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.

5.1.4. The proposals of the site are indicatively set out as follows:

- a multi-Intellectual Property (IP) global resort including leading brands related to film television, electronic gaming and toys;
- a leisure core comprising a range of events space, themes rides and attractions, entertainment venues, theatres and cinemas delivered as a phased approach of two unique theme park gates;
- entrance plazas offering ancillary Retail, Dining and Entertainment (RDE) facilities adjacent to and outside the 'payline' of the two theme park gates;
- four hotels delivering 3,550 keys providing family, upmarket, luxury and themed accommodation;
- a Waterpark incorporated within one of the hotels;
- a 'conferention' centre combined conference and convention facilities capable of hosting a wide range of entertainment, sporting, exhibition and business events;
- a linked building hosting a range of eSports, video and computer gaming events;
- related housing comprising up to 500 dwellings to accommodate approximately 2,000 Resort workers;
- a phased approach to delivering a maximum of 10,000 visitor car park spaces, 25% of which (2,500 spaces) are proposed to be located at the Port of Tilbury, in Thurrock;
- Park and Glide' ferry provision to transport visitors and employees between the Port of Tilbury and the London Resort jetty; and
- a people mover and transport interchange between Ebbsfleet International Railway Station, the main transport terminal adjacent to the main entrance plaza to the Resort and the London Resort's ferry terminal adjacent to Bell Wharf on the western side of the Swanscombe Peninsula.

5.1.5. The London Resort is planned to become operational in 2024 with the opening of the main park alongside the RDE element and 2,300 hotel keys. The visitor attendance is taken from the LDP Attendance & Physical

Planning (enclosed in **Appendix TA - A**) report and forecasts the total attendance across the various stages between Gate One opening and park maturity. The opening of Gate Two is planned to be approximately 2029. The timeline in **Plate 5-1** outlines the planned development phasing.

Plate 5-1: The London Resort planned operational profile

5.1.6. Substantial improvements are proposed to transport infrastructure that will include a new direct road connection from the A2 and a dedicated transport link between Ebbsfleet International Station, the Resort and a Swanscombe Pier. The new ferry terminal would serve visitors arriving by the 'Park and Glide' on the River Thames from central London and Tilbury. At the Essex Project Site, additional coach and car parking and a passenger ferry terminal are proposed to serve the Resort.

5.1.7. The proposed infrastructure will be operational from 2024 including the junction upgrade on the A2, the dedicated Resort Access Road, the people mover from the Thames to Ebbsfleet International via The London Resort and the enhanced bus services within the local area. Access proposals to the leisure core, for all potential modes of transport, are discussed in detail within this chapter and in the proposed access arrangements in section 5.2.

5.1.8. The London Resort is proposed to open Easter of 2024 as a result 2025 therefore forms the first full operational year, this is the first year that will be assessed. 2029, the year in which Gate Two and remaining 1,250 hotel keys open, will also be assessed. The final assessment year is 2038, by which point industry experts have forecast the London Resort will have reached maturity and stabilisation..

VISITOR DEMAND

5.1.9. The visitor demand for the site has been provided from the industry experts as outlined within the Introduction of this Transport Assessment. The assumptions behind these calculations have been discussed in detail within the Stakeholder Advisory Technical Document (SATD) in **Appendix TA - H** and the resulting trip generation and distribution is discussed in Chapters 6 and 7 respectively.

STAFF

5.1.10. The staff numbers for the Resort will vary according to the demand and operational day type and will have a different arrival / departure profile compared to typical resort visitors. The consideration of staff in the arrival and departure profiles and resulting transport modes on the local network is an important one and needs to be added to any analysis to ensure that all trips have been captured.

5.1.11. The London Resort development proposals include the provision of related housing of up to 500 dwellings accommodating up to 2,000 staff on-site, reducing the need for travel to and from the site. During the higher visitor periods (exceeding 85th percentile days), it is considered that the onsite worker accommodation will be at 90% capacity, thus providing accommodation for approximately 1,800 staff.

5.2 PROPOSED ACCESS ARRANGEMENTS

5.2.1. Before 1000, entrance to the leisure core at The London Resort is planned to be restricted to on-site hotel guests. The arrival profile before 0800 will typically be associated with staff with visitors departing from mid-afternoon until closing. The visitor profile extends across the day, with daily peak demands, typically in the afternoon and with a peak of departures towards the latter parts of the day.

5.2.2. Details of the proposed access strategy are summarised within this section and presented in full within the Access Strategy in **Appendix TA - J**.

VEHICLE ACCESS

The Resort Access Road

5.2.3. The only access for visitors driving to the London Resort will be via a dedicated Resort Access Road from the A2(T) at a new and improved junction with the B259. The vehicular access strategy will be informed and refined further as part of the iterative transport modelling process, with sensitivity tests undertaken on numerous day types and options.

5.2.4. It is intended to utilise existing highway infrastructure located at the A2 Ebbsfleet junction where possible, but to combine this with the Highways England proposed improvement at the junction. The access comprises a new dual carriageway link directly from the new A2 Ebbsfleet junction to the London Resort's main transport terminal .

A2 Ebbsfleet junction

5.2.5. Throughout the 2014/5 consultation WSP identified the need for a significant junction improvement at Ebbsfleet that was intended to accommodate the traffic flows for both Ebbsfleet Garden City and the London Resort. Since that time, HE have come forward with their own application for the improvements at both the A2 Bean and Ebbsfleet Junctions, which was approved earlier in 2020.

5.2.6. Through ongoing consultation with HE, WSP has undertaken additional junction modelling of the proposed Ebbsfleet scheme and are now confident that minor revisions to the junction arrangement would provide the additional capacity for the London Resort. This will see a realigned Station Quarter South arm being used solely for the London Resort, with a new Station Quarter South access located between the two roundabouts. Some additional widening at a number of the approaches is required, to provide sufficient capacity.

5.2.7. The proposed improvement scheme is provided in WSP Drawing LR-PL-WSP-DCP-2.12.5, included in **Appendix TA – K**.

A2260 Crossing

5.2.8. Heading north from the A2 Ebbsfleet junction, the Resort Access Road will pass beneath the existing A2260 highway in the form of an underpass beneath the existing highway, with a bell mouth on the southeastern flank to provide maintenance access for the HS1 railway.

5.2.9. The arrangement of the underpass has been assessed by structural engineers and can take a form that will allow for future upgrading of the A2260 to a dual carriageway, whilst maintaining current traffic flows.

Ebbsfleet Station

5.2.10. South of Ebbsfleet International Station is an existing bridge structure that has been constructed to provide possible future connections over the HS1 rail track.

5.2.11. To ensure that the Resort Access Road does not compromise this potential route, the bridge structure will be extended over the Resort Access Road.

5.2.12. International Way crosses the HS1 rail track south of Ebbsfleet International Station, providing highway access to Car Park D, the A2260 and adjacent land and will be realigned west of the Resort Access Road with a new entrance to Car Park D and relocated roundabout

5.2.13. The existing International Way bridge over the HS1 railway is to be extended westwards over the Resort Access Road and incorporated into the plaza area outside the new proposed concourse for the people mover route.

5.2.14. The Resort Access Road will be routed at a similar level to that of the adjacent railway track, to allow adequate headroom for the bridge to be extended as noted above.

5.2.15. The people mover and concourse will therefore be at a similar level to that of Ebbsfleet International Station, above the surface of the Resort Access Road.

5.2.16. Retaining walls and similar structures will be provided alongside the Resort Access Road, to ensure that the adjacent station and lands continue to be supported. No tunnelling provisions are required.

People Mover Route

5.2.17. The people mover route is to be dedicated to providing access to the resort for pedestrians and cyclists arriving at the Resort via HS1.

5.2.18. The route of the people mover is generally parallel to the Resort Access Road, albeit running at grade rather than in cutting due to the topography and other constraints along its route.

5.2.19. The route passes over the western portion of Baker’s Hole Site of Special Scientific Interest (SSSI) avoiding the adjacent landfill area. This has purposely been designed in consultation with stakeholders including the EA and Historic England on the basis that the SSSI on this side has already been extensively investigated. The people mover route will have minimal impact and will be constructed on a no-dig basis, utilising proprietary foundation units of Jablite or similar.

5.2.20. The people mover route will also be used infrequently to provide maintenance access to the utilities compounds and buildings within located near Bamber Pit and The Sportsground..

Public Rights of Way crossings

5.2.21. A PROW bisects the access corridor between Ebbsfleet International Station and the Resort with a pedestrian bridge spanning HS1.

5.2.22. These structures are to be extended over the new access road, to ensure the rights of way are maintained safely after and where possible during construction of the Proposed Development.

Chalk Spines

5.2.23. At the north end of the Resort Access Road, adjacent to the main entrance area and parking, the People Mover Route and Resort Access Road will pass through two tall chalk spines. The southern spine carries the North Kent Railway Line in a deep cutting railtrack and the northern spine the existing A226 highway.

5.2.24. Buro Happold have produced the outline form of the underpasses through the chalk spines for the Resort Access Road and People Mover Route. This outline has dictated the line and level at which the new route should be constructed at the point of the spines.

5.2.25. Between the spines, control barriers and a separated large vehicle security area are located. To allow vehicles to be turned away at these barriers, turning areas are provided to connect the NB carriageway to the SB, without the vehicles accessing the Resort itself.

5.2.26. The large vehicle security area has sufficient capacity to stack the anticipated number of vehicles offline from The Resort Access Road. This will minimise any congestion.

5.2.27. The security area also provides horizontal deflection for vehicles travelling north bound, ensuring that vehicles are unable to approach the Resort at speed.

General Access Road Design Considerations

5.2.28. The Resort Access Road takes the form of dual 7.3m wide carriageways, with a total corridor width of [x]m. Horizontal and vertical alignments comply with Design Manual for Roads and Bridges (DMRB) design standards, with a 40mph design speed.

5.2.29. All drainage for the Resort Access Road is to be managed and attenuated in accordance with Sustainable Urban Drainage Strategy (SuDS) best practise. The Lead Local Flood Authority has been consulted and associated drainage strategy developed. Where possible, surface water is to be discharged to ground via infiltration but will also have overflows to the Ebbsfleet River to cope with extreme storm situations.

5.2.30. The people mover route is a 6m width carriageway, likewise, designed in accordance with DMRB standards but to a 30mph design speed.

Access to EDC Station Quarter South

5.2.31. The development of the Garden City has an extant planning permission dating back to October 2007 (Application reference DA/06/01045/EBQSQS, outline permission DA/96/00047/OUT). As an attached condition, there is an agreed level of development traffic that could be demanded by the scheme as it is built out. Given the delays, it is now understood that the EDC have been looking to re-masterplan the development, (notably around the Ebbsfleet International Station) resulting in a change in land use and reduced quantum. However, the modelling work has continued to assess the extant permission, which also formed the baseline of assessment by HE for the A2 Bean and Ebbsfleet application.

5.2.32. The proposed revised scheme will see a new access into Station Quarter South to replicate that of the approved Highways England scheme. The relocation of the Station Quarter South development is discussed in more detail in the Modelling Methodology in chapter 9.

Access from London Road

5.2.33. The transport strategy for the site sees access for all visitors arriving by car utilising the proposed access road from the A2 Ebbsfleet Junction. Vehicular access in and out of the Resort from London Road will be limited to occasional service and delivery vehicles to minimise visitor traffic on the local road network. This will occur from the back of house servicing yard which is located in the south east corner of the Main Resort site. As outlined in further detail in chapter 16, the majority of deliveries and servicing of the Resort will take place overnight between 2300 and 0700. The minimal movements forecast from London Road during the day will mean the Resort will have no material impact on London Road.

Tilbury Access

5.2.34. Access to the Essex Project Site will be via Ferry Road/ Fort Road, the road is currently in the process of being downgraded as part of the Tilbury2 construction. A new priority junction is currently being installed on the A1089, with the Ferry Road being the minor arm. Ferry Road/ Fort Road is a single carriageway two-way road. As outlined in further detail below, the Phase 1 car park at the Port of Tilbury will be accessed and egressed via Fort Road on the eastern side of the car park this is approximately 200m north of the mini-roundabout. The Phase 2 multi-storey car park would be accessed/ egressed via the Ferry Road roundabout. public transport access

5.2.35. The London Resort will deliver a comprehensive access package, promoting sustainable travel and efficient multi-modal transfer. As part of the proposed public transport improvements, an over-arching public transport strategy has been developed and summarised within Chapter 11.

Rail

5.2.36. The rail access strategy will seek to utilise the available rail services, with Ebbsfleet International being promoted as the primary rail access to the Kent Project Site; it will have a dedicated access corridor to connect the Ebbsfeet International Station to the Resort in the form of a shared used multi-transport link (the People Mover Route), enabling bus, walking and cycle journeys. Rail passengers will be transported between the station, main entrance and the pier via an exclusive London Resort 'People Mover' connection.

5.2.37. For those arriving via other local stations, bus service provision will be provided to connect the stations to the Resort. The bus strategy proposals linking nearby railway stations to the London Resort main interchange plaza are presented in detail within chapter 11.

Bus

5.2.38. The potential options for a public transport route from Ebbsfleet International Station to the main Interchange Plaza at the Resort have been presented in the People Mover – Alignment Options Appraisal, included in **Appendix TA - I** and summarised within this section.

5.2.39. It is anticipated that a significant proportion of visitors and staff will travel to the Resort via rail, predominantly using Ebbsfleet International Station which provides excellent connections from London and Kent, alongside access to mainline Europe as presented in chapter 4. Given the important of Ebbsfleet International Station as a means of access to the London Resort, a key component of the transport strategy is a dedicated public transport, pedestrian and cycle corridor between the station and the Resort. It is likely that several different services could utilise this route which would include:

- a privately operated 'land train' providing direct connections between Ebbsfleet International Stational and the Resort;
- Fastrack bus services;
- other local bus services; and
- walking and cycling.

5.2.40. Within the options appraisal (**Appendix TA - I**), four route options were considered and their advantages and disadvantages in respect of the existing constraint within the area are discussed. The preferred route option for the Land Train, or people mover, is Option D which will run along the eastern boundary of the landfill area over the SSSI using a proprietary foundation system, reducing any need to excavate; the proposed route is also further away from the landfill which reduces any potential impacts of building in proximity to provides gradients more favourite for active travel.

5.2.41. The constraints considered as part of the appraisal are presented in detail within the People Mover Options Appraisal, in addition to the analysis of the four considered options. Option D is the preferred route and the WSP drawing 3539-DI-SK-103 presents this, included within the options appraisal in **Appendix TA - I**.

5.2.42. The People Mover will use the dedicated new road to be built between Ebbsfleet International Station and the Interchange Plaza. The journey is expected to last less than 5 minutes. The People Mover route is demonstrated in **Plate 5-2**.

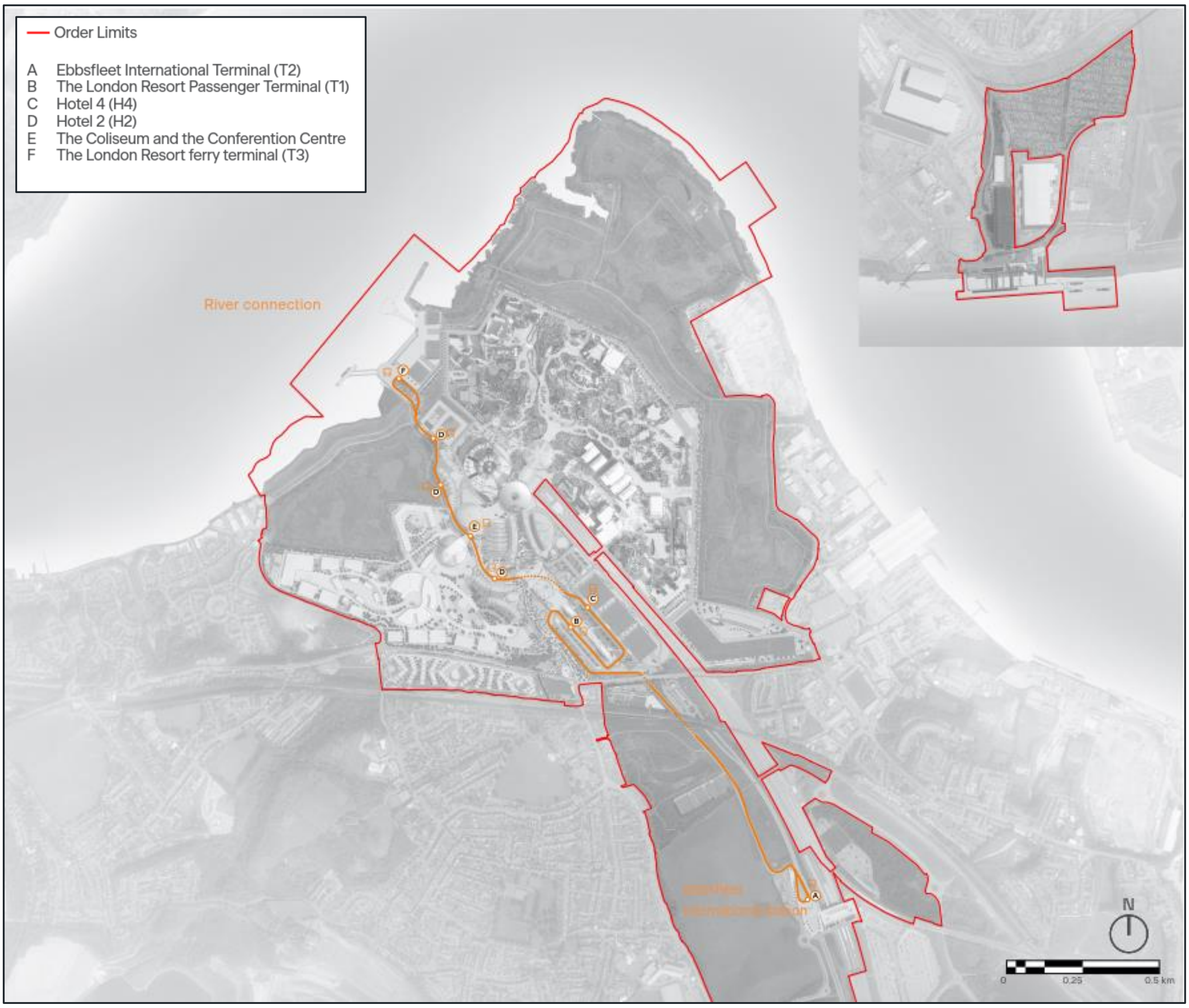


Plate 5-2: People Mover Route (Taken from the Design and Access Statement, document reference 7.1)

5.2.43. Outside of the main People Mover Route between Ebbsfleet International and The London Resort, the following proposals, (provided in detail within the Bus Strategy in chapter 11) will support the transition of passengers from rail stations (excluding Ebbsfleet) via bus:

- visitors and staff using the Park and Glide from Tilbury terminal, will require a bus connection to reach the Resort entrance. The bus connection will be provided to align with the Park and Glide timetable;
- while Greenhithe is currently served by Fastrack B and C between the station and the Resort, an additional three vehicles will be supplied to support transfer/to and from the Greenhithe Station when/if the Fastrack services needs additional capacity;
- those arriving by train journey to/from Northfleet Station will be able to use the Sapphire routes 480/490 which pick up and drop off in the High Street before travelling to the site via Pilgrims Road; and
- provision of a new shuttle route with the sole objective of providing a fast link between Tilbury Town Station and the Tilbury Ferry Terminal. The shuttle will be scheduled to meet the train arrivals and departures.

River Access

5.2.44. Given the Project Site's strategic location adjacent to the River Thames, there is the opportunity to adopt river-based travel. The use of river taxis/shuttle services from Central London will provide a further travel option, reducing the impact on the local and strategic road networks. River transport options from Tilbury, together with the proposed parking arrangements, will form part of the visitor experience to the Proposed Development, and it is envisaged that branded shuttle ferries will be used to transfer visitors (and staff) across to the Resort pier. A suitable frequency of shuttle services will be adopted to ensure minimal wait times for users from the Tilbury parking area and return. This will form a specific option for visitors arriving from the north.

5.2.45. The proposed London Resort has the potential to affect existing river traffic and its users to varying degrees depending on the season, visitor demand and extent of implementation of waterborne services provided.

5.2.46. Discussions with Uber Boats by Thames Clippers indicates that a potential journey time from London Waterloo / Blackfriars (for Thames Link) to the Resort and from Greenwich (DLR / North Kent Line) and Woolwich (for the Elizabeth Line / DLR) to the Resort would be a viable and attractive alternative to other modes. Ultimately, the journey time and frequency will be dependent on the service pattern adopted and economic viability. However, this provides an outline indication of how a passenger ferry could be adopted to serve the London Resort and provide another public transport alternative from central London.

5.2.47. As part of the water access strategy, supporting river infrastructure at the Project Site will enable the movement of users to and from the site. The River access strategy is shown in **Plate 5-3**.

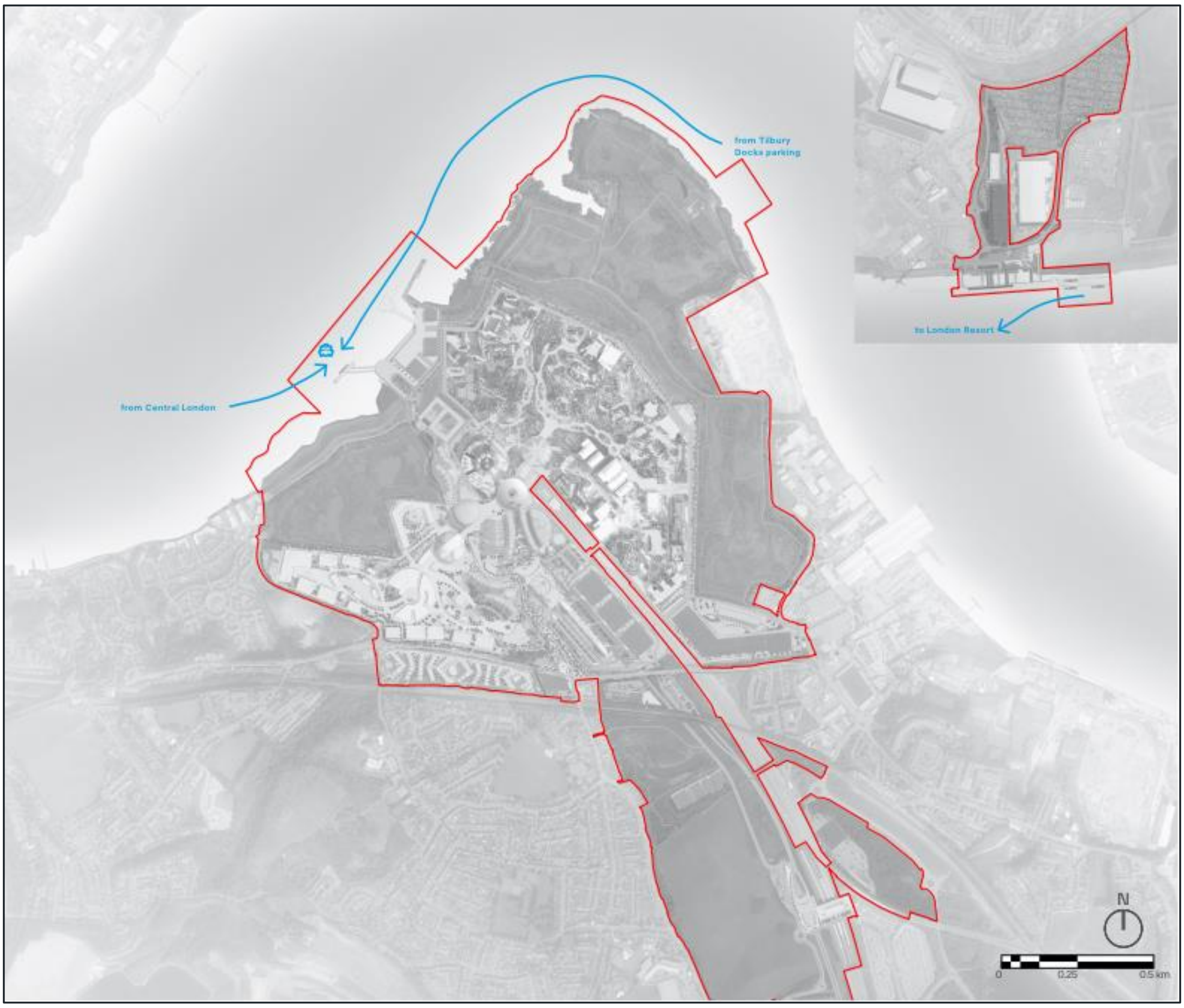


Plate 5-3: **River Access Strategy (Taken from the Design and Access Statement, document reference 7.1)**

5.2.48. The Proposed Development will provide new water-based infrastructure and pump-prime new services for the proposals, supporting wider growth plans. It is anticipated that this infrastructure would further support growth in passenger numbers by forming a new/extended interchange for development growth in Ebbsfleet and the North Kent Thames transport interchanges.

WALKING AND CYCLING ACCESS

5.2.49. The London Resort contains a network of PRoWs (consisting of footpaths, bridleways and cycle routes). As part of the master planning process, the details of these have been identified and incorporated into the site layout and shown within the DCO Access and Rights of Way plans. **Plate 5-4** presents the proposed active travel access points; it is noted that routes outside of the Order Limits are discussed in detail as part of the Walking and Cycling Strategy within chapter 10. This chapter primarily address development proposals included within the red line boundary.

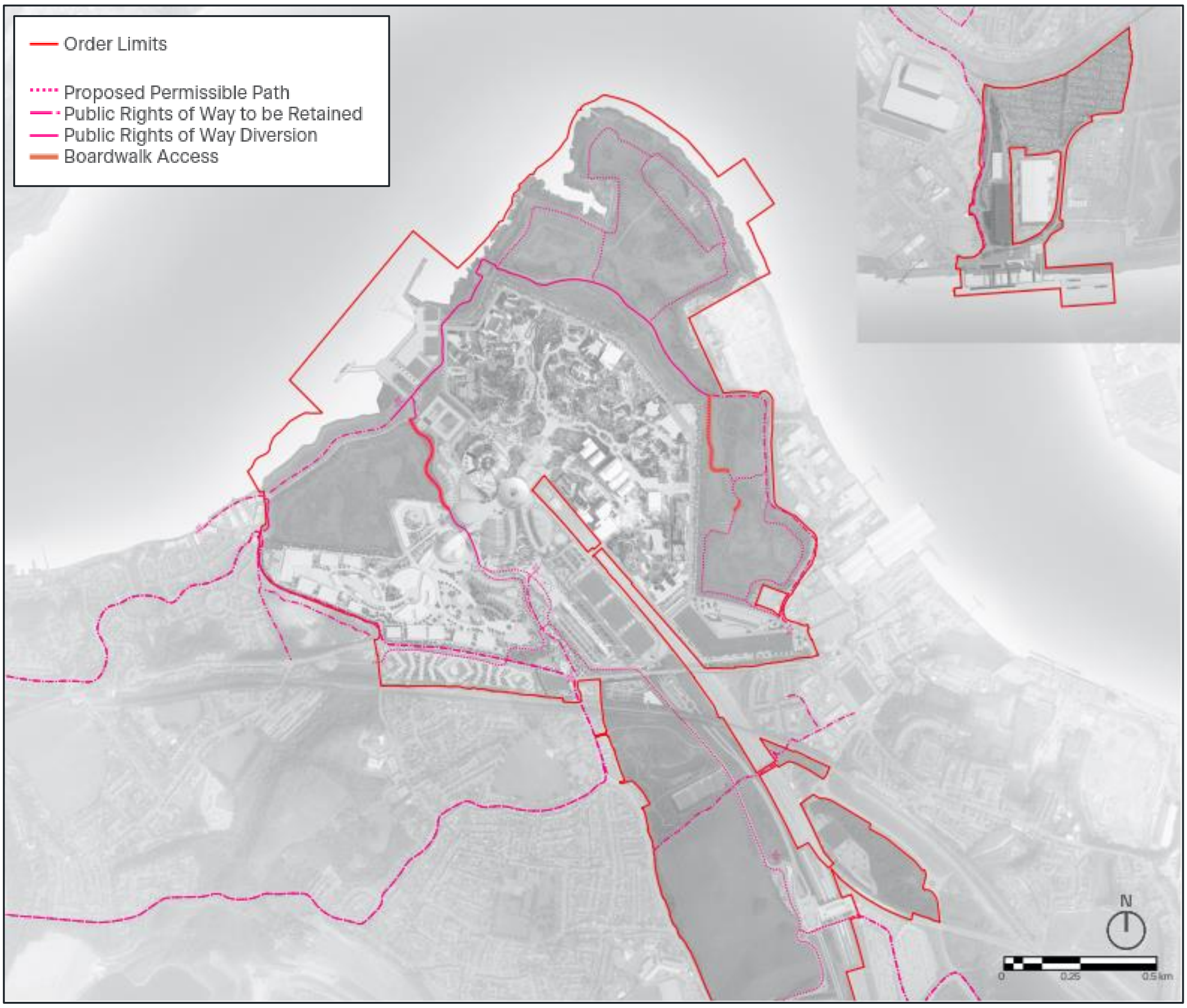


Plate 5-4: Active Travel Access Points (Taken from the Design and Access Statement, document reference 7.1)

5.2.50. The Proposed Development has outlined a new connection west of Ebbsfleet International station and running parallel to the HS1 railway line, extending north to The London Resort main Interchange Plaza and finally to the London Resort jetty. This new alignment, shown in **Plate 5-4** will be an off-road route formed of a shared-use pathway.

5.2.51. The proposed active travel alignment is a new route through greenspace bound by the international railway line to the east and Swanscombe to the west and will intersect an existing shared use path serving as an east-west connection between Swanscombe and Northfleet. The Proposed Development includes creation of a new pedestrian cycle bridge over the regional rail line between Northfleet and Swanscombe, overcoming the severance between the site and Ebbsfleet International. This is a key strategic connection and will be wide enough to accommodate walking and cycling flows in both directions.

5.2.52. Cyclist safety and comfort along the dedicated walking and cycling route between Ebbsfleet International Station and The London Resort will be ensured with the provision of sufficient lighting and by passive surveillance from CCTV, overlooking buildings and other users. This new dedicated route from Ebbsfleet station will connect to the London Resort jetty and will have the potential to serve longer commuter trips to London via the Uber Boats for Thames Clipper for the local community.

5.2.53. It can be seen from **Plate 5-4** that the peninsula also incorporates permissible paths around the perimeter of The London Road and walking/cycle access is maintained along DS1 PRoW between Ingress Park and the London Resort jetty.

5.3 PARKING PROPOSALS

VISITORS - PRIVATE VEHICLES

5.3.1. Following analysis undertaken in 2017, the calibrated UK Home Origin gravity model – discussed in detail in Chapter 7 – was used to determine what proportion of visitors would route to The London Resort clockwise around the M25 and ultimately use the Dartford Crossing. This concluded that a car park in the Port of Tilbury could attract and be beneficial for approximately 25% of the daily demand at the Resort. As such 25% of the total visitor car parking will be provided at the Port of Tilbury in what is known as the Essex Project Site Car Park. The remaining 75% will be provided at The London Resort. The car parks will incorporate an area for short stay pick-up /drop-off and taxi spaces. The Main Visitor Car Park at the Kent Project Site will incorporate the Hotel Car Park.

5.3.2. The construction of visitor car parks will be phased to coincide with the forecast visitor demand from The London Resort, which in turn is linked to the offer available at the Proposed Development. **Table 5-1** below presents the Visitor Car Park capacity across the assessment years, it provides the split in car parking provision between the Kent Project Site, Essex Project Site and Hotel car parks. The location of the multi-storey Car Parks is presented in **Plate 5-5** for the Essex Project Site and the Kent Project Site.

Table 5-1: Visitor Car Park Capacity (in vehicles) across the assessment years

	2025	2029	2038
Kent Project Site Car Park	3,060	4,560	6,435
Essex Project Site Car Park	1,250	1,875	2,500
Hotel Car Park	690	1,065	1,065
Total	**5,000**	**7,500**	**10,000**

These are illustrative values and are subject to amendments

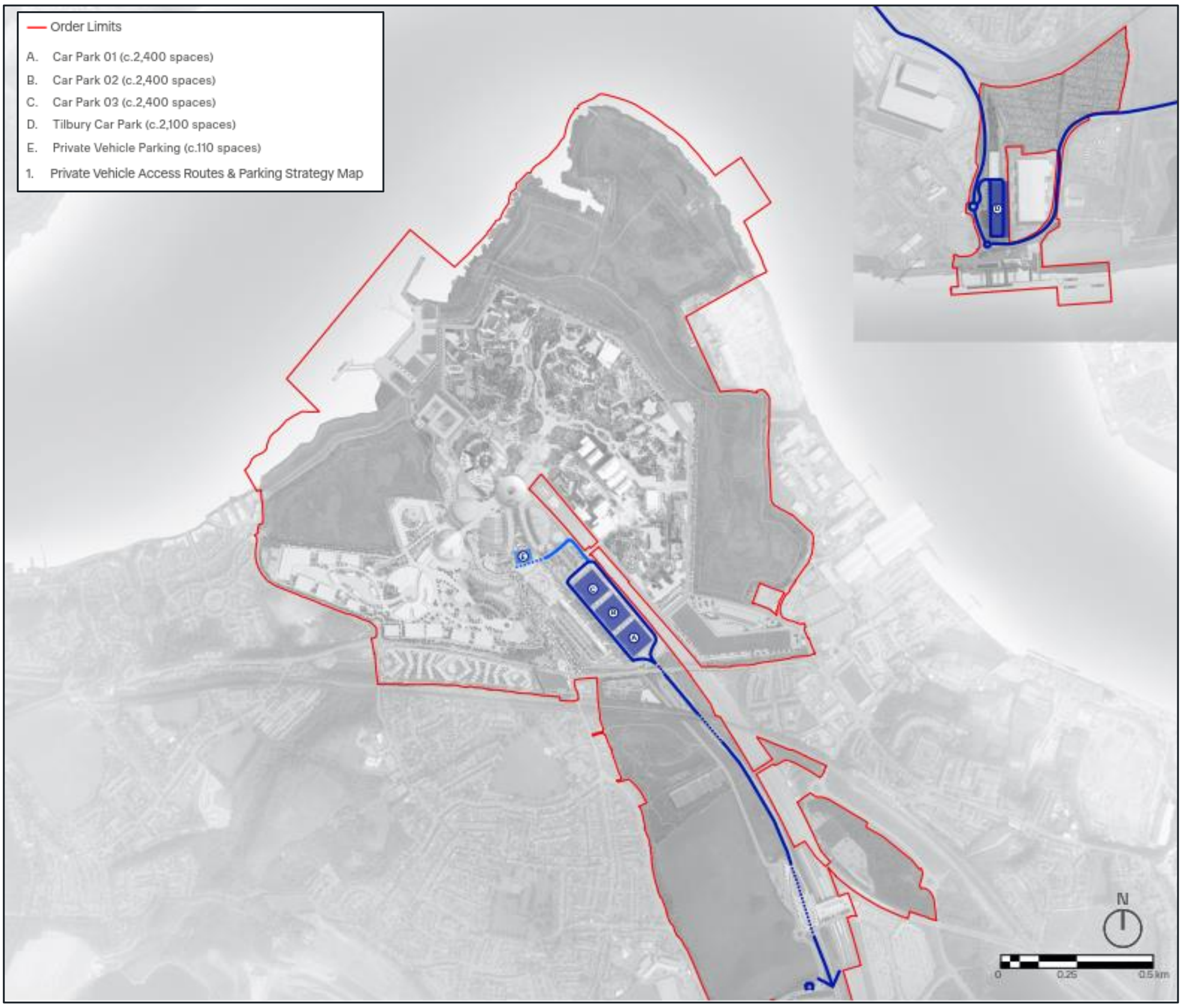


Plate 5-5: Visitor Car Parks (Taken from the Design and Access Statement, document reference 7.1)

5.3.3. A full breakdown on the car park layouts, parking bay widths, key design parameters and access control to the car parks is presented in **Appendix TA - L**, Parking Proposals. The TN outlines the key spatial setting and access constraints, the dimensions of each of the structures, the car park access points, the car parking bay widths and some proposed layout options.

Kent Project Site Car Park

5.3.4. The Kent Project Site Car Park will be accessed via the dedicated Resort Access Road from the A2(T) and will provide four locations for visitor parking. The Car Parks will be implemented in phases to coincide with the development of The London Resort. As presented in **Table 5-1**, upon opening in 2024 3,750 visitor parking spaces will be provided at The Kent Project Site. There will be a separate VIP parking area located adjacent to the entrance of Gate 1 and Gate 2. The likely delivery of the car parks will be phased starting with multi-storey Car Park 1 (A) followed by multi-storey Car Park 2 (B) and finally multi-storey Car Park 3 (C). On the completion of the final Car Park there will be 7,500 visitor parking spaces at The Kent Project Site in 2038.

5.3.5. The car parks will accommodate a minimum 5% of spaces for accessible bays, 1% of the total parking capacity provided for taxis and 2% of the total for short stay pick-up/ drop off spaces. Furthermore, the car park will incorporate EV charging provision, the level to be determined at the detailed design stage. LRCH will however be looking to deliver an exemplar level of EV charging. This ratio will be maintained throughout the phasing of the car park at the Resort. Short stay and taxi spaces will be additional to the total car parking capacity provided. Hotel car parking will be located on a single floor of the multi-storey car parks.

Level 2 of multi-storey car park is planned to be at the same level as the podium, which provides access to the Market Place and entrance gates to the Resort, over the coach parking. The accessible car parking spaces will be provided on Level 2 to provide access into the Resort. It is envisaged that Level 1 or Ground Level would contain the short stay pick-up/ drop-off and taxi spaces.

Essex Project Site Car Park

5.3.6. The Essex Project Site Car Park will be provided in two separate phases; Phase 1 will be provided from the opening of the Resort in 2024, utilising an existing at grade car park and Phase 2 will be completed in line with the opening of Gate 2 at the Resort in 2029; it will be a new multi-storey car park. Following the completion of Phase 2, the car park used in Phase 1 will be returned to the Port of Tilbury.

5.3.7. The Phase 1 Car Park is located north of Howard Tenens Logistics and south of the access road to Tilbury2. The car park access and egress will be via Fort Road on the eastern side of the car park. The Car Park will accommodate 1,392 standard parking spaces 3x5m, 70 accessible bays and 19 EV charging bays. A pedestrian walkway will be provided from the car park to the Tilbury Riverside Station along the western side of the Howard Tenens logistics unit.

5.3.8. The multi-storey car park will be completed and opened in 2029 to coincide with the opening of Gate 2. The car park will provide a minimum of 5% of the total public spaces for accessible bays equating to 125 spaces with 25 spaces for taxis and 50 spaces for short stay pick-up/ drop-off. As with the Kent site, the level of EV charging points will be determined at the detailed approval stage. The stay short and taxi spaces are additional to the 2,500 spaces which includes accessible bays. Cars would access/ egress the new multi-storey car park via the Ferry Road roundabout

5.3.9. Level 1 of the Car Park will provide two pedestrian bridges linking over Fort Road to tie into the redeveloped Tilbury Riverside Station. As a result, it is proposed Level 1 will accommodate the accessible car parking spaces and the majority of short-stay pick-up/ drop-off and taxi spaces.

COACH PARKING

5.3.10. The London Resort will have dedicated coach parking for up to 200 vehicles, allowing for the promotion of this mode of sustainable travel. It is envisaged that ticket packages will be available for visitors that could include a combined coach/entrance ticket from key strategic locations. There will the ability to manage coach parking arriving at the Resort as they will need to be booked in advance in order to access the Site. The coach parking will be split across five locations in the Kent and Essex Project Sites. The locations of the coach car park are presented in **Plate 5-6** below.

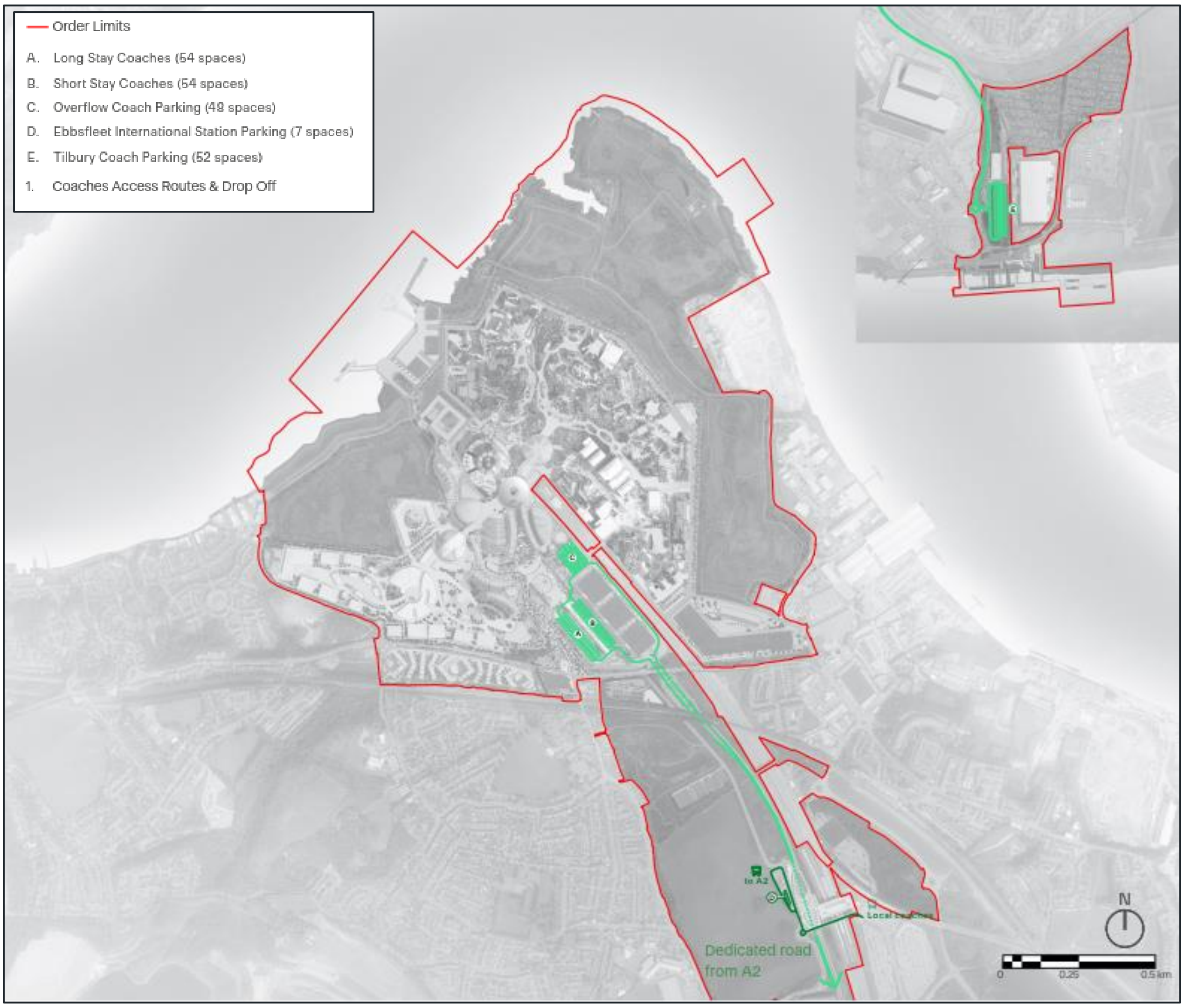


Plate 5-6: Coach Car Parks (Taken from the Design and Access Statement, document reference 7.1)

Kent Project Site Coach Parking

5.3.11. The Kent Project Site Coach parking will accommodate approximately 150 spaces, equating to 75% of the total provided. The Kent Project Site Coach parking will be split across four areas; a long and short stay coach car park south west of the multi-storey car parks, an overflow coach car park north of the car parks and a small number of spaces provided at Ebbsfleet International. The coach access to the Resort will be through the dedicated Resort Access Road from the A2(T).

Essex Project Site Coach Parking

5.3.12. The Essex Project Site has the ability to accommodate approximately 50 spaces this equates to 25% of the total provision, in line with the visitor car parking split. The proposed car parking for Phase 1 has 22 coach parking spaces however there is the ability to create additional spaces from the surrounding area if the demand requires at Gate One opening.

5.3.13. It is considered that coach services are likely to operate from varying locations dependant on future demand and this is likely to vary on a day-to-day basis, depending on trip purpose – school trip, large private group or organised event etc. It is reasonable to assume that coaches will primarily originate from large towns and cities and as such, 25% of coach arrivals will park at Tilbury and access the Resort via the Park and Glide service.

5.3.14. The Essex Project Site coach parking access will be via the ground level parking area via Fort Road and exit on the retained Ferry Road roundabout.

STAFF PARKING

5.3.15. The Staff Car Park will be located in the back of house area in the south east corner of The Resort, adjacent to the Delivery and Servicing Yard. The dedicated staff car park will accommodate 500 spaces from opening of the Resort in 2024. **Plate 5-7** presents the location of the Staff car park and how the car park will be accessed via the dedicated Resort Access Road from the A2(T).

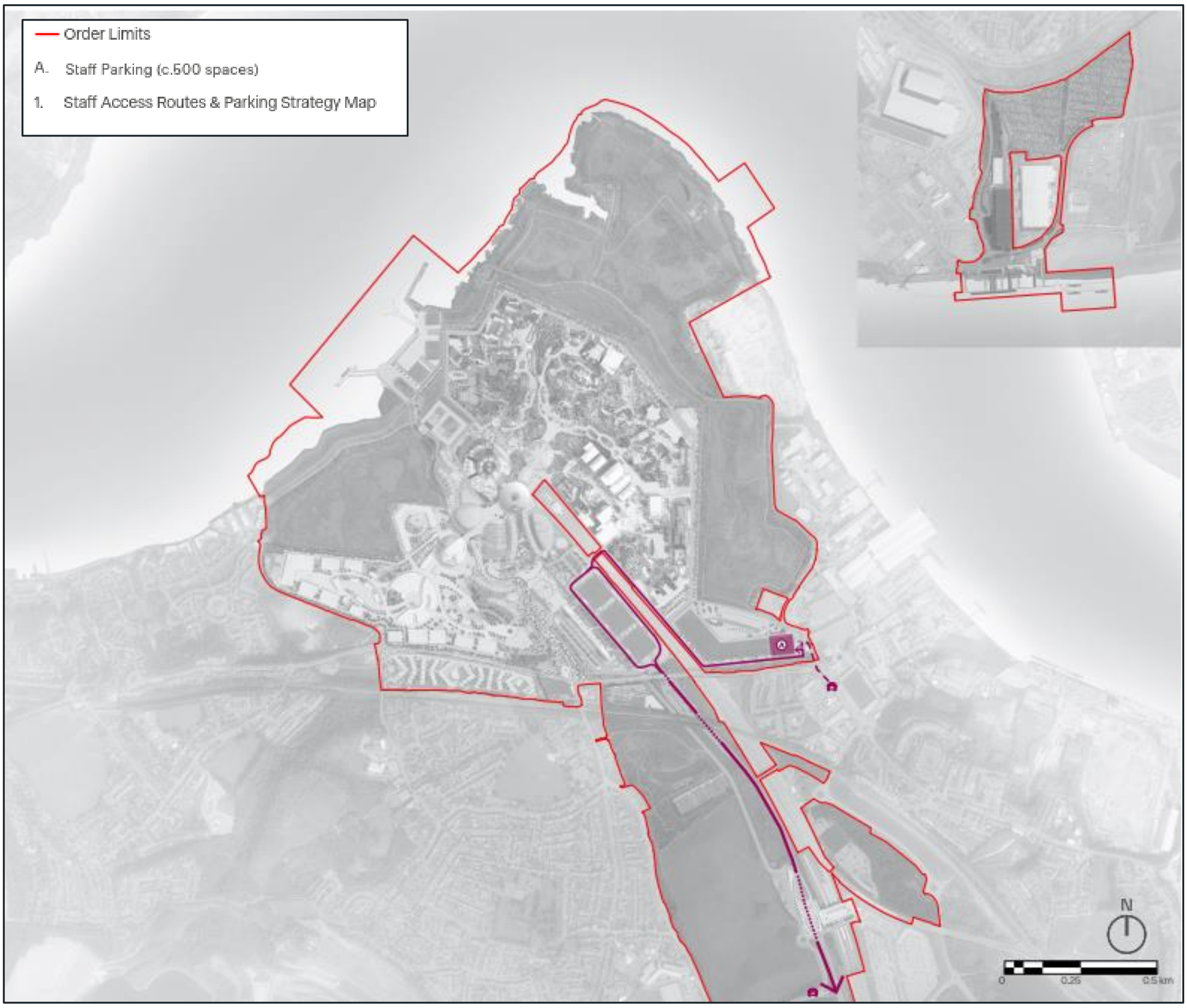


Plate 5-7: Staff Car Park (Taken from the Design and Access Statement, document reference 7.1)

5.3.16. It is envisaged that additional measures will be implemented to aid in staff travel choices and helping to promote sustainable modes where possible through various initiatives. LRCH is committed to only allowing parking on site for employee's car sharing, or if they used sustainable modes of travel and therefore the relevant mode shares are based upon an occupancy of 2 people. There will be a requirement for staff driving to the Resort to prove they have a second staff member in the vehicle with them. The measures proposed to manage this process are outlined in detail in chapter 14 of this document.

CYCLE PARKING

5.3.17. There will be a significant provision of cycle parking at The London Resort which will be formalised at detailed design stage. The detailed design approval applications that will be submitted to deal with matters of detail will need to specify the cycle parking provision and the provision will be continually monitored within the Travel Demand Management Plan (Chapter 14) and additional parking can be provided in line with demand. Space has been reserved for such provision.

5.4 SUMMARY

5.4.1. The London Resort will be a world -class, sustainable, next generation entertainment resort. The Resort will comprise of a Gate 1 and Gate 2 (the 'leisure core'), an entrance plaza offering ancillary retail, dining and entertainment (RD&E zone – The Market), approximately 3,550 hotel rooms and suites across four hotels, a Waterpark, a 'conferention' centre and 500 units for staff living on-site. Upon opening in 2024 The London Resort proposes to provide the following infrastructure a dedicated Resort Access Road from the A2, a people mover from the Thames to Ebbsfleet International and a new bus terminal for enhanced local services. Connections will also be available to River and Ferry services together with the opportunity to reach the Resort on foot or by bicycle.

5.4.2. The staff demand at the resort will depend on the operational day type. The London Resort DCO includes related housing 500 dwellings which can accommodate up to 2,000 staff members.

5.4.3. The London Resort will provide a dedicated Resort Access Road from the A2(T), the Resort Access Road will be a new two lane in each direction dual carriageway. The new road will link into the improved highway infrastructure at its junction with the A2T). The Resort will take advantage of its unique location on the River Thames to provide ferry services from Central London and the Essex Project Site to The London Resort. The Resort will provide a new transport interchange at the heart of the Resort, fully integrating the Fastrack and local bus services into the 'People Mover' to allow visitors to reach the Resort. The London Resort will promote access via rail to Ebbsfleet International as it will then connect into the 'People Mover'. For those visitors arriving at local stations, bus service provision will be provided to connect them to the Resort.

5.4.4. A shared use path will be provided adjacent to the 'People Mover' from Ebbsfleet International Station connecting the London Resort and will provide a pedestrian and cycle bridge over the regional railway connecting Swanscombe and Northfleet.

5.4.5. The London Resort will provide up to 10,000 car parking spaces once the Resort reaches maturity in 2038. These will be split 75:25 between the Kent and Essex Project Sites. The visitor car park split has been chosen based on forecasts of traffic distribution from home origins. The Coach parking will also be split 75:25 between the Kent and Essex Project Sites, it will be spread across five locations with a range of short and long stay spaces with a capacity of 200 coaches. The Resort will provide a dedicated staff car park located within the delivery and servicing yard; the capacity will be 500 spaces which will be operational from opening in 2024. Those travelling to the Kent Project Site will access via the dedicated Resort Access Road from the A2(T), while those travelling to the Essex Project Site will access the car park via the Ferry Road roundabout and coaches will access the car park via the ground level parking via Fort Road and exit onto the roundabout. The Resort will provide suitable cycle parking to fully support travel by this mode. The final provision will be agreed at the detailed approval stage and also monitored through the Travel Demand Management Plan.

CHAPTER 6

VISITOR AND STAFF TRAVEL

6 VISITOR AND STAFF TRAVEL

6.1 INTRODUCTION

6.1.1. This chapter provides a summary of TN1 - Trip Generation and the Stakeholder Advisor Technical Document (SATD). TN1 presents a methodology to determine the likely multi-modal trip generation for visitors and staff, and the travel demand expected based upon the forecast annual and daily visitors' figures calculated by ProFun and LDP. A full copy of TN1 is included within **Appendix TA - M**. As outlined in chapter 1 of this TA, LDP, ProFun and Volterra are industry experts in calculating and forecasting the demand to destinations such as the London Resort and this chapter utilises the data provided to calculate the trip generation of the Proposed Development.

6.1.2. The SATD presents the forecast visitor and staff numbers, associated daily arrival and departure profiles for the London Resort. The purpose of the SATD is to provide the methodology utilised to identify the visitors and staff trip generation. The SATD is included as **Appendix TA - H**.

6.1.3. A draft version of TN 1 was submitted in June 2020 to Transport Stakeholders who have an interest in the London Resort. Following comments from the Stakeholders the document has been reviewed and relevant changes have been incorporated into the updated reports.

6.1.4. As well as the comments received from the Stakeholders, individual meetings were arranged with highway authorities KCC and HE to discuss items in further detail. These related to trip generation, mode share, assessment methodologies and modelling.

6.1.5. The comments relevant to TN 1 have been reviewed and updated following consultee response, with further information provided in the relevant sections as follows:

- all hotel guests are assumed to visit at least one area of the Resort;
- the inconsistencies between TN1 and the SATD have been checked and corrected for the final version of this document for submission;
- the assessment periods have been finalised within this document to be AM (0800-0900) and PM (1700-1800) peaks and the assessments within the TA will follow this;
- the forecast number of delivery and servicing movements are outlined in detail within chapter 16 of this TA;
- a ride share / taxi mode share has been calculated and included;
- further information provided by LDP / ProFun is included within **Appendix TA - A** and **Appendix TA - B**; this includes supporting documentation presenting further detail in how the visitor and staff forecasts were calculated; and
- the trip rate information computer system (TRICs) validation report outlined that the software was not suitable for calculating the trip generation due to the unique nature of the London Resort, this is explained in further detail in section 1.8 of TN 1.

6.2 VISITOR ATTENDANCE

6.2.1. The London Resort is planned to become operational in 2024 with the opening of the main theme park (Gate One) alongside the RDE element and 2,300 hotel rooms and suites. The visitor attendance is taken from the LDP Attendance & Physical Planning (enclosed in the SATD) report and forecasts the total attendance across the various stages between Gate One opening and Resort maturity in 2038. The opening of the second gate is expected to be in 2029. The timeline is presented in **Plate 5-1** and outlines the expected profile.

6.2.2. The London Resort is proposed to open Easter of 2024 and therefore as 2025 forms the first full operational year, it will form the first traffic impact assessment year. As discussed in the SATD presented in **Appendix TA - H** the assessment years will include: 2025, the first full operation year after opening; 2029, the opening of Second Gate; and 2038, when the London Resort is forecast to reach maturity.

6.2.3. The London Resort will be open year-round, providing an unparalleled attraction and resort complex. As would be expected, the London Resort will experience peaks and troughs in terms of visitor demand due to seasonality and the influence of weekdays versus weekends. The annual operation and seasonal operation hours are set out in **Plate 6-1** to **Plate 6-3** for 2025, 2029 and 2038 respectively.

London Resort - Main Gate and Second Gate
Annual Operating Hours and Seasonality

365 day operations

		Start	End		Monday	Monday	Monday	Monday	Friday	Saturday	Sunday
1	Christmas	Wed - Jan 1, 2025	Sun - Jan 5, 2025	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
2	Second week Jan to Feb Half Term	Mon - Jan 6, 2025	Fri - Feb 14, 2025	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
3	February Half term to Easter Holidays	Sat - Feb 15, 2025	Thu - Apr 17, 2025	Medium	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p
4	Easter to 2nd Week in September	Fri - Apr 18, 2025	Sun - Sep 14, 2025	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
5	2nd week Sept to October Half Term	Mon - Sep 15, 2025	Fri - Oct 17, 2025	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
6	October half term 2 Week Period	Sat - Oct 18, 2025	Sun - Nov 2, 2025	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
7	After October half term to Christ. Week	Mon - Nov 3, 2025	Fri - Dec 19, 2025	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
8	Christmas and New Years	Sat - Dec 20, 2025	Wed - Dec 31, 2025	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
9	Public holidays (UK & Europe)			Peak	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p

All Holidays and Holiday Weekends use "Peak" Operating Hours

Plate 6-1: 2025 Annual Operating Hours and Seasonality

London Resort - Main Gate and Second Gate Annual Operating Hours and Seasonality											
365 day operations											
		Start	End		Monday	Monday	Monday	Monday	Friday	Saturday	Sunday
1	Christmas	Mon - Jan 1, 2029	Sun - Jan 7, 2029	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
2	Second week Jan to Feb Half Term	Mon - Jan 8, 2029	Fri - Feb 16, 2029	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
3	February Half term to Easter Holidays	Sat - Feb 17, 2029	Thu - Mar 29, 2029	Medium	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p
4	Easter to 2nd Week in September	Fri - Mar 30, 2029	Sun - Sep 16, 2029	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
5	2nd week Sept to October Half Term	Mon - Sep 17, 2029	Fri - Oct 12, 2029	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
6	October half term 2 Week Period	Sat - Oct 13, 2029	Sun - Oct 28, 2029	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
7	After October half term to Christ. Week	Mon - Oct 29, 2029	Fri - Dec 21, 2029	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
8	Christmas and New Years	Sat - Dec 22, 2029	Mon - Dec 31, 2029	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
9	Public holidays (UK & Europe)			Peak	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p
	All Holidays and Holiday Weekends use "Peak" Operating Hours										

Plate 6-2: 2029 Annual Operating Hours and Seasonality

London Resort - Main Gate and Second Gate
Annual Operating Hours and Seasonality

365 day operations

		Start	End		Monday	Monday	Monday	Monday	Friday	Saturday	Sunday
1	Christmas	Fri - Jan 1, 2038	Sun - Jan 10, 2038	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
2	Second week Jan to Feb Half Term	Mon - Jan 11, 2038	Fri - Feb 19, 2038	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
3	February Half term to Easter Holidays	Sat - Feb 20, 2038	Thu - Apr 22, 2038	Medium	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p	Med. 9p - 9p
4	Easter to 2nd Week in September	Fri - Apr 23, 2038	Sun - Sep 19, 2038	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
5	2nd week Sept to October Half Term	Mon - Sep 20, 2038	Fri - Oct 15, 2038	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
6	October half term 2 Week Period	Sat - Oct 16, 2038	Sun - Oct 31, 2038	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
7	After October half term to Christ. Week	Mon - Nov 1, 2038	Fri - Dec 24, 2038	Low	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 8p	Low 9p - 9p	Low 9p - 9p	Low 9p - 8p
8	Christmas and New Years	Sat - Dec 25, 2038	Fri - Dec 31, 2038	Peak	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p	Peak 9p - 11p
9	Public holidays (UK & Europe)			Peak	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p	Holiday 9p - 11p

All Holidays and Holiday Weekends use "Peak" Operating Hours

Plate 6-3: 2038 Annual Operating Hours and Seasonality

6.2.4. It is imperative to note that whilst the London Resort opens at 0900, the first hour will be exclusive to on-site hotel guests who are making an internal trip within the Resort. For the purpose of this document, the opening time of the London Resort is therefore considered to be 1000, when the site opens for all guests and anyone arriving between 0900and 1000 is doing so in advance of being able to enter the parks.

6.2.5. The characteristics of the various operating days, including Resort opening hours are outlined below:

- **Peak Operating Days (0900-2300)**: Peak periods corresponds with the three traditional summer months (July, August, September) including school summer holidays. The London Resort is expected to be at its busiest during this period and open for 13 hours a day;
- **Medium Peak Operating Days (0900-2100)**: The medium season corresponds to the period between low and peak season during the Spring and Autumn months. During the medium peak The London Resort is to be open for 12 hours daily;
- **Low – Weekday (0900-2000)**: The low season weekday period corresponds with the months outside of the traditional summer and school holidays. This is the period when visitors to The London Resort will be at its lowest and The London Resort will only be open for 11 hours; and
- **Low – Weekend (0900-2100)**: The low season weekend period corresponds with the low season weekday; the resort will have different opening hours on Friday and Saturday during these months and will be open for 12 hours.

6.2.6. Utilising and analysing ProFun's visitor datasets, included in **Appendix TA - B**, the ProFun data has been used and refined further to gather a likely understanding of the demand at the London Resort across the assessment years, days and time periods. **Table 6-1** presents a summary of yearly attendance (in visits) for the assessment years 2025, 2029 and 2038 and is detailed by area of the London Resort (excluding the hotel element, which will be discussed separately).

Table 6-1: Total forecast number of visits in 2025, 2029 and 2038

Area of Resort	Year 2025	Year 2029	Year 2038
Gate One	5,288,899	5,747,375	8,392,975
Gate Two	-	2,873,687	4,196,488
Retail, Dining and Entertainment (RDE)	2,053,479	3,604,440	4,812,735
Waterpark	621,604	765,578	804,039
Events	284,021	410,000	581,131
Total	**8,248,003**	**13,401,080**	**18,787,368**

6.2.7. **Table 6-1** above forecasts the total number of individual visits to the London Resort across the assessment years. Given the Resort will be a World Class destination, when assessing the transportation impact of the Site, it is necessary to consider the total number of visitors making a unique, or sole purpose, trip to the Resort. It is also necessary to identify any visitors who make a visit to a number of different areas of the Resort, for example both Gate One and the RDE. Those visitors who make trips to a number of destinations need to be disaggregated and identified separately, such that their visits are not applied to the trip generation on a gross basis given that they will only make one journey to the Resort.

6.2.8. To account for this, ProFun have made a number of adjustments to the attendance projections to account for cross-visitation between the various parts of the Resort. The assumptions behind these calculations are discussed in detail within the SATD in **Appendix TA - H**.

6.2.9. **Plate 6-4** presents the forecast daily attendance for The London Resort across 2029, also including the 85th percentile attendance. As shown the 85th percentile day has a lower forecast attendance than the identified peak days. ProFun have forecast that there would only be four or five ultimate peak days across the year and the other peak days generally occur during school holidays or bank holidays when the network traffic flows are generally lower. The assessment of the 85th percentile park attendance, being on a weekday, is deemed appropriate as it balances the traffic peaks on the existing highway network during the peak hours with the highest resort attendance during July. The highest park attendance is at the weekday when commuter traffic is much lower.

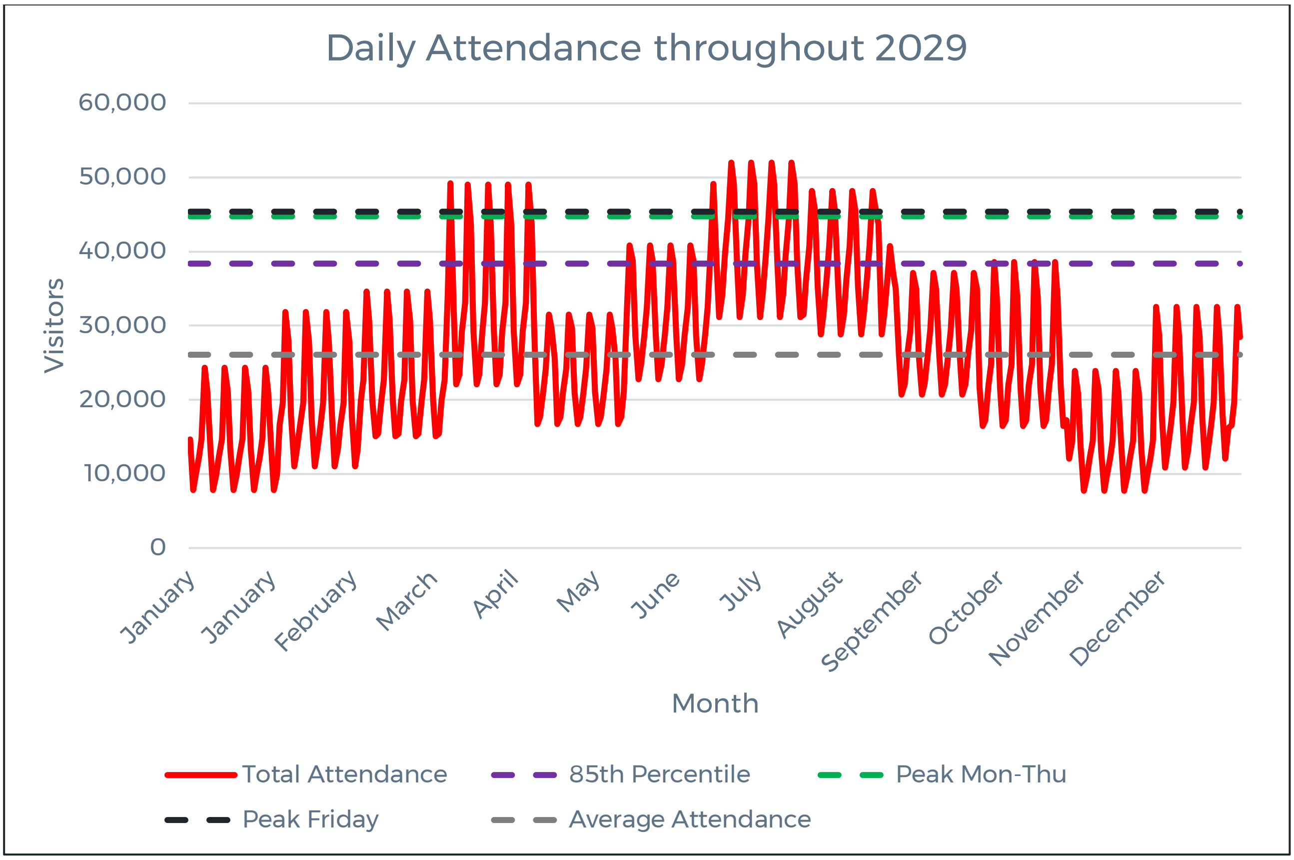


Plate 6-4: Daily Attendance trends throughout 2029

6.2.10. Presented in **Table 6-2** is forecast number of visitors across the different operating days at the London Resort for the first assessment year, 2025. As outlined above the 85th percentile day will provide the visitor attendance for the assessment scenario. It is noted that for most areas of the Resort, the number of arrivals will equal the number of departures. For the on-site hotel, this is not necessarily the case and the number of people arriving or departing will depend on the specific day and the length of stay of the visitor, which in some cases may be longer than a single night. **Table 6-2** presents the hotel arrivals only with the departures outlined below the table across the specific days.

Table 6-2: Total forecast number of visitors in 2025

Area of Resort	85th %ile Day (Mon 14th July)*	Peak Day (Sat 5th July)	Peak Weekday (Fri 4th July)	Average Day
Gate One	21,046	27,281	24,943	12,474
Gate Two	-	-	-	-
Retail, Dining and Entertainment (RDE)	2,167	2,809	2,568	1,605
Waterpark	1,351	1,751	1,601	801
Events	445	3,559	445	785
Hotels**	2,871	3,190	3,031	2,028
Total	**27,880**	**38,590**	**32,588**	**17,693**

**this is the day that will form the primary assessment for 2025.*

***Hotel Arrivals only. Hotel Departures are 2,978, 2,965, 2,765 and 2,028 for the 85th percentile day, peak day, peak weekday and average day respectively.*

6.2.11. As presented in **Table 6-2** in 2025 that the 85th percentile day (defined within the agreed terminology in Chapter 1) represents an extra 10,000 visitors in attendance than the average day, demonstrating that the assessment is robust. This pattern is followed across all the different assessment years and day types as presented in detail in Table 4 of the SATD.

6.2.12. **Table 6-3** presents the forecast number of visitors on the 85th percentile day for the primary assessment days in 2029 and 2038. This follows the opening of Gate Two of the Resort together with the remaining hotel rooms in 2029 and the maturity of the Proposed Development in 2038.

Table 6-3: 85th Percentile visitors in 2029 and 2038

Area of Resort	85th %ile Day* (Mon 9th July) 2029	85th %ile Day* (Mon 5th July) 2038
Gate One	19,556	30,227
Gate Two	6,346	11,237
Retail, Dining and Entertainment (RDE)	3,554	4,671
Waterpark	1,246	1,278
Events	599	839
Hotels**	4,729	4,714
Total	**36,030**	**52,966**

**this is the day that will form the primary assessment for 2029.*

***Hotel Arrivals only. Hotel Departures are 4,939 and 4,930 for the 2029 and 2038 respectively.*

6.3 STAFF

6.3.1. The number of staff required for the London Resort has been forecast from information provided by ProFun. **Table 6-5** presents the ProFun indicative staff demand profile for the peak weekend and weekday staff in 2025, 2029 and 2038 at The Resort. The staff profiles for the medium and low operating periods are presented in SATD and TN1 within **Appendix TA - H** and **Appendix TA - M** respectively. As would be expected, the forecast staffing levels are higher on a weekend compared to the weekday, which mirrors the visitor profiles at the London Resort.

Table 6-4: ProFun Staff Demand Profiles 2025, 2029 and 2038

Venue	Peak / Holiday 2025		Peak / Holiday 2029		Peak / Holiday 2038	
	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday
Gate One	5,355	4,227	5,683	4,487	6,032	4,762
Gate Two	0	0	1,869	1,476	1,984	1,566
RDE	2320	1831	2,462	1,944	2613	2063
Waterpark	215	170	215	170	215	170
Hotels	2,501	2,362	3,671	3,467	3,671	3,467
Total	**10,391**	**8,591**	**13,901**	**11,543**	**14,515**	**12,028**

Source: Provided by ProFun

6.3.2. The London Resort development proposals include the provision of related housing comprising 500 dwellings to accommodate 2,000 staff on-site, reducing the need for travel to and from the site. During the peak season, it is considered that the single units will be at 90% capacity, thus providing accommodating for approximately 1,800 full time equivalent (FTE) staff.

6.3.3. ProFun have considered the total number of operational staff required for the varying day types in each of the assessment years. As the 85th percentile day falls within the peak period of seasonal operation, the peak number of staff will be assessed in order to provide a robust assessment. The assessment undertaken considers the following:

- in 2025, it is estimated that there will be 8,591 weekday staff required during the peak season; with 1,800 staying on-site, the trip analysis therefore considered the arrival and departure of the remaining 6,791 staff;
- as shown in **Table 6-4**, it is estimated that there will be 11,543 weekday staff in 2029; with 1,800 staying on-site, the trip generation therefore considered the arrival and departure of the remaining 9,743 staff; and
- in 2038, it is estimated that there will be 12,028 weekday staff; with 1,800 staying on-site, the trip distribution therefore considered the arrival and departure of the remaining 10,228 people.

6.3.4. The London Resort will have a 500 space dedicated staff car park. It is also proposed that other measures will be implemented to aid staff travel choices, helping to promote sustainable modes where possible through various initiatives. The London Resort are committed to only allowing parking on site for those car-sharing and therefore the relevant mode shares are based upon an occupancy of two people. These matters are set out in the Travel Demand Management Plan.

6.4 VISITOR AND STAFF TRIP GENERATION 85TH PERCENTILE DAY

6.4.1. This section outlines the expected total visitor and staff trip generation demand to the London Resort and breaks down the total person trips from the assessment periods to total calculate the level of vehicular trips for each peak hour by applying the transport mode and occupancy rates per mode of transport. The forecast mode shares and occupancy rates for each different mode of transport are taken from chapter 4 of TN1 and outlined in further detail in TN3. The assessment periods are as follows;

- AM Commuter Peak 0800-0900; and
- PM Commuter Peak 1700-1800.

6.4.2. The above scenarios have been identified as the primary assessments through discussion with the statutory stakeholders, being the conventional peak hours on the highway network. It was considered important to be able to identify the worst-case impact upon the highway network during the peak hours of background traffic. Given the bespoke nature of the scheme we acknowledge that the many interested parties may have a number of additional sensitivity assessments that they will wish to be tested that follow a less conventional approach to the assessment of highway impacts. As such, it is intended that through on-going consultation with the stakeholders, these additional scenarios will be considered further.

6.4.3. Excluded from the trip generation outlined below is the number of servicing and delivery associated with the London Resort on specific day types. The servicing for the Resort is to be primarily undertaken via the river or during off-peak periods between 1900-0700 and therefore will not be included in the AM and PM peak hour assessments. Chapter 16 of this TA provides a summary of the Delivery and Servicing Plan.

6.4.4. A full breakdown of the visitor and staff travel demand forecast for the three assessment years 2025, 2029 and 2038 is included within TN1 which is presented in **Appendix TA - M**.

2025 VISITOR AND STAFF TRAVEL DEMAND

6.4.5. **Table 6-5** presents the forecast total visitor and staff numbers in terms of arrivals and departures in the AM and PM peaks using vehicular means of transport . **Table 6-6** outlines the trip generation in terms of absolute numbers in respect of actual vehicle numbers, presented for private vehicle, coach and drop off / taxi. These values account for the occupancy rates applied to each mode. As the occupancy factor is different for each mode of public transport and active travel, the tables below present the number of visitors and staff using those modes.

Table 6-5: Visitor and Staff Total Arrival and Departures – Weekday 85th Percentile 2025

Total	AM Peak Commuter Period (0800-0900)		PM Peak Commuter Period (1700-1800)	
	Arrival	Departure	Arrival	Departure
Private Vehicle	212	51	478	1,693
Public Transport and Active Modes (Rail, Bus, Thames Clipper, Walking and Cycling)	611	38	306	733
Coach	0	0	95	616
Drop Off/ Taxi	0	1	22	111
Total	**823**	**90**	**901**	**3,153**

Table 6-6: Visitor and Staff Total vehicle Arrival and Departures Per Occupancy of Vehicle of Travel - Weekday 85th Percentile 2025

Total	Occupancy	AM Peak Commuter Period (0800-0900)		PM Peak Commuter Period (1700-1800)	
		Arrival	Departure	Arrival	Departure
Private Vehicle	3.0	106	18	174	573
Public Transport and Active Modes (Rail, Bus, Thames Clipper, Walking and Cycling)	N/A	-	-	-	-
Coach	30	0	0	4	22
Drop Off/ Taxi	2.0	1	1	44	66
Total	**100%**	**107**	**19**	**215**	**661**

Source: Consultant Calculated

6.4.6. The peak hour two-way flow of 876 vehicles is forecast between 1700-1800 in the PM commuter peak in 2025. The forecast two-way flow trip generation in the AM peak is 126 vehicles.

2029 VISITOR AND STAFF TRAVEL DEMAND

6.4.7. **Table 6-7** presents the forecast total visitor and staff arrivals and departures in the AM and PM peaks. While, **Table 6-8** outlines the trip generations for private vehicle, coach and drop off/ taxi with the occupancy applied to each mode.

Table 6-7: Visitor and Staff Total Arrival and Departures – Weekday 85th Percentile 2029

Total	AM Peak Commuter Period (0800-0900)		PM Peak Commuter Period (1700-1800)	
	Arrival	Departure	Arrival	Departure
Private Vehicle	220	64	747	2,414
Public Transport and Active Modes (Rail, Bus, Thames Clipper, Walking and Cycling)	985	70	574	1,089
Coach	0	0	75	339
Drop Off/ Taxi	0	3	31	80
Total	**1,205**	**137**	**1,427**	**3,922**

Table 6-8: Visitor and Staff Total vehicle Arrival and Departures Per Occupancy of Vehicle of Travel - Weekday 85th Percentile 2029

Total	Occupancy	AM Peak Commuter Period (0800-0900)		PM Peak Commuter Period (1700-1800)	
		Arrival	Departure	Arrival	Departure
Private Vehicle	3.0	110	23	259	815
Public Transport and Active Modes (Rail, Bus, Thames Clipper, Walking and Cycling)	N/A	-	-	-	-
Coach	30	0	0	3	12
Drop Off/ Taxi	2.0	1	2	40	52
Total	**100%**	**111**	**25**	**302**	**879**

Source: Consultant Calculated

6.4.8. The peak hour two-way flow of 1,181 vehicles is forecast between 1700-1800 in the PM commuter peak in 2029. The forecast two-way flow trip generation in the AM peak is 136 vehicles.

2038 VISITOR AND STAFF TRAVEL DEMAND

6.4.9. **Table 6-9** presents the forecast total visitor and staff arrivals and departures in the AM and PM peaks. While, **Table 6-10** outlines the trip generations for private vehicle, coach and drop off/ taxi with the occupancy applied to each mode.

Table 6-9: Visitor and Staff Total Arrival and Departures – Weekday 85th Percentile 2038

Total	AM Peak Commuter Period (0800-0900)		PM Peak Commuter Period (1700-1800)	
	Arrival	Departure	Arrival	Departure
Private Vehicle	222	64	833	3,317
Public Transport and Active Modes (Rail, Bus, Thames Clipper, Walking and Cycling)	1,060	72	696	1,825
Coach	0	0	84	470

Drop Off/ Taxi	0	3	52	214
Total	**1,282**	**139**	**1,666**	**5,826**

Table 6-10: Visitor and Staff Total vehicle Arrival and Departures Per Occupancy of Vehicle of Travel - Weekday 85th Percentile 2038

Total	Occupancy	AM Peak Commuter Period (0800-0900)		PM Peak Commuter Period (1700-1800)	
		Arrival	Departure	Arrival	Departure
Private Vehicle	3.0	111	23	296	1,113
Public Transport and Active Modes (Rail, Bus, Thames Clipper, Walking and Cycling)	N/A	-	-	-	-
Coach	30	0	0	4	17
Drop Off/ Taxi	2.0	1	2	85	124
Total	**100%**	**112**	**25**	**385**	**1,254**

Source: Consultant Calculated

6.4.10. The peak hour two-way flow of 1,659 vehicles is forecast between 1700-1800 in the PM commuter peak in 2038. The forecast two-way flow trip generation in the AM peak is 137 vehicles. There is only forecast to be an increase of 11 vehicles between 2025 and 2038 in the AM peak; this is due to the majority of movements in the AM peak being associated with staff.

6.5 SUMMARY

6.5.1. This chapter provides a summary of the methodology behind forecasting the visitor and staff demand at the London Resort. The visitor demand for all the elements of the London Resort has been provided by ProFun and LDP. The Stakeholder Advisor Technical Document outlines the visitor and staff daily arrival and departure profiles for the London Resort in detail and is provided at **Appendix TA - H**.

6.5.2. The Resort will operate seasonally with the peak occurring during the traditional summer months. The Resort will reach maturity in 2038 when its annual number of visits is forecast to exceed 18 million, as presented in Table 6-1. The 85th Percentile Day will be assessed throughout this Transport Assessment, as outlined it provides peak weekday highway traffic values as well as occurring during the peak operation period at the Resort in July. In 2025 the visitor demand on the 85th Percentile day will be 27,880, this will increase to 36,030 in 2029 following the opening of Gate Two and once the Resort has reached maturity in 2038 on the 85th Percentile day the Resort will accommodate 52,966 visitors.

6.5.3. The staff demand has been based on forecast provided by ProFun. The staff demand will follow the Resort operation with peak staffing naturally occurring during the same time as peak operation. The peak weekday staff levels have been used for the assessments throughout this document, in combination with the 85th Percentile visitor numbers. The site will provide 500 dwellings allocated to staff on-site, that can accommodate up to 2,000 of the staff working at the Resort at any one time. In the interests of a robust assessment, it has been assumed that only 90% of this occupancy is taken up by workers being housed on site.

6.5.4. The total vehicle demand for the two assessment periods (AM and PM peak) has been calculated after taking account of the occupancy factor for visitors and staff together with the modal split. The mode shares used in this chapter are outlined in greater detail in chapter 9. The highest two-way vehicle flow during the commuter peak from the London Resort is 876 in 2025, 1,181 in 2029 and 1,639 in 2038 in the PM peak on the 85th percentile day.

CHAPTER 7

TRIP DISTRIBUTION

7 TRIP DISTRIBUTION

7.1 INTRODUCTION

7.1.1. The London Resort is forecast to be a global destination theme park attracting visitors from across the UK, Europe and the rest of the World. Comparisons with existing major entertainment attractions similar to the London Resort indicate that the home origin of visitors, and their relative distance from site, will directly influence length of stay. It is reasonable to assume that UK Domestic visitors are more likely to be day visitors whereas international guests may stay overnight or combine the visit within another trip purpose, such as visiting London.

7.1.2. In order to assess the impacts of development trips on the highway network accurately, WSP has considered the trip distribution on the day of visit to the London Resort as these trips are considered to have the most significant impact. Visitor's trip origin on the day they visit the London Resort is described as '*day of travel*' origin; it is anticipated that the vast majority of 'day of travel' trips will start and finish within the UK. Visitors travelling from overseas are expected to stay on-site, at nearby accommodation within the neighbouring local authorities or incorporate the visit with a longer trip and stay within London. It is therefore reasonable to assume that visitors from Europe and the Rest of the World's 'day of travel' origin will be within the UK.

7.1.3. This chapter outlines evidence and assumptions that have been used to forecast the distribution of visitors and staff to The London Resort and presents the resultant 'day of travel' trip distribution for each of the assessment years respectively.

7.2 VISITOR TRIP DISTRIBUTION

LDP

7.2.1. LDP has been commissioned by LRCH to complete a market penetration analysis and feasibility study for the proposed London Resort development. A number of assumptions have been adopted by LDP in order for their assessment to be undertaken and to determine the forecast percentage home origin splits for UK domestic and International guests visiting the development in 2025, 2029 and 2038.

7.2.2. International benchmarking of existing entertainment resorts and market share analysis undertaken by LDP indicates that day-visits tend to originate from locations within 120 minutes of the London Resort location, with a significant majority travelling from within 60 minutes. It is also reasonable to assume that all guests visiting the site from beyond 120 minutes, in addition to those travelling from outside the UK, are more likely to stay overnight within 60 minutes of the development.

7.2.3. LDP forecasts that the majority of UK home origin day visitors are expected to originate from within a 120 minutes' drive time (off-peak) radius of the proposed site location, defined as the primary (0-60 minutes) and secondary (60-120 minutes) resident markets. The resident market population is forecast to total approximately 24.2 million people in 2025 who reside within 120 minutes of the Site. People visiting the London Resort, and who live more than two hours' drive time away, are on the basis of the LDP forecasts likely to stay in the area overnight and are therefore considered in the tourist market forecast to total approximately 27.2 million domestic and international tourists in 2025.

7.2.4. Based on the LDP assessment and international benchmarking, the predicted 2025, 2029 and 2038 domestic/international home origin splits that have been adopted for the trip distribution are shown in **Table 7-1**.

Table 7-1: LDP Visitor Origin Splits

Available markets	2025 Visitor origin	2029 Visitor origin	2038 Visitor origin
Primary Resident - those living within 0-60 minutes of the site	37%	30%	24%
Secondary Resident - those living within 60-120 minutes of the site	23%	24%	24%
Domestic Tourist - living more than 120 minutes from site	17%	18%	17%
International Tourists	23%	27%	35%
Total	**100%**	**100%**	**100%**

7.2.5. Based on LDP's market analysis, the visitor profiles adopted for the London Resort site are considered to provide a robust forecast of UK domestic, European and International travel demand. As it is assumed that the domestic profile could generate a greater impact on local transport networks, particularly for road-based travel, this is considered a robust forecast.

TRIP DISTRIBUTION MODEL

7.2.6. To calculate the likely trip distribution for the London Resort on the anticipated first full operating year after Gate One opening (2025) and ascertain the level of visitors' attraction relative to their location, a visitor trip distribution model has been developed using a gravity model. A synthetic trip distribution model has been developed following standard practice and in accordance with guidance presented in TAG Unit M2; the model has been developed using a logit function and is based on LDP forecasting and UK 2011 Census Population data.

7.2.7. The model form, calibration, generalised costs and outputs are discussed and presented in detail within **Appendix TA - N.** The trip distribution model produces very similar results to the LDP projected patterns and is therefore considered a robust assessment of the likely distribution of trips to the London Resort.

HOME ORIGIN TRIP DISTRIBUTION

7.2.8. The distribution gravity model has been developed to ascertain distribution of trips within the UK. In order to calibrate the UK based distribution model, LDP drive time band forecasts for visitors with a UK home origin were factored to represent 100%. Based on LDP market analysis statistics for 2025, 2029 and 2038 respectively, and the UK home origin calibrated gravity model, the overall home origin distribution has been calculated based on the total expected visitors to the site, including those travelling from UK and abroad, and is presented in **Table 7-2**.

Table 7-2: All Visitors Home Origin Distribution

Home Origin	2025 Home origin of All Visitors	2029 Home origin of All Visitors	2038 Home origin of All Visitors
UK - 0 to 60 minutes	37%	30%	24%
UK - 60 to 120 minutes	23%	24%	24%
UK - more than 120 minutes	17%	18%	17%
Europe	15%	18%	22%
Rest of World	8%	10%	12%
Total	**100%***	**100%**	**99%***

*Source: Consultant calculated based on trip distribution model and international origin split. *small rounding errors*

7.2.9. The 2025 visitors' home origin percentages have been taken from the calibrated gravity model whilst 2029 and 2038 splits have been obtained from LDP projections and distributed using the validated 2025 gravity model. LDP analysis presents an increase in international visitors as the Resort progresses towards maturity and as the Site establishes its international reputation. WSP understands that the distribution has been benchmarked against similar attractions.

'DAY OF TRAVEL' TRIP DISTRIBUTION

7.2.10. It is necessary to consider the likely trip distribution on the 'day of travel' to the London Resort considering that a proportion of UK visitors and all international tourists are likely to stay overnight, either on-site or within the local area. Visitors' overnight location is important for the estimation of the trip distribution on the 'day of travel' since assessments and impacts on the highway network will be based on the location of the trip origin on the day, rather than the home origin.

7.2.11. Trips to guest accommodation from home origins form part of a separate trip purpose to existing land uses, such as from their home to a nearby hotel within Kent, and do not form part of this assessment; this section looks at likely visitor origin on their 'day of travel' to the proposed development.

Likelihood of Overnight Stay

7.2.12. To determine the distribution of trips on the 'day of travel' to the London Resort, a number of assumptions have been made regarding the correlation between distance travelled and proportion of overnight stays. The anticipated split between day trips and overnight visits[1] has been provided by Volterra and has been assumed to remain the same for all assessment years.

7.2.13. Analysis undertaken by Volterra[2] is underpinned by the following assumptions:

- All **International Tourists** will stay overnight, either on-site or within a 60-minute drive time radius;
- **Primary Residents**, living within 60-minutes, are day visitors only;
- Visitors travelling from 60 to 120 minutes, **Secondary Residents**, are predominantly considered to be day visitors with a small proportion, 10%, staying overnight on-site or within 60-minutes; and
- **Domestic Tourists**, with a UK Home Origin exceeding 120-minutes, are all considered to stay overnight but broken down as follows:
  - 50% are already staying within London/Kent/Essex as part of a combined trip and will visit the Resort as a 'day trip' from their nearby accommodation; and
  - 50% are making a sole-purpose trip to stay in a hotel on-site, or within 60-minutes.

7.2.14. Applying the visitor profile proportions for 2025, 2029 and 2039 to the likelihood of overnight stay percentages enables WSP to calculate the total percentage of visitors that will:

- stay overnight:
  - either on-site; or
  - within an off-site hotel
- Visit as part of a day trip
  - from a UK Home Origin; or
  - from temporary off-site accommodation (for some domestic tourists)

7.2.15. This analysis, for the 'day of travel' is presented in **Table 7-3**.

Table 7-3: Visitor Day Trip / Overnight Split

Home Origin	2025 (%)		2029 (%)		2039 (%)	
	Day Trip	Overnight	Day Trip	Overnight	Day Trip	Overnight
0-60 minutes	37.04%	0.00%	30%	0.00%	24%	0.00%
60-120 minutes	20.90%	2.32%	22%	2.43%	22%	2.42%
120 minutes+	8.26%	8.26%	9%	9.12%	9%	8.52%
Europe	0.00%	15.12%	0%	17.78%	0%	22.49%
Rest of World	0.00%	8.10%	0%	9.52%	0%	12.04%
Total	**66.20%**	**33.80%**	**61.16%**	**38.84%**	**54.53%**	**45.47%**

7.2.16. In 2025, approximately 34% of total visitors stay overnight and either begin their day of travel at the on-site hotels, thus internal within the London Resort and not generating any additional trips, or the off-site hotels and generating a local trip from within 60-minutes of the site. This percentage increases to 38.84% in 2029, and 45.57% in 2039; this is due to all international tourists forecast to stay overnight and LDP analysis indicates an increase in international tourists as the Resort progresses towards maturity.

Off-Site/On-Site Hotel Split

7.2.17. WSP has undertaken further analysis to determine what proportion of the overnight visitors will stay on-site against those who would use off-site accommodation within 60-minutes of the Resort. Using information from Volterra, WSP was able to determine that:

- in 2025, 28% of visitors with a UK Home Origin and 41% of International Tourists have the London Resort as their sole motivator;
- in 2029, 30% of UK visitors and 41% of International Tourists are sole-purpose visitors; and
- in 2038, it is predicted that 25% of UK Visitors and 41% of International Tourists will have the London Resort as their sole purpose for their overnight stay.

7.2.18. Applying the percentage of sole-purpose visitors to the percentage of visitors staying overnight enables WSP to calculate the percentage of visitors who have the theme park as their sole motivation for staying overnight. It is accepted that whilst cost of stay is likely to be an influence, visitors whose trip is solely motivated by the theme park are more likely to stay on-site within one of the hotels rather than in an off-site in the local area. The proportional split of visitors with the London Resort as their sole motivation has therefore been used to determine the domestic and internal split of the on-site hotel and ultimately calculate the proportion of overnight guests who stay on-site and off-site for each assessment year, by home origin distance band. This analysis is described and presented in full within Section 5.3, Chapter 5 of TN2 – included in **Appendix TA - N**.

Day Trips

7.2.19. Primary residents, living within 60-minutes of site, are all assumed to make a day trip and therefore starting and ending their 'day of travel' at their UK Home Origin.

7.2.20. Volterra's data states that 90% of all secondary residents will have a 'day of travel' origin at their UK home and similarly that 90% of secondary residents will have a destination on the evening of the assessed day, at their UK home. WSP has assumed that a proportion of secondary resident will begin 'day of travel' at their UK home and end their 'day of travel' at either the on-site hotel or an off-site hotel within the local area; the same for the reverse journey.

7.2.21. It is reasonable to assume that on the 'day of travel' a proportion of domestic tourists will have a UK Home Origin, with the intention to stay in a hotel that evening. WSP has assumed the following split:

- 50% of domestic tourists stay overnight;
- 33% of domestic tourists are already staying overnight within 60-minutes as part of a combined trip and will therefore make a "day trip" from their temporary accommodation; and
- 17% of domestic tourists have a 'day of travel' at their UK Home.

7.2.22. All international tourists are expected to stay overnight, on-site or within the local area, and so on the 'day of travel' any day trips are expected to be made from one of the forms of nearby accommodation.

'Day of Travel' Trip Distribution

7.2.23. Applying the likelihood of overnight stay and day trip methodology discussed within this chapter, it is possible to present the full distribution on the 'day of travel' by home origin; this is shown in **Table 7-4** to **Table 7-6**.

Table 7-4: 2025 Visitor Day of Travel Origin

Home Origin by distance	% UK home origin	% local area*	% off site hotel	% on-site hotel
UK- 0-60 minutes	37.04%	0.00%	0.00%	0.00%
UK- 60-120 minutes	20.90%	0.00%	1.70%	0.62%
UK- 120 minutes +	2.75%	5.51%	6.08%	2.18%

Home Origin by distance	% UK home origin	% local area*	% off site hotel	% on-site hotel
Europe	0.00%	0.00%	9.27%	5.85%
Rest of World	0.00%	0.00%	4.96%	3.13%
Total	**60.69%**	**5.51%**	**22.02%**	**11.79%**

*Source: Consultant calculated. *already staying within 1-hour as part of a combined trip, but making a "day trip" from their off-site temporary accommodation*

Table 7-5: 2029 Visitor Day of Travel Origin

Home Origin by distance	% UK home origin	% local area*	% off site hotel	% on-site hotel
UK- 0-60 minutes	30.18%	0.00%	0.00%	0.00%
UK- 60-120 minutes	21.86%	0.00%	1.66%	0.77%
UK- 120 minutes +	3.04%	6.08%	6.23%	2.89%
Europe	0.00%	0.00%	10.30%	7.48%
Rest of World	0.00%	0.00%	5.51%	4.00%
Total	**55.08%**	**6.08%**	**23.70%**	**16.81%**

*Source: Consultant calculated. *already staying within 1-hour as part of a combined trip, but making a "day trip" from their off-site temporary accommodation*

Table 7-6: 2038 Visitor Day of Travel Origin

Home Origin by distance	% UK home origin	% local area*	% off site hotel	% on-site hotel
UK- 0-60 minutes	24.22%	0.00%	0.00%	0.00%
UK- 60-120 minutes	21.79%	0.00%	2.08%	0.34%
UK- 120 minutes +	2.84%	5.68%	7.24%	1.28%
Europe	0.00%	0.00%	17.02%	5.48%
Rest of World	0.00%	0.00%	9.11%	2.93%
Total	**48.85%**	**5.68%**	**35.44%**	**10.03%**

*Source: Consultant calculated. *already staying within 1-hour as part of a combined trip, but making a "day trip" from their off-site temporary accommodation*

7.3 TRIP DISTRIBUTION BY AREA OF RESORT

7.3.1. LDP forecast that the penetration rates for different areas of the London Resort will vary depending on the offer and likely attraction. This section details how the UK Home Origin Gravity Model has been used to develop likely trip distribution for each of the areas of the London Resort.

GATE ONE, GATE TWO AND EVENTS

UK Home 'Day of Travel' Origin

7.3.2. The likelihood of overnight stay statistics and anticipated of 'day of travel' origin assumptions have informed the quantity of visitors that are presumed to be day visitors to the London Resort. These guests will be distributed using the UK Home Origin Gravity Model, with the distance band percentages re-proportioned to represent the day trips percentages shown in **Table 7-4** to **Table 7-6** (shown as % UK Home Origin) for 0-60 mins, 60-120 mins and 120+ mins respectively.

Local Area 'Day of Travel' Origin

7.3.3. LDP determined that all Domestic Tourists, living 120+ minutes from the Site, will stay overnight within 60-minutes of The London Resort. The penetration rates considered those who are already staying within Kent or London anyway as part of a combined trip with another attraction and thus visit the London Resort as a day trip from their temporary accommodation. As the London Resort is unlikely to be the sole-purpose for this overnight stay, the 'day of travel' trips originating from the local area have been distributed using the UK Home Origin Gravity Model – reproportioned to represent 5.51% for 2025, 6.08% for 2029 and 5.68% for 2038 respectively, as shown by the total % local area in **Table 7-4** to **Table 7-6** for each assessed year.

Off-Site Hotel 'Day of Travel' Origin

7.3.4. As part of the DCO application Volterra have prepared a note, to be submitted separately as part of the submission, to consider how many resort guests may stay overnight and where they might stay in order to determine where they arrive from on the day of their visit to the London Resort. Volterra analysis has resulted in a distribution of off-site hotel to Resort travel on a local authority level; including all local authorities within 60 minutes in addition to all London boroughs. Volterra considered three possible scenarios when undertaking their calculations, as summarised in **Appendix TA - N**.

7.3.5. WSP has assessed the impacts of a scenario identified by Volterra where the hotel demand is still constrained by the available rooms in the district – demand that exceeds the available supply of hotel rooms is reallocated to other hotels in the wider area. It also assumes that the local demand is shared with the hotel stock in Thurrock due to the proposed parking and ferry service together with wider connectivity available by public transport. **Table 7-7** shows the distribution of off-site accommodation available in the 60-minute drive radius by relative location to The London Resort.

Table 7-7: Hotel Distribution within a 60 minutes' Drive (including all London) from The London Resort

Area relative to The London Resort	2025 Off-site hotel distribution	2029 Off-site hotel distribution	2038 Off-site hotel distribution
West	8%	6%	5%
East	8%	7%	6%
South	11%	9%	9%
North	10%	12%	13%
London	64%	66%	67%
Total	**100%**	**100%**	**100%**

Source: Consultant calculated using information provided by Volterra

7.3.6. Once the on-site guests have been reduced from the total number of guests staying overnight, the distribution presented in **Table 7-7** will be applied to the remaining proportion of visitors from each market penetration that are forecast to stay overnight.

RD&E ("THE MARKET")

7.3.7. The London Resort includes a Retail Dining & Entertainment zone (RD&E) – "The Market" that lies outside the pay-line and anyone is able to visit. However, most trips to this area are forecast to be cross-visitation from guests already visiting the main theme parks or hotels. In order to assess the transport impact of the RD&E element, it is important to consider only those trips that would not otherwise have been made to the core part of the Resort (Gate One or Gate Two) and are therefore additional trips on the public transport or highway network visiting this element of the Proposed Development. This enables these trips to be identified independently The distribution of these unique trips is demonstrated in **Table 7-8**.

Table 7-8: Home Origin Trip Distribution for RD&E

Home Origin	2025 Distribution	2029 Distribution	2038 Distribution
Residents 0-15 minutes	69%	76%	83%
Residents 15-30 minutes	23%	17%	12%
Residents 30-60 minutes	6%	4%	3%
Residents 60-120 minutes	0%	0%	0%
Domestic Tourists	2%	3%	2%
International Tourists	0%	0%	0%
Total	**100%**	**100%**	**100%**

Source: Consultant calculated using LDP physical planning document

7.3.8. The UK Home Origin gravity model has been used to represent the distribution of primary resident trips and the Volterra off-site hotel distribution has been used to represent the remaining sole-purpose RD&E trips. The full RD&E distribution, combining the primary residents and domestic tourists, can be found in TN2 included within **Appendix TA - N**.

WATERPARK

7.3.9. The Waterpark is being built as part of one of the hotels and therefore the majority of visits to the waterpark will be from guests already staying on-site, and thus internal trips. It is considered that primary residents, living within 60-minutes of the site, might visit the waterpark as a sole-purpose visit.

7.3.10. For each of the assessment years, the UK Home Origin gravity model has been used to represent the primary resident sole-purpose visits to the London Resort. A detailed distribution is included in TN2.

ON-SITE HOTEL DISTRIBUTION

7.3.11. All domestic arrivals and departures will be distributed using the UK Home Origin gravity model for each assessment year, this being representative of the on-site hotel proportion by home origin.

7.3.12. WSP has undertaken research into the methods of travel used to enter the UK and proportioned them based on likelihood of international visitor arrival. It is worth noting that arrivals via Eurostar were discounted from the overall proportions as they are, under normal conditions, able to disembark at Ebbsfleet international and use the people mover to transport to their on-site hotel destination.

7.3.13. A detailed distribution for the on-site hotel, split by domestic and international tourist, is given in TN2.

DAY OF TRAVEL VISITOR TRIP DISTRIBUTION

7.3.14. When the various trip distributions for the various areas of the London Resort are considered, the resultant trip distribution is presented in **Table 7-9** by area relative to the Resort within 60 minutes, for 60-120 minutes and for over 120 minutes. The full day of travel distribution is shown in TN2 in **Appendix TA - N**.

Table 7-9: Trip Distribution on the Day of Travel - By Area Relative to The London Resort

Area relative to The London Resort	% Trip Distribution on the Day of Travel (2025)	% Trip Distribution on the Day of Travel (2029)	% Trip Distribution on the Day of Travel (2038)
UK- 0-60 minutes – West	5%	5%	5%
UK- 0-60 minutes – East	7%	7%	7%
UK- 0-60 minutes – South	10%	10%	10%
UK- 0-60 minutes – North	10%	9%	9%
UK- 0-60 minutes – London	46%	45%	48%
UK- 60-120 minutes	17%	18%	18%
UK- 120 minutes +	4%	5%	4%
Total	**100%**	**100%**	**100%**

Source: Consultant calculated based on various sources as outlined in each previous step.

7.3.15. A comprehensive analysis of visitors' trip generation for the London Resort has been made of home origins and visitors' trip origin on the day of travel based on robust information provided to WSP by Volterra. The day of travel trip generation has been based on the likelihood of overnight stay and the anticipated spread of accommodation relative to the site to ensure the transport assessment considers a robust approach.

7.3.16. **Table 7-9** shows the final anticipated trip distribution on the day of travel for the Resort visitors which shows, in 2025, that more than three quarters (79%) of visitors would arrive from within the one-hour drive radius with around 46% of visitors expected from the London boroughs. The remaining 21%, from areas located at more than 60 minutes' drive from the site are considered to be secondary residents and domestic tourist day guests-travelling from their UK home origin on the day of travel.

7.3.17. In 2029, it can be seen that slightly fewer visitors (77%) would arrive from within the one-hour drive radius with approximately 45% of visitors expected from the London boroughs. In 2038, it can be seen that 79% of visitors would arrive from within the one-hour drive radius with approximately 48% of visitors expected from the London boroughs.

DROP OFFS

7.3.18. It is reasonable to assume that some visitors will be dropped off at the London Resort in a car; WSP has assumed that drops offs are only likely to occur for visitors who reside within 60-minutes of the site and therefore the UK Home Origin gravity model distribution, for primary residents only, will be used to distribute these trips.

7.4 STAFF TRIP DISTRIBUTION

7.4.1. The distribution used for staff trips is primarily underpinned by analysis undertaken by Volterra in their note titled "*London Resort Staff Distribution Note*" (included in **Appendix TA – C**)and analyses Journey to Work (JTW) data available from the 2011 Census. This is still the most suitable and relevant information regarding staff travel patterns in the local area and in other areas containing comparable sites.

7.4.2. JTW analysis was undertaken based on a distance bands and considerations were given to the number of trips attracted, accessibility and relative geographical location to the proposed London Resort when selecting other Middle Super Output Areas (MSOAs) for comparison. Typically, the JTW trip attraction to the local area represents a good method to estimate the likely staff trip distribution for a proposed development. Nevertheless, due to the fundamental difference between the Immediate Area (IA) existing and proposed land uses it is considered appropriate to explore the work-related trip attraction to more comparable sites to the one proposed.

7.4.3. It is accepted that existing commuting patterns to the site ignore the attractive and bespoke nature of working at the London Resort and do not take into consideration the proposals for significant improvements to connectivity north of the river at Tilbury through the provision of a Park and Glide ferry link across the river.

7.4.4. Comparisons have been made between travel patterns to the current site and MSOAs containing Westfield Stratford City Shopping Mall, Thorpe Park and Bluewater Shopping Mall.

7.4.5. Volterra have applied the average distribution of trips among comparator sites to the local MSOAs in proportion to their existing propensity to commute to the IA. The updated trips have been aggregated to local authority level to give a new trip distribution, reflective of staff willingness to travel further to an employment site such as the London Resort.

7.4.6. Before the distribution was finalised, an additional adjustment was made to account for the enhanced connection at Tilbury port (Thurrock) and thus the promotion of Tilbury as a key location for staff arriving by public transport to utilise the ferry service across the river to the pier at the London Resort.

7.4.7. The resultant trip distribution for staff travelling to the resort, calculated by Volterra, can be seen in **Table 7-10**.

Table 7-10: Staff Trip Distribution, Peak Season

Origin	2025	2029	2038
On-site accommodation*	16%	12%	12%
Gravesham	24%	26%	26%
Dartford	16%	17%	18%
Thurrock	8%	9%	9%
Medway	8%	8%	8%
Bexley	6%	7%	7%
Greenwich	4%	5%	5%
Bromley	2%	2%	2%
Southwark	1%	1%	1%
Maidstone	1%	1%	1%
Sevenoaks	1%	1%	1%
Lewisham	1%	1%	1%
Croydon	1%	1%	1%
Canterbury	1%	1%	1%
Lambeth	1%	1%	1%
Swale	1%	1%	1%
Other	8%	8%	8%

**2,000 single units within 500 dwellings, assumed 90% capacity and therefore provides accommodation for 1,800 in all three assessment years*

7.4.8. The proportion of staff associated with 'other' has been distributed equally by WSP between all local authorities within 60-minutes of the London Resort that are not already listed explicitly in **Table 7-10.**

7.5 SUMMARY

7.5.1. In order to calculate the likely trip distribution for visitors to the London Resort and ascertain the level of attraction relative to their location from the site, a trip distribution model has been developed and calibrated using population data from the 2011 Census, grouped by distance travelled from home origin to site.

7.5.2. The Gravity Model has been used to calculate the trip distribution for day visitors travelling from a UK home origin to the London Resort on the day of travel. The Gravity Model has also been used to calculate the distribution associated with visitors whose sole purpose of visiting the London Resort is the RD&E zone.

7.5.3. An off-site hotel distribution model was provided by Volterra and has been used to generate the trip distribution for visitors that are forecast to stay overnight within 60 minutes of site and therefore on the day they visit the Resort, trips are generated from the temporary accommodation to the development. It is accepted that the trips from home origins to temporary accommodation form part of a separate trip origin and therefore have not been considered for the purpose of this assessment.

7.5.4. Likely staff trip distribution associated with te London Resort has been calculated using Journey to Work (JTW) data available from the 2011 Census and has been analysed as the most suitable and relevant information regarding staff travel patterns in the local area and in other areas containing comparable sites.

7.5.5. The trip distribution methodology for visitors is based on:

- LDP market analysis providing the visitor breakdown of UK / Domestic, European and International;

- a detailed review of anticipated visitor home origins for UK visitors based on the construction of a validated trip distribution model;
- analysis of the likelihood for overnight stay of all visitors based on home origin distance to the London Resort and domestic/international overnight visitors' statistics;
- a breakdown of existing temporary accommodation availability in the surrounding area and likely distribution relative to the London Resort; and
- assessment of the likely distribution on the day of travel to the London Resort to ascertain the visitor day trip origin;

7.5.6. Staff trip distribution to the London Resort site has been taken from Volterra's staff distribution note which uses:

- an evaluation of the staff trip distribution based on Journey to Work Data from the most recent data from Census 2011 at the MSOA level;
- appraisal of staff distribution for similar amenities in England with and evaluation of the anticipated London Resort staff distribution based on expected distance travelled by Local Authority in the surrounding area.

7.5.7. The distribution of visitors, recognising the nature and scale of the proposed development site and its location, is forecast to generate a large proportion of visitors with home origins outside the UK; in 2025 approximately 15% from Europe and 8% from the rest of the world. Domestic (UK) visitors are expected to represent just over three quarters (77%) of overall visitors.

7.5.8. The forecast distribution and overnight accommodation represent a significant factor in the distance and distribution of trips to the development.

7.5.9. Using the likelihood of overnight statistics outlined in this chapter, it is assumed that all visitors travelling from a home origin outside of the UK will be overnight guests. Domestic tourists are equally likely to be day visitors and stay overnight and a small proportion of secondary residents will also decide to stay overnight due to the unique offering at the London Resort. It is therefore expected in 2025 that 34% of overall visitors will stay overnight either on-site at the site, within a 60-minute radius in one of the neighbouring local authorities or in London.

7.5.10. Combining the day visitors and overnight guests travelling from nearby accommodation, it is possible to determine a final day of travel trip distribution which is considered to represent a robust assessment of the impacts of these trips on the local highway network.

7.5.11. Trip distribution of trip origins/destinations on the day of travel therefore contemplates the proposition of visitors that are likely to stay in the region either before, after or before and after their visit to the London Resort. With overnight stays considered, a 'day of travel' trip distribution is considered and forecasts that over 79% of visitors will begin or end their trip in nearby locations (76% in 2029), up to 60 minutes' drive from the Resort site, with approximately 42% travelling from the London Boroughs (40% in 2029). The effect on UK and local tourism will be considered as part of the DCO application where the travel distribution forecasts maybe reviewed as part of a sensitivity test if necessary.

7.5.12. In a separate analysis, the staff trip distribution has been assessed. The analysis of Journey to Work (JTW) data to Swanscombe resulted in mainly local trip origins for staff. Comparisons with trip distributions for UK sites which exhibit some similarities suggest that staff may travel from slightly further afield to work at the London Resort.

7.5.13. The Swanscombe staff trip attraction has been adjusted based on average distance travelled to comparable UK sites and populations within the region using UK census statistics. As a result, the expected distance to be travelled by staff will increase compared to the existing journeys to work shown by the Swanscombe JTW census data. The resultant staff trip distribution suggests that 52% of the staff to The London Resort will reside within 10km from the site.

7.5.14. TN 2: Trip Distribution is included in full within **Appendix TA - N.**

CHAPTER 8

MODE SHARE ANALYSIS

PUBLIC

8 MODE SHARE ANALYSIS

8.1 INTRODUCTION

8.1.1. The London Resort will experience varying mode shares throughout its operation and at different times of the year. As such, fixing a mode share becomes complicated as many variables influence travel choice. One of those variables is the design and availability of parking at the site itself.

8.1.2. **TN3** was prepared to set out in detail to the relevant stakeholders, the forecast mode shares associated with visitors to The London Resort, and the likely transport modes adopted by staff. **TN3** is attached to this TA in **Appendix TA - O**.

8.1.3. TN3 focused on calculating the mode shares based on a worst-case vehicle scenario, assuming the designed car parks are at full occupancy. This approach was updated compared to previous versions following comments from KCC and HE in 2017, where a worst-case approach (in terms of vehicle numbers) was requested. As set out below, further assessments have been undertaken to build up the evidence base on the potential mode shares that could be adopted.

8.2 RESEARCHING VISITORS AND STAFF MODES SHARES

8.2.1. As set out in TN3, an extensive review of existing resorts both in the UK and internationally, alongside other major attractions have been undertaken to gather an understanding of the likely mode shares experienced at each site. It is worth noting that no single site has demonstrated travel characteristics or travel options that are fully comparable to the London Resort proposals, however the information does provide a useful indication and summary of travel choice.

8.2.2. During the review it was clear that there are a number of variables that determine and influence the travel choices used by visitors to each site. The availability of an inter-connected public transport network, especially for sites within London, would lead to a lower private car mode share, which is to be expected. Conversely, those sites which had a limited travel choice relied heavily on private car travel to get visitors to and from the site.

8.2.3. Due to the location of the London Resort and its connections to rail, water and the road networks in the vicinity there will be a large contingent of visitors travelling to and from London. It is therefore prudent to acknowledge the travel choices available for London based travel and apply different mode shares to those visitors travelling elsewhere from the UK. As part of the research undertaken in TN3, a review of the likely mode share for London based travel has also been extracted, which will be applied to the London Resort visitors travelling from that location.

8.2.4. For the purposes of modelling and understanding potential impacts on the network, we have to assess a scenario that is robust and defendable. It is also acknowledged that private vehicle travel remains high in terms of propensity for choice of travel, however, as can be seen in cities already, the availability of other modes, including shared mobility has resulted in differing uptake and use by residents, visitors and staff across various projects.

8.2.5. Traditionally, transport planning methods may look to adopt a fixed mode share, then design certain elements in reaction to the numbers generated. This approach is normally based on supporting data on how people travel now at sites that match the proposals, and not necessarily how they would travel given a set of fixed parameters.

8.2.6. To assess the London Resort at this stage, an alternative methodology was adopted that seeks to use supporting data where it can, in combination with the development designing in deterrence from over-reliance on private vehicle use.

8.2.7. This seeks to ensure that the London Resort is resilient to current travel patterns but also provides enough flexibility when looking at the emerging Future Mobility megatrends and proposed technologies / services that could be adopted through the Resort's timeline. TN4 reviews these trends as well as the mode shift opportunity – or the estimated range of visitors that could access the site by modes other than private vehicle. TN4 (**Appendix TA - P**) estimates the number of people that could arrive by active travel, direct local bus services, river and rail. The mode shift opportunity identifies a range of mode shares – with actual mode share determined by factors such as car parking availability and pricing on-site, ticketing strategies and other behavioural change initiatives

8.2.8. This approach is also in response to KCC and HE enquiries on mode shares adopted in previous versions of the analysis and reports in 2017. A separate stakeholder comment response document is also being prepared to assist in providing further information on those matters.

8.2.9. The combination of design, plus variability across the year will result in the site experiencing shifts in mode share and percentages.

8.2.10. It is acknowledged that during a low season period, there may be less parking demand, which in turn could result in visitors using their car to a higher level compared to peak season (where the car parks may be at capacity and cannot be used beyond a certain level). However, it is important to note that the demand is relative to the total visitors (and therefore total cars) which would be less too. As set out in the Transport Demand Management Plan, should visitors wish to park on site, it will be required that they will need to pre book this as part of their trip to the Resort.

8.3 UPDATES FOLLOWING CONSULTATION

8.3.1. Draft versions of the Technical Notes (TN1, TN2, TN3 and TN4) were issued to stakeholders for their review and consideration. Feedback was received and comments, where possible, have been incorporated into the updated reports.

8.3.2. Alongside comments received, meetings were held with consultees, including KCC and HE to discuss related items, such as trip generation / modal share / assessment methodologies and modelling. These meetings have assisted in providing explanation and justification on the assessment methodologies used to date.

8.3.3. Pertinent comments to TN3 relating to mode share and associated modal calculations have been summarised in more detail within an updated version of that TN, attached to this TA at **Appendix TA - O**. A summary of the comments received is provided below to reflect those comments related to mode share and associated analysis. Also provided is a response on the points raised by Stakeholders and where within the Application material, this has been responded to:

- comments were received on the **Mode Share Methodology**; this outlined whether travel costs and times should be taken into consideration for different travel modes from different locations in order to validate any mode share proposed for the Resort. Additional comments were received that suggested that any mode share calculation should also consider the public transport costs and door to door journey times:
  - it is acknowledged that a traditional modelling approach typically includes travel costs and times to assist various mode uptake, however, the development is not a typical attraction. There is a lack of evidence for a cost of travel approach for a leisure use / international venue such as the proposals. Users will be less cost sensitive compared to commuters for example, as the visit will not be a frequent occurrence;
  - further information on costs and resulting impacts are shown in the relevant updates in TN4 – Current and Future Mobility (**Appendix TA - P**). TN4 has looked at the sensitivity of users to mode shift from various distributions. Alongside this, the Travel Demand Management Strategy (**Appendix TA - AC)** sets out how the site will consider measures to improve attractiveness of modes, this could be measures such as subsidising the cost of Public Transport for visitors or other ticketing strategies.

- **London Private Car Mode Share**; Queries were raised over the methodology for selecting the car mode share percentages for visitor arrivals from London. The appropriateness of a blanket car mode share for locations across London was raised.
  - Further information and analysis on the London private car mode share, including disaggregation by Inner and Outer London Boroughs has been provided in Section 5.4 of TN3.
- **Staff mode share**; comments were made on the mode share for employees and that they may be higher. It was also raised that the staff car mode share, will need to be supported by a range of sustainable travel incentives and car management measures, to be set out within a the TDM Plan:
  - it is noted that the staff mode shares represent a forward-thinking approach to staff private vehicle use. However, a site of this international importance will require staff, including senior level staff and executives to lead by example and prioritise use of public transport over private vehicle. Measures will be put in place, such as only allowing staff parking permits to those who can demonstrate car sharing, or for disabled workers. The low use of private vehicles will also be included and managed through staff contracts:
  - further to this, the sustainable travel incentives and management schemes are set out within the Travel Demand Management Strategy. Staff coaches for example will be dependent on staff origin and demand for Public Transport, which will be picked up in detail in the Travel Demand Management Strategy and Public Transport Strategies; and
  - TN4 – Current and Future Mobility, Travel Demand Management Strategy and Public Transport strategy (bus and rail) detail how the other modes could accommodate demand.
- **Public Transport Mode Shares**; Comments received outlined that the public transport scenarios need to be sufficiently robust and evidence provided on how this is going to be achieved.
  - TN4 – Current and Future Mobility (**Appendix TA - P**) and the Rail Strategy (**Appendix TA - U**) and the text below has updated the assessments and provided further evidence on this.
- How are vehicle trips which are **drop off trips** counted? It was noted that the calculations did not explicitly identify the vehicle trips which are drop-off's including ride share and taxis:
  - a drop off/ Taxi mode share has been produced to remove the risk of undercounting vehicle movements. This is discussed in summary in Chapter 6 and in more detail within TN1 - Trip Generation; and
  - the design of the car park on site has incorporated significant drop off area (in both northern and southern – main resort car parks).
- **JTW data.** It was mentioned that it may be helpful to review the use of Journey to Work data from the 2011 Census to show the existing mode share for the local area:
  - further information on JTW data has been set out in TN3. It is however, accepted that current mode share trends are unlikely to reflect the proposed development and as such the information in TN4 – Current and Future Mobility, Travel Demand Management Strategy and Public Transport strategy (bus and rail) will set out how trends may change.

FURTHER ASSESSMENTS

8.3.4. Following the consultation feedback, additional assessments looking at potential mode shift and resulting demand has been undertaken in **TN4 – Current and Future Mobility** (**Appendix TA - P**), alongside information in the Public Transport Strategy, the TDM Plan and Off-Site Parking Strategy reports. Furthermore, the Travel Demand Management Strategy (**Appendix TA - AC**), provides more information on how certain measures can be adopted at the London Resort. All of these documents provide information and initiatives in promoting sustainable based travel where possible.

8.3.5. The information in TN3 is therefore considered as the Base mode shares, utilised as the worst-case assessment of vehicle demand. TN4 has taken this Base mode share information but has added more in-depth analysis considering costs, travel times and accessibility to public transport to ratify the modal share to reflect the specific characteristics of the Proposed Development. This work is the next level of Mode Share assessments – which review variables other than just parking demand. Finally, together with the Events Management Strategy that sets out the measures and strategies that will be adopted to influence visitor travel to and from the site, these strategies influence what modes visitors use and would be the final level of potential mode profiles at the site.

8.3.6. **Plate 8-1** sets out the updated Mode Share strategy.

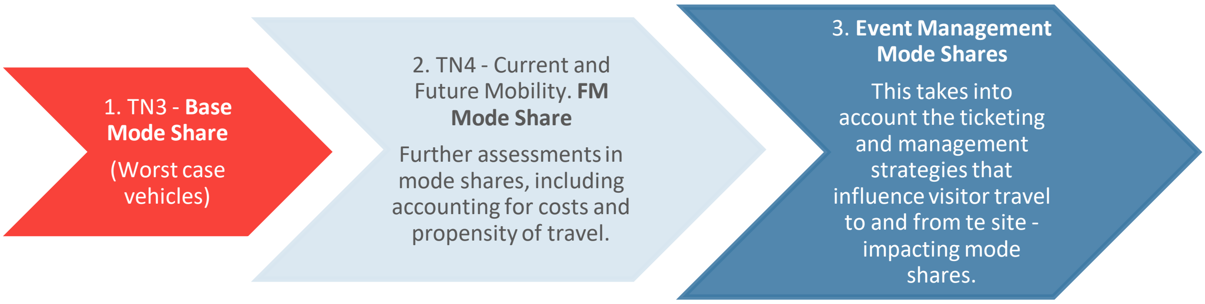


Plate 8-1: Mode Share Assessment Updates

8.3.7. Taking each level of analysis in turn, this section presents a summary of the findings.

8.4 BASE MODE SHARE (TN3)

8.4.1. TN3 looks at two approaches, one focusing on the worst case for vehicles - assuming full occupancy of the car and coach parks and the other reviewing the ranges of mode splits on the other modes that could be utilised by visitors, taking the worst-case vehicle approach into account. The first scenario is considered as a base mode share assuming full uptake of vehicles and parking spaces.

8.4.2. TN3 outlines an approach to determining how people may travel to the site and how this then feeds into TN1 and TN2 to determine the potential mode shares and impacts on local and strategic road networks, as well as non-vehicular travel, such as buses and rail. In determining those impacts, there are two main focuses

- **SCENARIO 1** - Assessing worst case road capacity for the Transport Assessment – **vehicle focused; and**
- **SCENARIO 2** - Assessing the demand on rail, buses and sustainable travel – **other modes focused**

8.4.3. Based on the available data and by constraining the numbers of those arriving by vehicle (as the car parking is a fixed number) an estimated mode share for non-London and London based travel can be calculated.

8.4.4. To align with the extensive transport modelling required to assess the impacts of the London Resort, this assessment is primarily focused on vehicle travel, however, it highlights the potential of public transport (other modes) and transport choice for visitors and staff. It is expected therefore as operational agreements become secured and developed, other mode shares, such as coach travel or rail could differ from those set out below.

8.4.5. The mode shares have been cross-referenced against the existing sites (such as Disneyland Paris, Thorpe Park, Warner Brother Studios etc.) to ensure that they remain appropriate for the London Resort.

Scenario 1 - Worst Case Private Vehicle

8.4.6. As there is suitable data available to ascertain the likely private vehicle mode share from London visitors, this will be used to determine the number of vehicles attracted from London alone. Knowing the number of vehicles from London enables WSP to identify the level of vehicles and therefore a mode share for visitors originating from non-London origins. TN2 outlines the distribution of visitors and provides the information required to ascertain the split between London and Non-London visitors. Removing the London visitors by car can allow the calculation of the general private vehicle mode share. **Plate 8-2** outlines the assessment approach in a flow diagram.

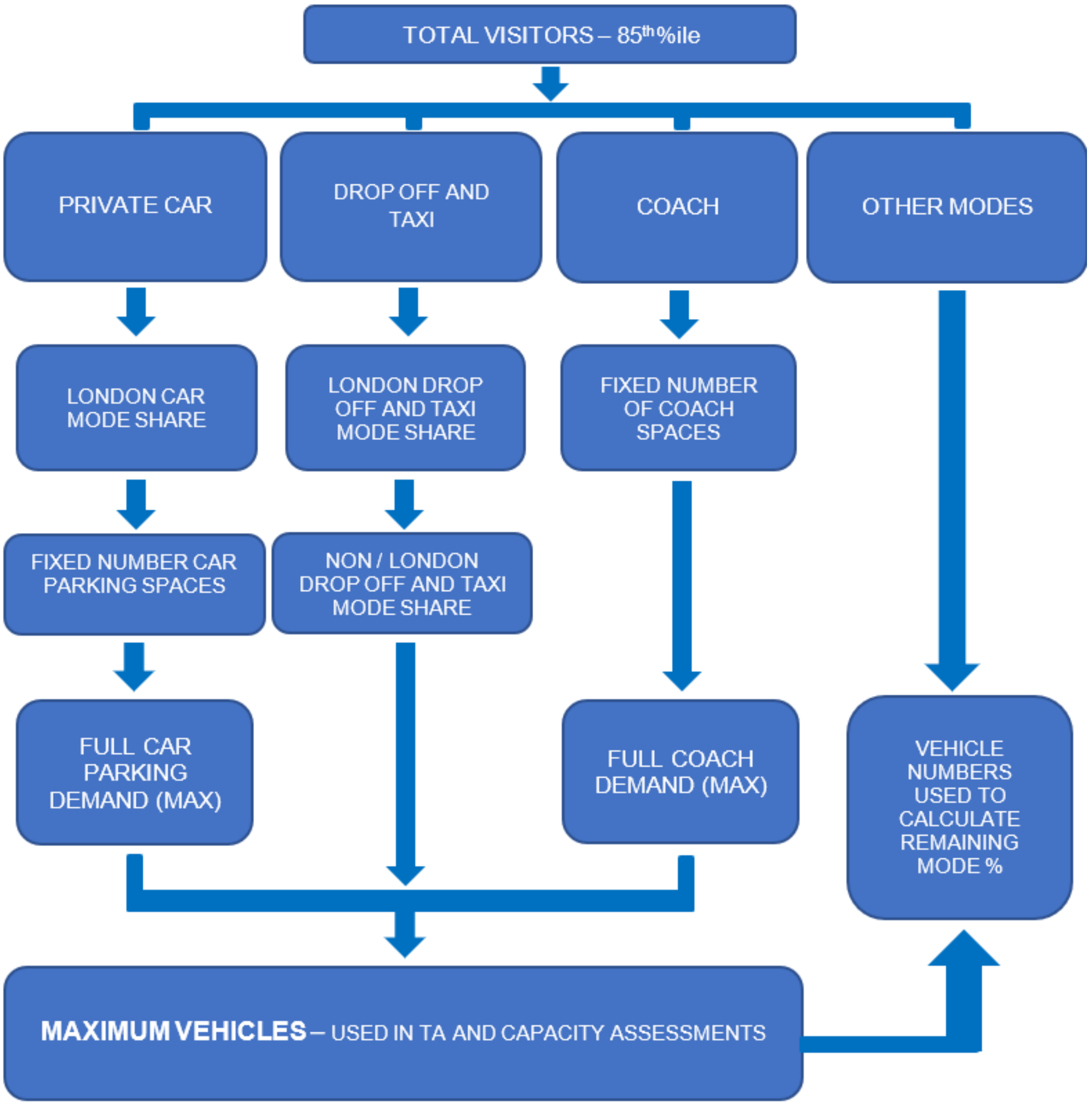


Plate 8-2: Base Mode – Scenario 1 (Worst Case) Assessment Flow Diagrams

8.4.7. Determining an exact modal share across all travel types is a complex undertaking that has many variables. the London Resort will not always see the same levels of demand throughout the year, so seasonality will play a role in determining the availability of car parking spaces for example. Coupled with this, the London Resort will be able to influence users through ticketing strategies, with potential collaborations with other providers, such as rail and public transport companies.

8.4.8. The forecast visitor demand has been developed by ProFun, based on commercially sensitive data and has been used to determine a robust forecast of the likely visitor footfall as discussed in TN1.

Car Park Accumulation

8.4.9. Using the arrival / departure profiles for the Resort elements, an accumulation profile for the visitors traveling by private vehicle has been created. This is shown in more detail within chapter 12 of this TA, as this profile is based on the developments parking strategy for the site.

8.4.10. Applying the accumulation profiles alongside the maximum car park occupancy, a simple calculation of; subtracting the London vehicles from that number allows an understanding of non-London vehicular traffic. Once the private vehicle numbers from London are known, subtracting that from this total creates the maximum accumulation number for non-London trips. This exercise is shown and summarised in TN**3**.

Coach Parking

8.4.11. The max parking for Coach is 200 spaces. As shown above an occupancy of 30 visitors per coach has been used to calculate the vehicles required to fill this parking (or create the maximum number of vehicles on the network if the max parking is not met). If the private vehicles mode share results in a high percentage to create a maximum car park occupancy, then obviously people will not travel via coach, so as shown in the calculations there are instances where coach travel does not result in the maximum parking level being reached.

Scenario 1 – Mode Shares

8.4.12. **TN3** outlines how the Private Vehicle London mode share has been calculated for Inner and Outer London Boroughs.

8.4.13. Following consultee feedback, further evidence and analysis has been undertaken to justify the assumptions adopted previously. Based on a further review of information, accounting for international tourists and incorporating taxi and uber use, it is still considered appropriate that the final mode share for London Visitors will be similar to that outlined in the 2019 Great Britain Day Visit data for London.

8.4.14. The analysis has also been updated to consider Taxi and Drop off usage, which has also been applied to the distribution analysis. As a result, **Table 8-1** presents the Private Vehicle and Taxi / Drop off London mode share that has been adopted in the analysis.

Table 8-1: Private Vehicle and Taxi / Drop Off - London Mode Share used in the analysis

Mode	2025 Total %	2029 Total %	2039 Total %
Inner London – Taxi / Drop Off	1.7%	1.6%	1.8%
Outer London – Taxi / Drop Off	2.8%	2.9%	3.1%
Inner London – Private Vehicle	4.8%	4.3%	3.7%
Outer London – Private Vehicle	22.9%	22.9%	20.5%
TOTAL	**32.1%**	**31.7%**	**29.1%**

8.4.15. The resulting London vehicle mode shares are similar to those presented in the draft version of TN3 issued to consultees previously in June 2020 but provides a greater level of detail. The inclusion of taxi and drop off vehicles ensures that these vehicles are both accounted for specifically in the design of the car park.

8.4.16. The underlying analysis in TN3 applies the respective arrival and departure profiles for each of the resort elements e.g. Gate One, Gate Two etc. By then applying the geographical split to visitors, as set out in TN2, the total number of visitors to each resort element can be calculated. Reviewing the accumulation profile for the vehicles from London and comparing against the maximum number of parking spaces at the London

Resort, the difference must relate to vehicles coming from Non-London locations. This mode share can then be checked against the total parking provision at the site.

2025, 2029 and 2038 Assessment Years – Visitor Base Mode Shares

8.4.17. TN3 sets out the process of reaching the base mode shares across the various day types and assessment years. For ease of review, **Tables 8-2, 8-3 and 8-4** summarise the worst-case mode shares for the 2025, 2029 and 2038 years.

Table 8-2: 2025 – Base mode shares – Total Site (Visitors)

2025	85th Percentile Day		Peak Day		Average Day	
	Arr	Dep	Arr	Dep	Arr	Dep
Private Vehicle (Max)	56.6%	56.7%	43.4%	43.3%	67.5%	67.5%
Coach (Max)	20.1%	20.0%	18.3%	18.4%	10.7%	10.7%
Other modes / PT (Min	19.6%	19.6%	34.4%	34.5%	19.7%	19.7%
Drop Off / Taxi	3.7%	3.7%	3.8%	3.8%	2.1%	2.1%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

8.4.18. In 2025, the average day shows a private vehicle percentage of approximately 68%. This reflects the lower visitor demand, enabling higher vehicle usage to reach maximum parked vehicles on site. This results in the other modes reducing accordingly.

8.4.19. As shown on the 85th percentile and peak day, the private vehicle mode share reduces as parking demand gets filled up quicker due to the higher volumes of guests. The remaining visitors are then split across coach, other modes and to a lesser extent drop off and taxi.

8.4.20. **Table 8-3** shows the same summary, but for the 2029 future year.

Table 8-3: 2029 – Base mode shares – Total Site (Visitors)

2029	85th Percentile Day		Peak Day		Average Day	
	Arr	Dep	Arr	Dep	Arr	Dep
Private Vehicle (Max)	64.8%	64.8%	51.6%	51.6%	67.2%	67.2%
Coach (Max)	8.8%	8.8%	14.7%	14.7%	13.9%	13.9%
Other modes / PT (Min	24.0%	24.1%	30.0%	30.0%	16.9%	16.9%
Drop Off / Taxi	2.3%	2.3%	3.7%	3.7%	2.0%	2.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

8.4.21. 2029 shows a similar pattern to 2025, albeit with higher vehicle percentages compared to the previous years across the three days. The analysis continues to demonstrate that once car parks become full, there is a need for visitors to utilise other modes, primarily public transport options. **Table 8-4** below shows the 2038 base mode shares across the day types.

Table 8-4: 2038 – Base mode shares – Total Site (Visitors)

2038	85th Percentile Day		Peak Day		Average Day	
	Arr	Dep	Arr	Dep	Arr	Dep
Private Vehicle (Max)	59.2%	59.2%	45.8%	45.8%	62.9%	62.9%
Coach (Max)	8.2%	8.2%	9.7%	9.7%	9.4%	9.4%
Other modes / PT (Min	28.8%	28.8%	40.6%	40.6%	25.1%	25.1%
Drop Off / Taxi	3.9%	3.9%	3.9%	3.9%	2.6%	2.6%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

8.4.22. As with the 2025 and 2029 years, the 2038 analysis demonstrates that calculating the maximum use of the car parks results in private vehicle mode shares that are comparable to existing resorts. As shown on the Peak day, the higher visitor demand results in the car parks being utilised at approximately 46% mode share. The remaining visitors are then forecast to travel on other modes.

8.4.23. The analysis is a useful exercise in showing the base position if the maximum amount of car use and parking is seen on site.

8.4.24. LRCH and The Resort are promoting the use of sustainable transport beyond these levels and are expecting, especially as future trends emerge towards active travel, to see these private vehicle modes reduce. For the purposes of the modelling exercise however, the use of these mode shares is deemed as a robust exercise.

Scenario 2 - Worst Case Public Transport

8.4.25. For the purposes of calculating a starting point of determining what other modes could be used – the maximum vehicle percentages in Scenario 1 were reviewed and the resulting potential percentage available for public transport use can be ascertained.

8.4.26. Day to day variation is difficult to predict, and we do not consider it best practice to set a single definitive mode share to any public transport mode to then prepare the corresponding transport strategy. Instead, the base mode shares were used initially, but further analysis applied that begins to calculate the ranges in uptake and how changes in one public transport mode could impact upon the others. **Section 8.5** below discusses this in more detail.

Base Mode Share - Staff

8.4.27. Staff will adopt a different travel pattern to visitors, and as shown in TN1 will arrive / depart from the site predominantly outside of the main visitor peak movements. Alongside this, staff are likely to adopt a different mode share choice to suit the available options and timings.

8.4.28. The London Resort will have a 500 space dedicated staff car park. It is also envisaged that other measures are likely to be implemented to aid in staff travel choices, helping to promote sustainable modes where possible through various initiatives. LRCH is committed to only allowing parking on site for those car-sharing and therefore the relevant mode shares are based upon an occupancy of 2 people.

8.4.29. Adopting the same methodology, of using the car park number as a constraint to determine the mode share for staff, it is possible to calculate the numbers across the various day types. **Table 8-5** shows the resulting private vehicle mode share for staff.

Table 8-5: Base Staff Modal Share for Private vehicle

Year	Day Type	Private Vehicle (Car Driver)
2025	Average Day	25.8%
	85^{th} ile	25.8%
	Peak Day	20.1%
2029	Average Day	18.2%
	85^{th} ile	19.1%
	Peak Day	14.5%
2038	Average Day	18.2%
	85^{th} ile	17.3%
	Peak Day	13.8%

8.4.30. As a result, a base forecast of 14% to 26% for Private Vehicles for staff has been calculated. The London Resort site will look to capitalise on nearby populations to source local work staff, which will be combined with the staff accommodation on site to minimise the need for car use.

8.5 FUTURE MOBILITY BASELINE MODE SHARES

8.5.1. The assessment for the other modes of travel largely focuses on what accessibility to public transport and active travel is feasible for those visiting the London Resort. A separate report, TN4 has reviewed the future mobility and accessibility to public transport and active travel has been compiled to provide further evidence on the options available.

8.5.2. TN4 includes a summary of the:

- megatrends analysis and technology timeline affecting future mobility;
- mosaic analysis and summary of Transport for London's Transport Classification of Londoners;
- mode share scenario testing – including methodology and input assumptions;
- car parking and interchange design considerations;
- first mile / last mile mode summary;
- potential incentives to encourage mode shift, and
- soft market testing of potential operators.

8.5.3. To estimate the mode share of the staff and different visitor groups, the Future Mobility team developed a bespoke tool for estimating key mode shares for each person group. The mode share estimation tool calculates the potential baseline mode share for seven unique person groups, across ten modes. The key modes included are private vehicles, non-public transport modes, rail, bus, and active modes.

8.5.4. Using the 2029 future year scenario as an example, a summary of the potential baseline mode shares for staff and visitors are shown in **Plate 8-3** and are:

- private vehicle – 41 to 44%;
- coach – 3 to 6%;
- private hire – 5 to 11%;
- car clubs – 4 to 6%;
- rail / tube – 24 to 28%;
- public bus – 6 to 7%;
- ferry – 1%;
- shuttle – less than 1%;
- walk – 1%; and
- bike / scooter – 4%.

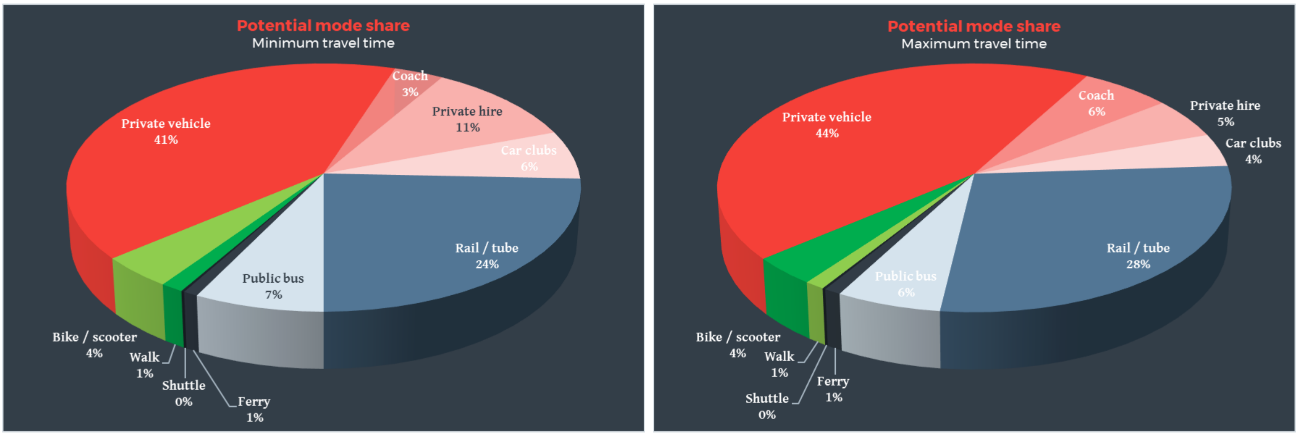


Plate 8-3: Potential Baseline Mode Share

8.5.5. In order to calculate the potential mode share, the tool included a number of inputs, which are shown in **Plate 8-4**. A full summary of the methodology and input assumptions are included in TN4 and summarised below.

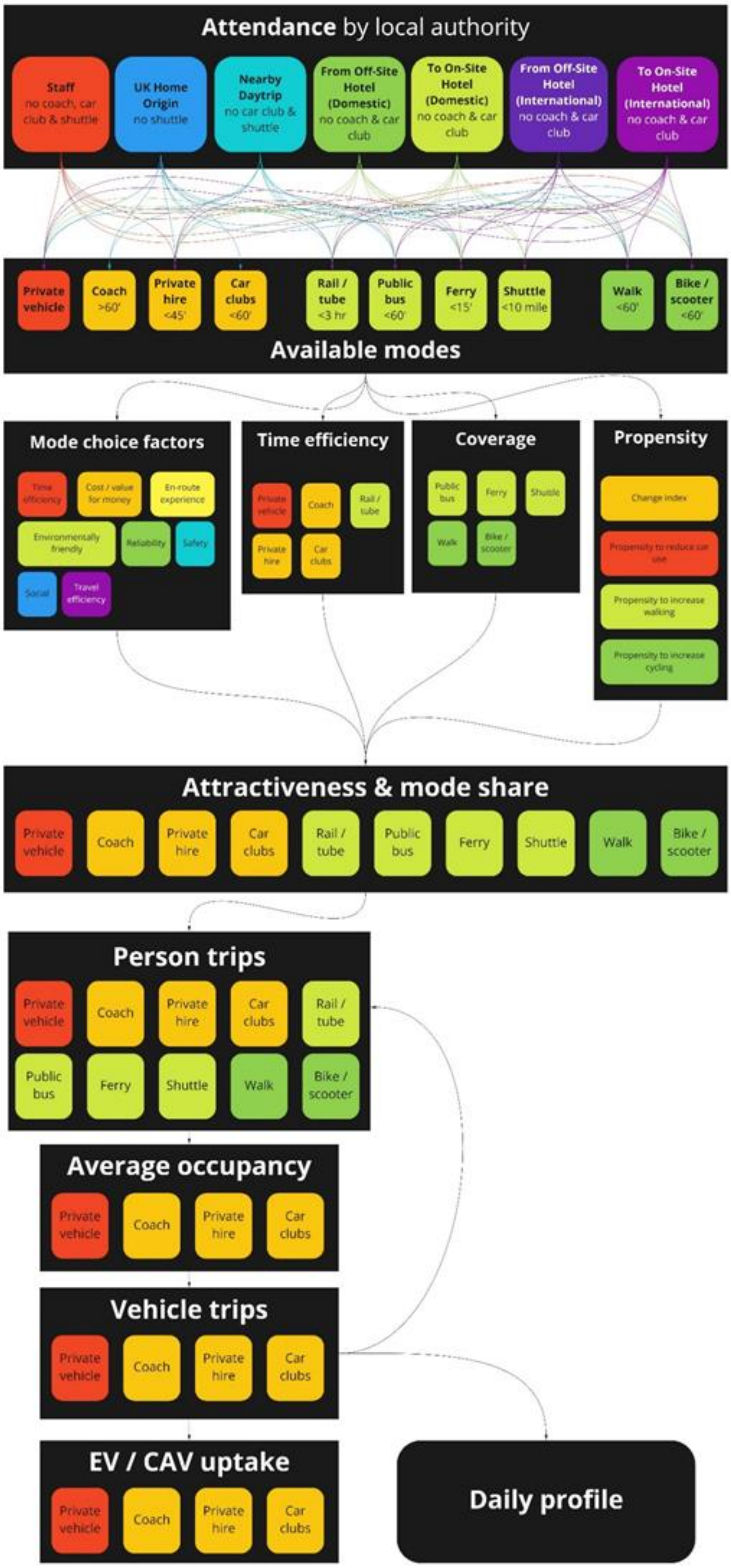


Plate 8-4: Mode Share Tool Methodology and Assumptions

8.5.6. The mode share estimation tool includes the following inputs:

- **Attendance** – by person groups and local authority (Staff, UK Home Origin, Nearby Daytrip, From Off-Site Hotel (Domestic and International), and To On-Site Hotel (Domestic and International);
- **Available modes** – this included a number of time / distances cut-offs, and exclusion by various groups (private vehicle, coach, private hire, car clubs, rail / tube, public bus, ferry, shuttle, walk and bike / scooter);
- **Mode choice factors** – a qualitative comparison against private vehicle (time efficiency, cost / value for money, en-route experience, environmentally friendly, reliability, safety, social and travel efficiency);
- **Journey times** – comparing rail / tube to vehicle travel times;
- **Network Coverage** – a coverage assessment of public bus, ferry, shuttle, walk and bike / scooter coverage within the allowed time bands;
- **Propensity for residents to use Active Travel** (by local authority) – based on Mosaic and Transport Classification of Londoners data;
- **Average Vehicle Occupancy** – as set out in previous sections of this document; and
- **Daily Arrival/Departure Profile** – as set out in previous sections of this document.

8.5.7. These inputs allow the calculation of the following:

- attractiveness & estimated mode share;
- person trips, and
- vehicle trips.

FUTURE MOBILITY – PUBLIC TRANSPORT STAFF TRAVEL

8.5.8. Using the mode share estimation tool, we have estimated mode shares for Scenario 1 – Base case. The methodology and assumptions used within the mode share estimation tool are outlined in TN4.

8.5.9. The modes shares consider the maximum car parking that is provided by the London Resort, which includes 500 staff spaces (1,000 people at an average occupancy of 2). **Table 8-6** displays the resulting estimated mode share of staff trips.

Table 8-6: Staff Mode Share

Mode	Private vehicle	Coach	Private hire	Car clubs	Rail / tube	Bus	Ferry	Walk	Bike / scooter
Staff	10%	0%	20%	0%	22%	30%	1%	4%	13%

8.6 TRAVEL DEMAND MANAGEMENT (TDM) MODE SHARES

8.6.1. The Travel Demand Management (TDM) strategy is attached to this TA within **Appendix TA - AC**.

8.6.2. The TDM Plan for the London Resort outlines a comprehensive and flexible approach to managing the travel demands of key audiences that will travel to and from the Resort. This focuses on travel demands associated with two main groups; Resort ticket holding visitors (visitors) (assumed to include those attending the RD&E) and those employed at the Resort (staff/employees).

8.6.3. Collectively visitor and employee trips will represent much of the total travel demand associated with the resort and therefore managing this demand and positively influencing travel behaviour in favour of sustainable transport options will be important to manage impacts on transport networks and support wider low carbon objectives at the resort.

8.6.4. The over-arching purpose of TDM is to determine specific measures and techniques that can be applied at scale to help optimise the people-moving capacity of travel and transport networks. This has the benefit of helping reduce peak period travel demand that may otherwise present challenges on highway networks or transport services. TDM also has the benefit of proactively promoting sustainable, low carbon forms of transport to reduce emissions from transport and support wider local and national net zero carbon objectives.

8.6.5. Most notably in recent years TDM Plans have been or are being been developed and implemented for:

- large scale sporting events: The London 2012 Olympic and Paralympic Games was subject to an award-winning demand management plan and more recently successful TDM Plans have been deployed for the Glasgow 2014 and Gold Coast 2018 Commonwealth Games as well as the England 2015 Rugby World Cup;
- major disruption projects: Transport for London has TDM Plans prepared for major engineering works with the redevelopment of London Bridge Station being a recent example. Planning for HS2 through the West Midlands is another example of where a TDM plan will be deployed to manage construction disruption.
- area- or corridor-specific programmes: Highways England has developed a national TDM Toolkit and emerging TDM investment plans for sections of the Strategic Road Network. This investment is often developed in partnership with local highway authorities to better manage background traffic growth or add value to major planned highway schemes; and
- Site-specific locations and activities: Major attractions, such as Cardiff's Principality Stadium, have different levels of intervention planned to depend on the nature of the event (sporting, music or other) that is taking place and the volume and concentration of travel demand anticipated.

8.6.6. The TDM Plan includes measures to achieve sustainable behaviour, drawn from a review of international best practice and considering the context and wider transport evidence base for the London Resort.

8.6.7. Those measures will have a positive impact on the travel behaviour of both visitors and staff at the Resort. It is important to note that some of the measures set out could also benefit the wider public, although for consistency – only visitors and staff specific to the Resort have been reviewed further.

TDM – POTENTIAL VISITOR TARGETS

8.6.8. The TDM measures will have varying levels of applicability, dependent on day types, season and future year trends. As such the TDM looks at the mode shares from TN4 (for visitor and staff) and considers where appropriate shifts could occur. The TN4 baseline mode shares provide an initial target as a measure of an acceptable proportion of journeys to and from the Resort by private vehicles. It should be noted that the mode shares in TN4 outlined minimum and maximum mode shares, based on travel time alongside other variables as described in more detail in Section 8.5 above.

8.6.9. Using the 2029 85th percentile scenario as an example, a comparison between the base (worst case) mode shares set out in TN3 against the mobility baseline in TN4 has been presented. Also, alongside these are the aspirational targets that the measures in the TDM will look to achieve over time.

TN3 Base	Modelling (Worst Case Vehicle)
Private vehicle	64.80%
Coach	8.80%
Taxi	2.30%
Other modes	24.10%

TN4 Mobility Baseline	Minimum	Maximum
Private vehicle	49%	53%
Coach	4%	8%
Private hire	9%	3%
Car clubs	8%	5%
Rail / tube	25%	25%
Public bus	1%	1%
Ferry	1%	1%
Shuttle	0%	0%
Walk	0%	0%
Bike / scooter	2%	2%

TDM Future Targets	Aspirational Target
Private vehicle	40%
Coach	5%
Private hire	5%
Car clubs	5%
Rail / tube	30%
Public bus	4%
Ferry	3%
Shuttle	4%
Walk	1%
Bike / scooter	3%

Plate 8-5: Mode share comparison - Visitors, TN3, TN4 and TDM (2029 – 85th Percentile)

8.6.10. It should be noted that the TDM is a flexible document and this set of targets are provided as an intention for The London Resort to aim towards. As shown in TN3 and **Plate 8 - 5** above, what has been tested in terms of vehicles (private vehicle, coach and taxi) within the modelling is higher compared to the TN4 analysis, and the TDM potential modes.

8.6.11. The TDM targets set out a further intention to reduce private vehicle as much as possible whilst promoting sustainable travel options as far as practical.

TDM – POTENTIAL STAFF TARGETS

8.6.12. Similar to the visitors, the TDM presents measures and strategies that are applicable to staff at the Resort.

8.6.13. Following the same exercise, a comparison of the 2029 85th percentile scenario for the base (worst case) mode shares set out in TN3 against the mobility baseline in TN4 has been presented. The aspirational targets that the staff specific measures in the TDM will look to achieve over time are also shown in **Plate 8 - 6** below.

TN3 Base	Modelling (Worst Case Vehicle)
Private vehicle	18.2%
Other modes	81.8%

TN4 Mobility Baseline	Minimum	Maximum
Private vehicle	10%	10%
Coach	0%	0%
Private hire	20%	13%
Car clubs	0%	0%
Rail / tube	22%	37%
Public bus	30%	24%
Ferry	1%	1%
Shuttle	0%	0%
Walk	4%	4%
Bike / scooter	13%	11%

TDM Future Targets	Aspirational Target
Private vehicle	10%
Coach	0%
Private hire	15%
Car clubs	0%
Rail / tube	30%
Public bus	28%
Ferry	1%
Shuttle	0%
Walk	4%
Bike / scooter	12%

Plate 8-6: Mode share comparison - Staff, TN3, TN4 and TDM (2029 – 85th Percentile)

8.6.14. For staff travel, the TDM would seek to maintain the mode shares as set out in TN4 as far as possible, striking a balance between the various public transport options.

8.6.15. These aspirational targets are not fixed and through monitoring could be updated and reviewed to ensure that the Resort is reacting to best practices and responsive to any issues emerging.

8.7 SUMMARY

8.7.1. To calculate the likely mode shares expected for visitors and staff to the Resort, a number of assessments have been undertaken, ranging from a worst case (in terms of high numbers of vehicles) to those that incorporate travel behaviour as well as other variables, such as cost and travel demand measures.

8.7.2. The Base mode shares set out in TN3 outline what the mode shares could be if the car parking on site was utilised to its maximum. This approach largely ignores any existing travel choices available for non-London visitors and assumes that people will drive where possible. TN3 sets out further assessment of London based trips as it is recognised that the travel options and behaviours from those users are likely to be different from rest of the UK.

8.7.3. The TN3 base mode shares have been used in the modelling for capacity and highway impact assessments as it represents the worst case, and therefore highest demand expected on the site.

8.7.4. TN4 builds upon the work in TN3 but applies further assessment and analysis to look at the likely shift in mode that could occur to visitors and considers the future mobility and accessibility to public transport and active travel. WSP's Future Mobility team has developed a bespoke tool for estimating key mode shares for each person group. The mode share estimation tool calculates the potential baseline mode share for seven unique person groups, across ten modes. The key modes included are private vehicles, non-public transport modes, river, rail, bus, and active modes.

8.7.5. These mode shares have been used in the non-vehicular mode assessments (public transport etc) as they represent the likely uptake in those modes and therefore should be used in the tests against existing capacity.

8.7.6. Finally, a review of the potential and aspirational mode shares that could occur following the implementation of the Travel Demand Management plan has been undertaken. The TDM provides a series of measures for both visitors and staff alike, which will have the goal to reduce reliance on private vehicle use where possible. These targets are set out for information at this stage and will be reviewed as the site develops.

CHAPTER 9

MODELLING METHODOLOGY

9 MODELLING METHODOLOGY

9.1 INTRODUCTION

9.1.1. This Chapter provides an assessment of the forecast impacts of the proposed London Resort on the local and strategic highway network. It was agreed with stakeholders that a combined approach of local junction modelling, microsimulation modelling and a spreadsheet based strategic model derived from existing strategic traffic models would be an appropriate approach for assessing the London Resort impacts.

9.1.2. This chapter has been written to detail the methodology, agreed in principle between key stakeholders, used to develop spreadsheet models, microsimulation models and standalone junction models representative of forecast highway conditions with the inclusion of the London Resort across various assessment years.

9.2 STUDY AREA

9.2.1. The study area is based around key corridors, where it is forecast the London Resort will have highway impacts. These key corridors include the A2(T) / M2, M25, A13 and A1089; the corridors are split north and south of the River Thames. The whole study area has been included in a Strategic Spreadsheet model which utilises link flows as the basis of the assessment. In order to assess the scheme in an appropriate manner, different modelling software has been utilised. **Figure 9-1** presents the entire study area and how each area has been assessed based on the different modelling software utilised including Microsimulation (VISSIM), Individual Junction Assessments and Merge Diverge Assessments.

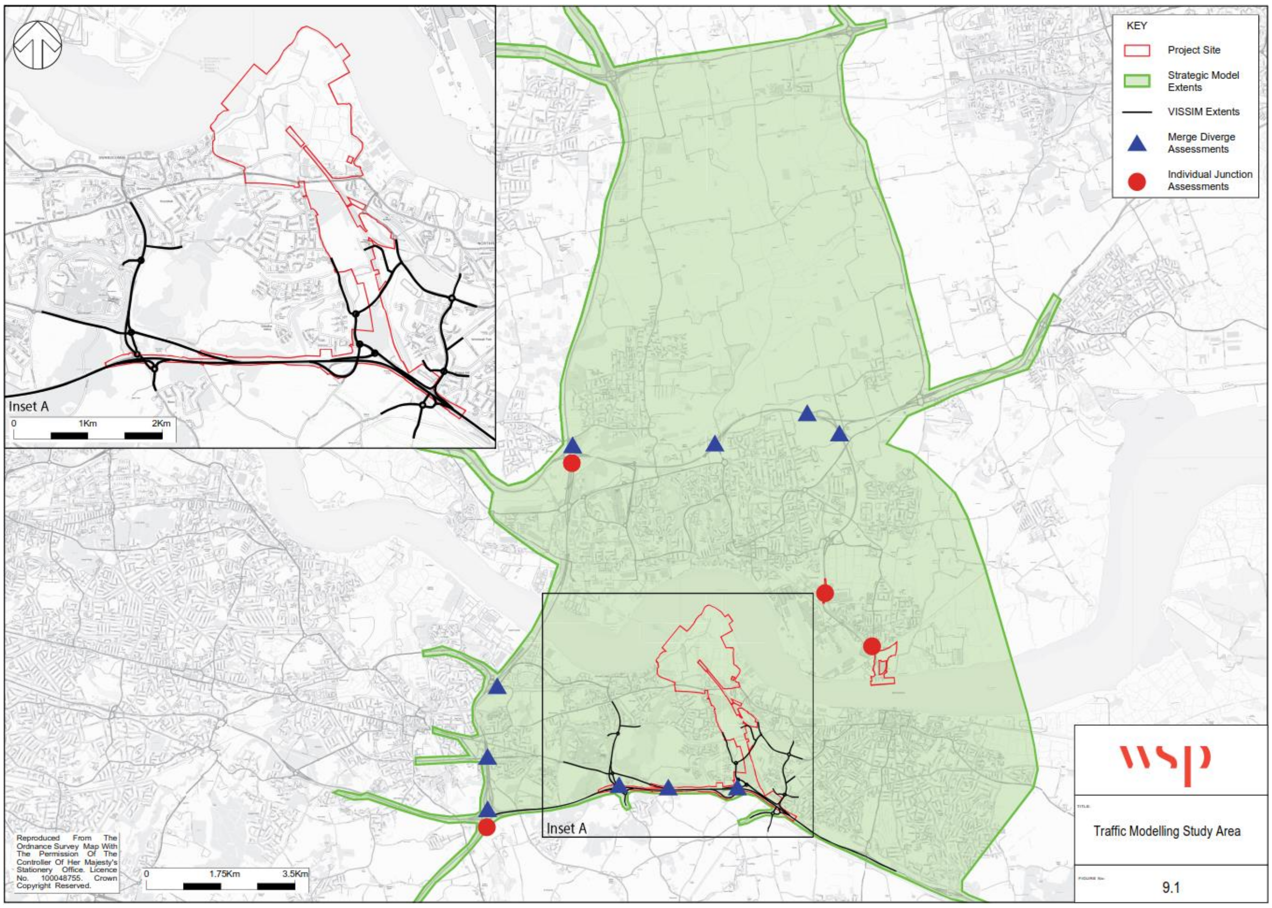


Figure 9-1: Traffic Modelling Study Area

9.3 THE LONDON RESORT DEVELOPMENT FLOWS

9.3.1. In order to generate the London Resort development flows, for input into the spreadsheet-based model, microsimulation model and local junction modelling, the visitor trip distributions (detailed in TN2 by area of Resort) were applied to the total visitor arrival and departure information, supplied by ProFun. The distribution of total vehicles was calculated by applying the private vehicle mode share and occupancy information, calculated in TN3 (**Appendix TA - O**) to the total people distribution.

9.3.2. Following feedback as part of the 2020 consultation, WSP has incorporated a mode share to represent drop offs and associated increase in vehicles on the highway network. It has been assumed that drop-offs would only occur within a 60-minute drivetime radius of the Kent Project Site and that for every two drop offs, one vehicle also departs the site within the same hour – therefore every drop off/pick-up generates 1.5 two-way trips on the network to allow time for arrival, set down/pick-up and departure. These vehicles were combined with the private vehicles to determine a full distribution profile for visitors.

9.3.3. The London Resort proposals that underpin the transport strategy now include the provision of car and coach parking at the Port of Tilbury. Based on UK Home Origin analysis undertaken in 2017, it was determined that 25% of visitor car and coach parking should be provided in Tilbury and that car parks in both Project Sites would fill up and empty at the same ratio. Therefore 25% of visitors using private car or drop-off/pick-up will arrive and depart from Tilbury, with the remaining 75% of visitors travelling in this way utilising the Kent Project Site.

9.3.4. Staff distribution, provided to WSP by Volterra and presented in **Table 7-10**, was applied to the total staff hourly arrival and departure numbers, followed by the private vehicle mode share and expected occupancy to determine the total vehicle staff distribution. It is assumed that all staff who are forecast to drive to the London Resort, will park at the Kent Project Site and therefore all staff private vehicle arrivals and departures are to/from Swanscombe via the dedicated Resort Access Road.

9.3.5. Visitors arriving by private vehicle and being dropped off were combined with staff total vehicles to determine the distribution of total vehicles to the London Resort Kent Project Site and Essex Project Site respectively on the 85th percentile day, for each of the assessment years: 2025, 2029 and 2038. **Plate 9-1** presents a flow diagram detailing the step-by-step methodology for generating the full distribution, by local authority.

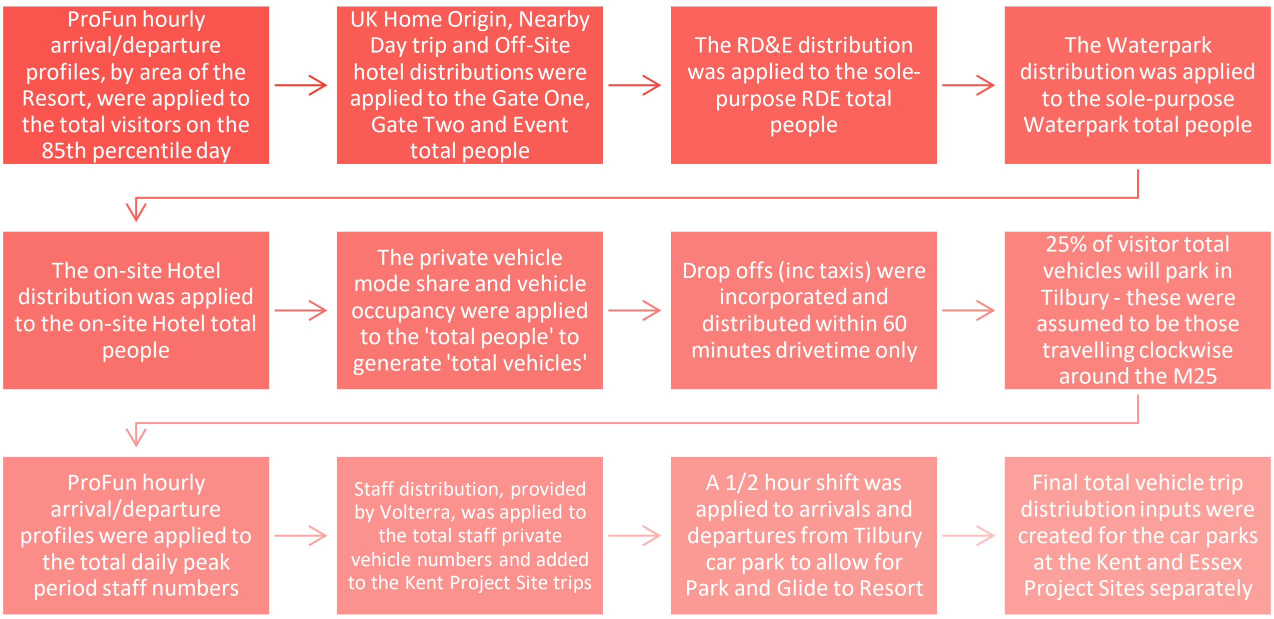


Plate 9-1: **The London Resort, Development Flows Methodology**

9.3.6. The final total vehicle trip distribution, by local authority, for the whole of England, Scotland and Wales is presented separately for the Kent Project Site and Essex Project Site, by assessment year in **Appendix TA - Q.** The summary included in **Appendix TA - Q** refers to visitors and staff arriving/departing by private vehicle only and not those arriving by active or sustainable modes.

9.3.7. Using Google Maps journey planning tools, routes were assigned to each Local Authority to determine the assignment of the origin-destination development trips on the highway network. The provision of 25% visitor car and coach parking in Tilbury means a limited number of vehicles use the Dartford Crossing as it is reasonable to assume only those travelling clockwise around the M25 (or from within Essex) will park at Tilbury and likewise, people travelling anti-clockwise around the M25 (or from within Kent) will park in Swanscombe. This can also be reinforced by parking ticket management practices.

9.4 ASSESSMENT CRITERIA

9.4.1. It has been agreed that the London Resort trip generation should be assessed in the traditional AM and PM peaks:

- AM Peak 0800 – 0900; and
- PM Peak 1700 – 1800.

9.4.2. Whilst these aren't the peak hours of arrival and departure to the Resort, they are considered to be the busiest times on the surrounding local and strategic highway network and assessment in these time periods forms the basis of our assessment.

9.4.3. It is noted that construction workers will primarily arrive between 0600-0800 and depart between 0600-1900 however we have assessed peak arrivals in the AM peak (0800 – 0900) and peak departures in the PM peak (1700 – 1800) as a worst-case assessment.

9.4.4. Using the spreadsheet-based, microsimulation and local junction modelling, discussed in detail within this chapter, WSP has developed and assessed the following scenarios:

- **2023** Construction Scenario (no development);
- **2025** first full operational year after Gate One Opening;
- **2029** Gate Two Opening; and
- **2038** The London Resort reaches maturity.

9.4.5. Traffic flow diagrams have been produced to represent the arrival and departure of visitor and staff trip generation during the AM and PM peak hours, on the 85th percentile day in 2025, 2029 and 2038. These are included in **Appendix TA - R** and have been used to inform the development trips in the spreadsheet-based, microsimulation and local junction modelling.

9.4.6. It is noted that whilst a 2024 year was required in the spreadsheet-based modelling, to help inform the Air Quality assessment undertaken by Buro Happold, the development flows represented 2025 in line with the microsimulation and local junction modelling assessments.

9.5 SPREADSHEET MODELLING METHODOLOGY

BACKGROUND INFORMATION

9.5.1. HE agreed to share modelling outputs from both the A2 Bean Ebbsfleet (A2BE) traffic model and the LTC Area Model (LTAM) as included in a letter dated 19 May 2020. WSP requested modelled traffic flows, split by user class and time period, and the modelled travel times for the area shown in

9.5.2. A Transport Modelling Methodology Technical Note was produced and issued in June 2020 to allow comment and for agreement to be reached with the HE Spatial Planning team that the methodology proposed to assess the London Resort is suitable and technically robust. Confirmation was received from HE that the methodology being used was acceptable in principle.

UNCERTAINTY LOGS

9.5.3. The A2 Bean to Ebbsfleet (A2BE) transport model has a number of committed development and infrastructure improvements included with the model which are shown in **Table 9-1**.

9.5.4. In areas of the EXCEL based spreadsheet transport model which extended beyond the scope of the A2BE model extent (see Figure 2-1) growth from developments north of the River Thames has been included by the use of National Trip End Model (NTEM) growth factors accessed via the TEMPRO programme.

Table 9-1: Development included in the A2 Bean to Ebbsfleet transport model

Developments	Infrastructure
Eastern Quarry (Barton Wilmore)	Lower Thames Crossing (Highways England)
Bluewater Shopping Centre – new tunnel (Kent County Council)	A2 Bean and Ebbsfleet Junction Improvements (Highways England)
Stone Pit I (Graham Simpkin Planning)	
Stone Lodge Complex (BAM Construction)	
Stone Pit II (Barton Wilmore)	
Land West of Springhead Road – Outline (Countryside Properties)	
Land West of Springhead Road – Reserved Matters (Countryside Properties)	
Northfleet Embankment (Keepmoat Homes Ltd)	
Land at Coldharbour Road (Bovis Homes/Persimmon Homes)	

NATIONAL TRIP END MODEL

9.5.5. The DfT maintains the National Trip End Model (NTEM) to establish a common baseline for all assessments for traffic growth in the UK. Growth factors for model flows can be extracted from this model using the Trip End Model Program (TEMPRO).

9.5.6. **Table 9-2** to **Table 9-4** shows the projections within the NTEM model for the number of households and jobs that are anticipated in Thurrock, Dartford and Gravesham for the coming years.

Table 9-2: NTEM Projections for Thurrock

Model Year	2018	2023	2024	2029	2038
Number of Households	70,379	77,125	78,484	85,095	96,764
Change from 2018	N/A	+ 6,746	+ 8,105	+ 14,716	+ 26,385
Number of Jobs	72,361	73,902	74,119	75,107	77,084
Change from 2018	N/A	+ 1,541	+ 1,758	+ 2,746	+ 4,723

Table 9-3: NTEM Projections for Dartford

Model Year	2018	2023	2024	2029	2038
Number of Households	44,452	47,566	48,185	51,228	56,510
Change from 2018	N/A	+ 3,114	+ 3,733	+ 6,776	+ 12,058
Number of Jobs	64,609	66,115	66,311	67,193	68,960
Change from 2018	N/A	+ 1,506	+ 1,702	+ 2,584	+ 4,351

Table 9-4: NTEM Projections for Gravesham

Model Year	2018	2023	2024	2029	2038
Number of Households	43,539	45,870	46,171	48,100	51,536
Change from 2018	N/A	+ 2.331	+ 2,632	+ 4,561	+ 7,997
Number of Jobs	37,409	38,217	38,329	38,841	39,862
Change from 2018	N/A	+ 808	+ 920	+ 1,432	+ 2,453

9.5.7. The A2BE model identifies 12,431 new dwellings across Dartford and Gravesham. This is lower than the combined NTEM projection of an additional 20,055 new dwellings by 2038. This would therefore indicate that the A2BE model is compatible with the NTEM projections, with difference between the identified developments and the NTEM projection made up via background growth.

9.5.8. For Thurrock, **Table 9-5** contains the sites have been specifically identified as part of the London Resort scoping exercise.

Table 9-5: Identified Thurrock Developments

Site Name	Location	Number of Dwellings	Number of Jobs	Notes
Tilbury2 Port Expansion	East of Tilbury	N/A	≈ 500	
Thurrock Flexible Generation Plant	East of Tilbury	N/A	N/A	Environmental statement states that only a limited full-time workforce will be utilised
Tilbury Energy Centre	East of Tilbury	N/A	N/A	Project currently on hold. (November 2018)
Chadfields, Tilbury	Tilbury FC Stadium	112	N/A	
Land West of Lytton Road		140	N/A	
Land adjacent Wood View and Chadwell Road		75	N/A	
Star Industrial Estate		203	N/A	
Land part of Little Thurrock Marshes		161	N/A	
Purfleet Regeneration	Purfleet	2,850	1,795	Final Committee Report 25/04/2019
Total		**3,541**	**2,295**	

9.5.9. Given the nature of the EXCEL based spreadsheet transport model it has not been possible to include development trips specifically as you would within e.g. highway assignment model. The number of new dwellings/jobs identified in the Thurrock district is lower than the projections included within NTEM as shown in **Table 9-2**.

9.5.10. When compared to the NTEM projections contained in **Table 9-2** then the future growth that has been applied to the EXCEL based spreadsheet transport model provides a robust estimate of future traffic growth to the north of the River Thames.

MODEL INPUTS

9.5.11. Data from a variety of sources was used to input into the development of the spreadsheet modelling; a summary of the data sources is included within this section and discussed in detail within the Spreadsheet Modelling Methodology, included within **Appendix TA - S**:

- **A2BE model**: Data was provided for the base year model and for the Do Something scenarios where the upgrades to the junctions have been completed. Whilst LTC does not fall within the A2BE model extent, the demand matrices used in the model were derived from the LTC model, so the later forecast models assume LTC is operational.
- **Thurrock counts**: Traffic counts were undertaken in November 2017 in support of the development of a VISSIM model in the Thurrock area for the Intu Lakeside retail park; counts were undertaken for the AM Peak, PM Peak and Weekend Peak Hour.
- **LTC**: WSP were able to use chapter 9 of the published *LTC Forecasting Report* to extract the projected flows and HGV percentages on the proposed route.
- **Additional Counts**: Highways England maintain a series of fixed traffic count locations across the Strategic Road Network. The DfT undertake regular traffic counts at key locations across the country;

- **National Trip End Model**: Growth factors for model flows extracted from the DfT's National Trip End Model (NTEM) using the Trip End Model Program (TEMPro); and
- **Road Traffic Forecast s 2018**: The DfT released in 2018 an updated version of the Road Traffic Forecast. This forecast contains an assessment of the likely traffic growth and traffic speeds for the next forty years.

BASE MODEL DEVELOPMENT

9.5.12. The extent of the Excel spreadsheet model is Junction 29 of the M25 to the north and Junction 3 of the M25 to the south. Beyond these locations it is anticipated that all resort traffic will be on the strategic road network and would have limited interaction with local traffic. The scope of the model includes the location of the LTC and the connecting link between the A13 / A1089 junction and the M25. The full scope is shown in **Figure 9-2**.

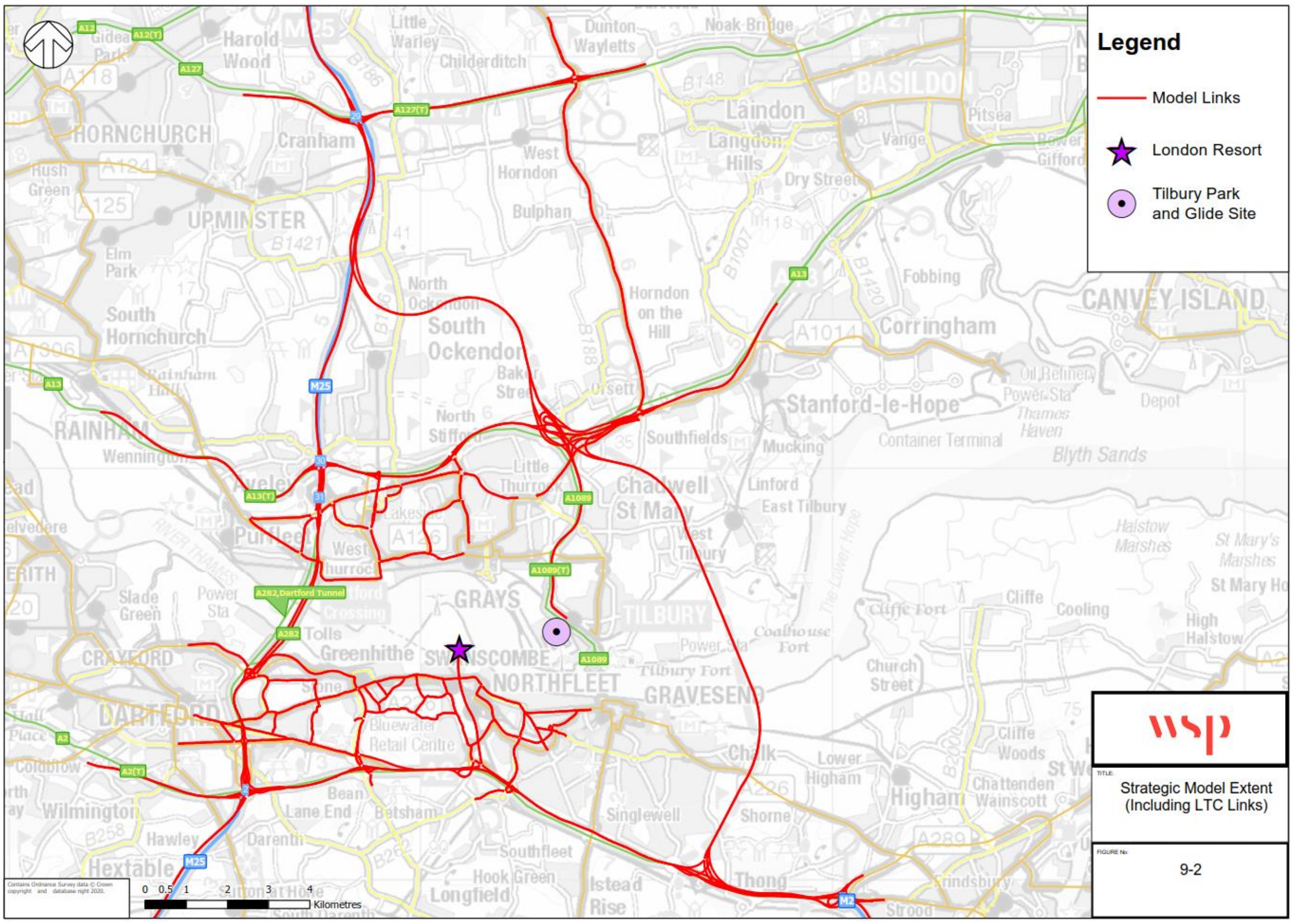


Figure 9-2: Strategic Model Extent (Including LTC)

9.5.13. In coordination with the Buro Happold Air Quality assessment team, a base year of 2018 was chosen. Flows for the AM and PM peaks were extracted from the A2BE model and from the Thurrock count locations for links south and north of river respectively.

9.5.14. As the base year for the A2BE model was 2016 it was determined that base year flows would be taken by looking at the linear growth between the A2BE base year and the first forecast year of 2023. For links unaffected by the Bean and Ebbsfleet schemes these links could be matched and the growth calculated. For links involved within the Bean and Ebbsfleet schemes the closed equivalent links were found to calculate the growth in traffic flows between 2016 and 2018.

9.5.15. Traffic flows from the Thurrock counts were used directly to inform the model flows for most links north of the river.

9.5.16. Links at the junction of the A2 and M2 were outside the scope of the A2BE model. Traffic flows were calculated for this junction using values taken from the HE and DfT traffic counts.

FORECAST MODEL DEVELOPMENT

9.5.17. For each assessment year, a "Do Minimum" and "Do Something" scenario was developed to model the highway impact with and without the London Resort. To account for the impact of LTC, two scenarios were developed for the 2029 and 2038 model years, one with the LTC in operation and one without the LTC in operation.

9.5.18. In order to develop the forecast scenarios 2023 was chosen as a common year to pivot future growth scenarios from because it aligns with the only forecast year from the A2BE model that is unaffected by the LTC, as well as including all the proposed network changes that will result from the Bean and Ebbsfleet scheme.

9.5.19. NTEM growth was used to increase the model flows from the 2018 base to the 2023 forecast year for all links not covered by the A2BE model.

9.5.20. For the 2024 scenario and the "without LTC" scenarios it was no longer possible to use the A2BE model as the forecast scenarios were derived from an LTC model that therefore included the assumption that the LTC was operational. Therefore, for all these scenarios model growth was calculated using NTEM growth factors only.

9.5.21. For the "with LTC" scenarios the A2BE models could be used. The linear trend between the 2026 and 2031 model was used to calculate the 2029 scenario flows. The 2038 scenario flows were taken directly from the 2038 A2BE model year

9.5.22. Flows for links directly affected by the LTC were taken from the LTC forecast report. Linear trends between the flows published in the report were used to calculate flows in the 2029 and 2038 model years.

9.5.23. For all links that were not covered by the A2BE model nor the LTC forecast report NTEM growth was used instead. To account for traffic switching from the M25 and Dartford Crossing to the LTC a comparison was set up between the traffic growth expected on the M25 through NTEM growth and the growth seen in the LTC and A2BE forecasts. The difference between these growth factors was used to adjust the NTEM growth used for links along the M25.

9.5.24. The Do Something scenarios were generated by directly adding the traffic associated with the resort onto the existing traffic within the links. No traffic reassignment was assumed because of this additional traffic.

9.6 MICROSIMULATION MODELLING METHODOLOGY

9.6.1. The A2BE Operational VISSIM model from the Highways England's PCF Stage 3 onwards was developed by Atkins; the operational model is developed in version 10 of PTV VISSIM software and future year models have been built for each of the assessment years of the London Resort using the validated base model.

9.6.2. The A2BE VISSIM model is a static assignment model; the vehicle routings and demand have been obtained from the A2BE SATURN strategic assignment models. In the PCF Stage 5 the VISSIM model has been refined to incorporate the design changes.

9.6.3. The access for Station Quarter South (SQS) in the baseline Do Minimum scenarios for Highways England displayed latent demand (vehicles unable to egress the zone within the peak hour) as a result of the priority junction on the access road. Utilising the microsimulation software, in the Do Something scenarios SQS access has been moved to A2260 Spur Road between the two A2 Ebbsfleet roundabouts. By optimising the signal timings at this junction it has ensured that we are able to accommodate at least as much traffic as in the Do Minimum; therefore, the London Resort does not negatively impact vehicles accessing and egressing SQS. The demand for the priority junction in the Do Minimum for the SQS access exceeded capacity for the departing traffic especially in the PM period, with vehicles finding it difficult to exit the development. In the Do Something, the SQS access is changed to a signal controlled junction to mitigate this issue and the performance of the SQS access does not deteriorate between the Do Minimum and Do Something.

9.6.4. A Microsimulation report has been written to outline the methodology of the VISSIM Model and has been included in **Appendix TA - Z** and summarised within this chapter.

NETWORKS

9.6.5. **Plate 9-2** shows the network extent as in the baseline scenarios built for Highways England. This network layout was used to assess the scenarios without The London Resort visitor and staff development traffic (Do Minimum) and for the 2023 Construction scenario.

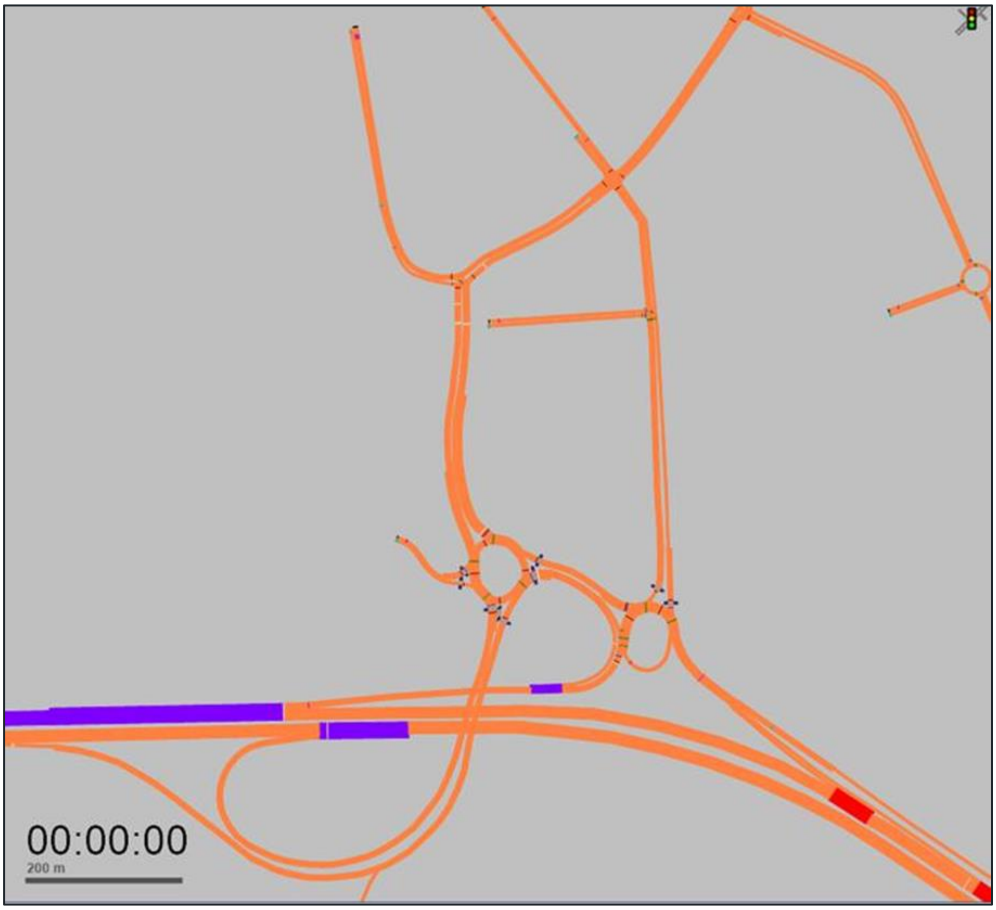


Plate 9-2: A2BE VISSIM Model Extent (Ebbsfleet Valley Area)

9.6.6. The VISSIM model scenarios developed to assess construction staff in 2023 and The London Resort visitor and staff, arrivals and departures in the assessment years of 2025, 2029 and 2038 (Do Something), included network changes at the Ebbsfleet Valley and A2 junction which are summarised below:

- re-aligned dedicated Resort Access Road;

- two-lane egress from the A260 / A2 eastbound (EB) On-Slip / A2 EB off-slip roundabout onto the dedicated Resort Access Road;
- three lane approach to the A260 / A2 EB On-Slip / A2 EB off-slip roundabout from the dedicated Resort Access Road;
- Station Quarter South access re-located to a signalised junction between the A260 / A2 EB On-Slip / A2 EB off-slip roundabout and the A2260 / A2 WB Slip roads / Ackers Drive roundabout on A2260 Spur Road, with two lane access and one lane egress;
- three WB lanes between the A260 / A2 EB On-Slip / A2 EB off-slip roundabout and the A2260 / A2 WB Slip roads / Ackers Drive roundabout;
- two lanes circulatory on the A260 / A2 EB On-Slip / A2 EB off-slip roundabout between the A2 EB On-Slip and A2 EB Off-Slip arms; and
- two lane roundabout approach on the A2 EB off-slip.

MATRICES

9.6.7. The HE baseline 2023 and 2038 scenarios are based on Road Traffic Forecasts and in order to derive 2025 and 2029 matrices, the linear growth between the provided 2023 and 2028 models was applied. In the AM there is a growth of 16.7% between 2023 HE and 2038 HE (135 approx. 1.1% per annum) and 18.7% in the PM (135 approx. 1.25% per annum). The linear growth is summarised in **Table 9-6**.

Table 9-6: Linear Growth between VISSIM Models

Scenario	AM Growth	PM Growth
2023 HE to 2038 HE	16.7%	18.7%
2023 HE to 2025	2.2%	2.5%
2023 HE to 2029	6.7%	7.5%

9.6.8. In the 2029 scenario, 6.7% in the AM and 7.5% in the PM has been applied to all background traffic input which had an increase between 2023 and 2038. All other inputs with negative growth or no change have been kept the same between 2025 and 2029 as a result of the LTC coming into place in 2026 which will see a reduction in traffic on the A2 primarily.

9.6.9. For scenarios with the London Resort, the unique trip generation was also added on as additional vehicle inputs and vehicle classes. The Kent Project Site arrivals and departures, included within the respective VISSIM models, are demonstrated in **Table 9-7**.

Table 9-7: The London Resort, Trip Generation (Kent Project Site)

Assessment Year	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	Arrivals	Departures	Arrivals	Departures
2025	107	20	199	499
2029	111	26	288	679
2038	112	26	347	978

SUMMARY

9.6.10. The A2BE VISSIM model , received from Atkins and with the HE design at the Ebbsfleet junction, has been developed to represent a scenario with the London Resort trip generation and associated junction improvements and access road. For clarity, the Do Minimum and Do Something scenarios have been described in full in **Table 9-8**.

Table 9-8: Summary of VISSIM Assessments

	Do Minimum	Do Something
2023	▪ Atkins network with HE junction design; and ▪ Baseline matrices as provided by Atkins.	▪ Construction traffic for the London Resort
2025	▪ Atkins network with HE junction design; ▪ Linear background growth between 2023 and 2038 applied to obtain 2025; and ▪ Station Quarter South access modelled as a priority junction north of the A2 Ebbsfleet Roundabouts	▪ Junction improvements at the A2 Ebbsfleet junction; ▪ The dedicated Resort Access Road ▪ Relocation of Station Quarter South access; ▪ Station Quarter South access has been relocated to the A2260 Spur road between the two A2 Ebbsfleet Roundabouts; and ▪ Visitor and staff trips for the Resort in 2025.
2029	▪ Atkins network with HE junction design; ▪ Linear background growth between 2023 and 2038 applied to obtain 2029; and ▪ Station Quarter South access modelled as a priority junction north of the A2 Ebbsfleet Roundabouts	▪ Junction improvements at the A2 Ebbsfleet junction; ▪ The dedicated Resort Access Road; ▪ Station Quarter South access has been relocated to the A2260 Spur road between the two A2 Ebbsfleet Roundabouts; and ▪ Visitor and staff trips for the Resort in 2029.
2038 (with LTC)	▪ Atkins network with HE junction design; ▪ Baseline matrices as provided by Atkins; and ▪ Station Quarter South access modelled as a priority junction north of the A2 Ebbsfleet Roundabouts	▪ Junction improvements at the A2 junction; ▪ The dedicated Resort Access Road; ▪ Station Quarter South access has been relocated to the A2260 Spur road between the two A2 Ebbsfleet Roundabouts; and ▪ Visitor and staff trips for the Resort in 2038.
2038 (without LTC)	▪ Atkins network with HE junction design; ▪ Adjusted matrices using flow differences on the A2 from the 2038 strategic with and without LTC modelling; and ▪ Station Quarter South access modelled as a priority junction north of the A2 Ebbsfleet Roundabouts.	▪ Junction improvements at the A2 Ebbsfleet junction; ▪ The dedicated Resort Access Road; ▪ Station Quarter South access has been relocated to the A2260 Spur road between the two A2 Ebbsfleet Roundabouts; and ▪ Visitor and staff trips for the Resort in 2038.

9.7 LOCAL JUNCTION MODELS

9.7.1. This section outlines the individual junction assessments and merge diverge assessments that have been undertaken in order to assess the traffic implications of the London Resort.

9.7.2. The Strategic highway model is a link flow based model as outlined earlier in this Chapter, the traffic flows were taken from the A2BE traffic model and traffic count data from HE and Thurrock Council, the locations of which are presented in the Strategic Modelling Methodology Technical Note enclosed within **Appendix TA - S**. This spreadsheet model provides the link flows for the merge diverge assessments but does not provide turning counts for individual junction assessments. The junction turning counts have been taken from traffic surveys from between 2016-2018 which will provide the basis for the individual junction models. The baseline turning count data has been growth to the assessment years using the growth factors taken from the strategic spreadsheet model.

Individual Junction Assessments

9.7.3. The individual junction assessments are presented in **Figure 9-5** and are focused north of the River Thames except for one junction to the south of the River Thames theses junctions are outside of the VISSIM model which provides detailed individual junction assessments for those in the vicinity of the Kent Project Site. The individual junctions assessed within this Transport Assessment are as follows:

- M25 Junction 30 signalised roundabout (Thurrock Council);
- M25 Junction 2 signalised roundabout (KCC);
- A1089 / Tilbury2 Access junction (Thurrock Council); and
- Asda Roundabout (Thurrock Council).

9.7.4. The location of the individual junctions considered within this report, are shown in **Figure 9-5**. Individual junction assessments have been undertaken along key transport corridors where the trip generation associated with visitor and staff demand to the London Resort is forecast to have the more significant impacts; locations have been chosen outside of the VISSIM model extent but within the boundary of the strategic spreadsheet-based modelling assessment.

Figure 9-5: **Individual Junctions Locations**

9.7.5. The junction capacity assessments presented in chapter 13 have been carried out using the industry standard LinSig v3 for traffic signals and Junctions 9 using the ARCADY and PICADY module for roundabout and priority junctions. These computer junction modelling packages are produced by JCT Consultancy and Transport Research Laboratory (TRL) respectively. The summary tables are contained within this chapter, copies of the full outputs can be provided on request.

9.7.6. LinSig models provide an indication of the Degree of Saturation (DoS) as a percentage and the Mean Maximum Queue (MMQ) in Passenger Car Units (PCUs) for each junction approach, the average delay per vehicle on each approach recorded in seconds and the Practical Reserve Capacity (PRC), which is a measure of the junction's total capacity (as a percentage). For DoS the thresholds can be categorised as follows:

- **less than 90%**: Any queues that have built up will be able to disperse during the relevant stage in each cycle;
- **90-100%:** Indicates that an arm is close to its theoretical capacity and any queue that has built up does not fully clear within each cycle; and
- **more than 100%:** Indicates an arm is over its theoretical capacity and significant queues are likely as a result.

9.7.7. When reviewing the PRC of a junction the following is considered:

- a positive figure indicates the junction operates with reserve capacity;
- a negative figure less than -10% suggests that the junction would be broadly at capacity; and
- a negative figure more than -10% indicates that the junction cannot accommodate the demand.

9.7.8. The signal junctions assessed as part of this TA are currently operated via Microprocessor Optimised Vehicle Activation (MOVA) which minimises vehicle delays by detecting upstream traffic conditions and altering signal timings accordingly. This operation cannot be fully reflected in LinSig, which optimises traffic signals on a fixed-time basis across the peak hour and therefore it is estimated that the traffic signal junctions will operate 10-15% better in reality than presented within this report.

9.7.9. Junction capacity in Junctions9 is specified with reference to the Ratio of Flow over Capacity (RFC) for priority and roundabout junctions. In doing so, values of 0.85 would typically indicate the design point at which congestion is likely to occur with values of 1.00 being the theoretical point at which this congestion forecast to occur regularly during the assessment period. However, it is important not to use these output values in an arbitrary manner.

9.7.10. The geometry of the junctions has been measured using AutoCAD 2020* and Ordnance Survey large scale mapping. The LinSig models are based on the traffic signal specification provided by HE and KCC. These are included within **Appendix TA - AA** of this document.

9.7.11. In the assessment of forecast demand at Tilbury car park, consideration will be given to the arriving vehicles to ensure that the right turning vehicles do not queue back along the A1089 towards Tilbury Town railway station.

9.7.12. Traffic flow diagrams for each of these scenarios are included in **Appendix TA - R** of this report for reference. Full model outputs are provided in **Appendix TA - AA**.

MERGE DIVERGE ASSESSMENTS

9.7.13. Merge / diverge assessments has been undertaken for the following on and off slips contained within the study area. The calculations have been completed following the guidance outlined in Design Manual for Road and Bridges (DMRB) CD 122 'Geometric Design of Grade separated junctions, Revision 1 (*https://www.standardsforhighways.co.uk/dmrb/search/871d6bff-0126-41b7-bf34-a05c7e74a52f)* '. From the document, Figures 3.12a and 3.12b have been used for merge assessments and Figures 3.26a and 3.26b have used for diverge assessments.

- M25/ A2 (Dartford County Council);
- Bean Lane/ Watling Street (Dartford County Council);
- Roman Road/ Watling Street (Dartford County Council);
- A282/ A206 (Dartford County Council);
- A13/ A126 (Thurrock Council);
- M25/ A13 (Thurrock Council);
- A1306/ A13 (Thurrock Council); and
- A1089/ A13 (Thurrock Council).

9.7.14. The location of the merge/diverge assessments is shown in **Figure 9-6**.

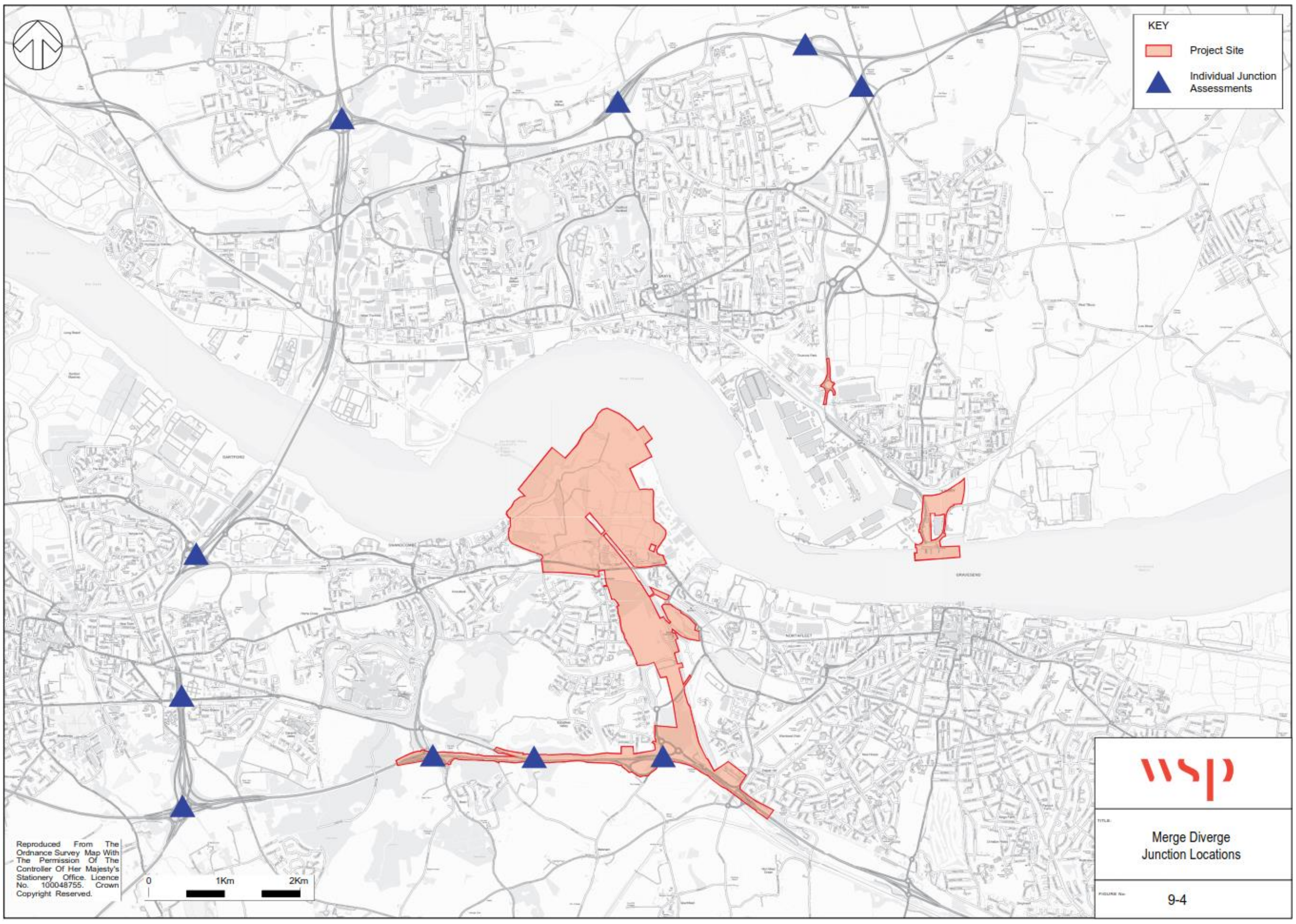


Figure 9-6: Merge/Diverge Junctions

9.8 SUMMARY

9.8.1. This chapter sets out the modelling methodology associated with the spreadsheet-based, microsimulation and local junction modelling undertaken to assess the London Resort's impact on the local and strategic highway network.

9.8.2. Analysis undertaken within TN1, TN2 and TN3 has been combined to determine the full hourly arrival and departure distribution profile, at a local authority level, for the 85th percentile day in each assessment year. Online journey planning tools were used to determine origin-destination routes to/from the Resort and input the resulting trip generation and distribution, into traffic flow diagrams.

9.8.3. Using inputs from the A2B2 strategic model, traffic count data, LTC forecasting report, TEMpro growth factors and 2018 Road Traffic Forecasts (RTF18), a spreadsheet-based model has been developed for use in determining the local and strategic highway impacts of the proposed London Resort visitor and staff demand. The spreadsheet model has been used to provide Air Quality and Noise (AQ&N) outputs to Buro Happold to inform their environmental assessment.

9.8.4. Highways England's A2BE operational VISSIM model was developed by Atkins and obtained by WSP for use in assessing proposed London Resort development flows. The Micro-Simulation model will be used to assess the operation of the proposed junction improvements and access to the dedicated Resort Access Road in each of the outlined assessment years.

9.8.5. Local junction models, in the form of ARCADY, PICADY and LinSig have been built to represent junctions along key transport corridors that are likely to see a change in operational capacity with the additional of the London Resort development flows.

9.8.6. Merge and diverge assessment have be undertaken on on-slips and off-slips of the strategic road network to determine the impact of the London Resort development flows at these locations.

CHAPTER 10

WALKING AND CYCLING STRATEGY

10 WALKING AND CYCLING STRATEGY

10.1 INTRODUCTION

10.1.1. Walking and cycling have a significant number of benefits on health and accessibility as well as helping to reduce local traffic congestion and vehicle emissions. The Government is making substantial investment in what is known as active travel, most recently with the increased uptake in rates of walking and cycling in relation to the COVID-19 pandemic; in May 2020, the UK Government announced a £250 million emergency active travel fund and published fast-tracked statuary guidance for local authorities to enable them to make significant changes to give more space to cyclists and pedestrians.

10.1.2. Active travel is to be at the heart of policies on transport, planning and health with the Government publishing *Gear Change: A Bold Vision for Cycling and Walking* (*https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/904146/gear-change-*) in July 2020; this plan describes the vision to create better streets for cycling and people, keeping active travel at the heart of decision-making and enabling people to cycling – and protecting them when they do so.

10.1.3. Government guidance and policy dictates that quality walking and cycle infrastructure should be provided as part of any highway improvement and as such an active travel strategy has been developed to propose a series of recommendations for the creation of a coherent and resilient street network for walking and cycling to the London Resort, compliant with local, regional and national guidelines which consider the overall changes in the local area.

10.1.4. The long anticipated DfT *Local Transport Note (LTN) 1/20 Cycle Infrastructure Design* (*https://www.gov.uk/government/publications/cycle-infrastructure-design-ltn-120*) , together with Gear Change, outlines a bold future vision of Cycling and Walking in England. The documents set out the Government's plans for new infrastructure and the creation of new walking and cycling routes with an emphasis on high quality routes that meet minimum quality criteria.

10.1.5. Some of the main requirements within LTN 1/20 are:

- cycle lanes must be physically separated from traffic; paint-only lanes on busy roads will no longer be funded;
- shared use is discouraged – cycles must be treated as vehicles;
- routes should be continuous and direct, and not give up where it gets difficult; and
- point closures will be encouraged, to create cycle routes and to stop rat-running through residential neighbourhoods.

10.1.6. As part of the development proposals a network of pedestrian and cycle routes will be provided on the Swanscombe Peninsula, combining existing with new proposed routes. This will improve connectivity through residential neighbourhoods and create linkages with the network of green spaces in the area, as well as key routes between railway stations

10.1.7. The strategy sets out to assess the connections to the London Resort from the key transport hubs and developments in the surrounding area. It highlights the existing infrastructure observed during a site audit undertaken in September 2020 and identifies the necessary improvements to provide a safe, cohesive network to the Site for both visitor and employee trips.

10.1.8. The site context and a detailed overview of existing walking and cycling conditions has been provided in chapter 4 of this TA. This section builds upon this initial analysis.

10.2 DATA ANALYSIS

10.2.1. The following analysis has been undertaken to understand the propensity to cycle within the area surrounding the London Resort. This section provides an evidence base for prioritisation of cycling and walking infrastructure to encourage more people to cycle, both for commuters, visitors and well as local residents.

10.2.2. In general terms, these frameworks / corridors are strategic aims, which may be brought forward within their planned future masterplan. In the interim, the London Resort has identified further cycle improvements schemes which form part of the Proposed Development.

ACTIVE TRAVEL MODE SHARES

10.2.3. As discussed in Section 8.5 of chapter 8, WSP's Future Mobility team have developed a baseline mode share tool to identify the percentage of staff and visitors expected to travel to the London Resort by each mode. The outputs for 2029 showed there were approximately up to 4% of staff likely to walk to work, and up to 11-13% by bicycle or scooter. Given national nature of the Proposed Development and the identified trip distribution, it is expected that a minimal level of visitors is likely to walk to the Resort but there is the opportunity for up to 3% could cycle.

10.2.4. With the development of new infrastructure and improvement to the existing walking and cycle network, primarily coming forward as part of the Garden City, there is potential for a further increase in trips by active travel. The TDMP seeks to incentivise active travel further in order to reduce dependency on private vehicle and reduce the impacts on the highway network. The TDM is discussed in detail in Chapter 14 however it is considered than the TDMP will target 4% of staff walking to work, and up to 12% cycling and 1% of visitors walking to the site with 3% cycling.

PROPENSITY TO CYCLE TOOL

10.2.5. The Propensity to Cycle Tool (PCT) is an online tool that has been designed to help predict which areas have the greatest potential for increasing cycling. The data analyses the number of people travelling by different modes from each MSOA by trip lengths and gradient, to help identify trips that could be undertaken by cycle.

10.2.6. The PCT is a strategic planning tool, different visions of the future are represented through various scenarios of change, including the Government target which looks to double cycling in a decade from when the DfT Draft Cycle Strategy was published in 2014.

10.2.7. The Government target scenario was generated by adding the number of cyclists in each origin destination (OD) pair based on the 2011 Census, and then modelled the number of cyclists in each OD pair, as estimated using the baseline propensity to cycle equations. The scenario is not a prediction of the future, but an indication of how the spatial distribution of cycling may shift as cycling grows based on current travel patterns. It is not a set application of growth, with the outputs varying between different MSOAs.

10.2.8. **Plate 10-1** and **Plate 10-2** are both outputs taken from the online PCT, this demonstrates the top 20 fastest and quietest routes under the Government target scenario between key origin-destination pairs in Swanscombe and Tilbury respectively.

10.2.9. Typically, faster routes are often located on busy roads forming the most direct route such as the purple route identified along A226 London Road, south of the proposed development in **Plate 10-1**. Quieter routes tend to be greater in length, following off-road routes and footpaths; this is demonstrated by the darker purple route around West Tilbury in **Plate 10-2**. It must be noted the PCT does not consider future developments and should be analysed in conjunction with other data sources.

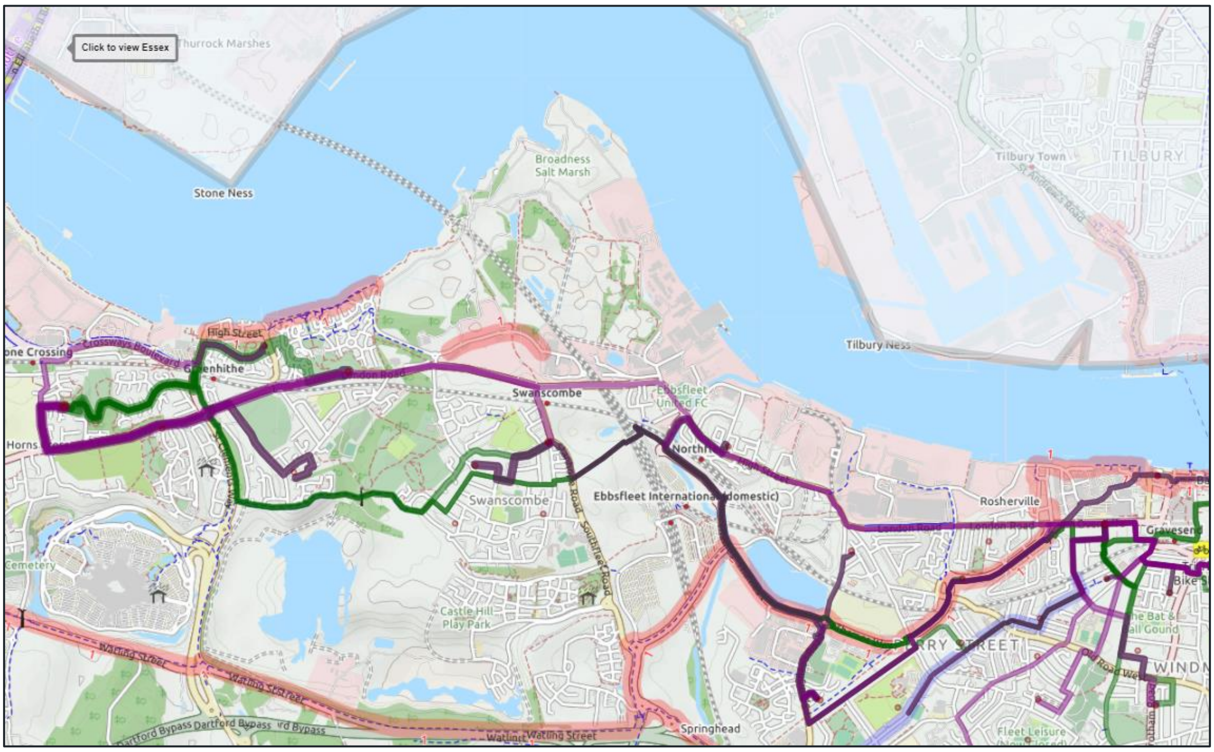


Plate 10-1: **PCT Top 20 Government Target Cycle Routes in Swanscombe**

10.2.10. The outputs are weighted by the number of commuters expected to use the route under the Government target, this reflects all commuting trips in the area made by bicycle and not specific to any individual employer. The figure is likely to be higher as it does not reflect all new developments and infrastructure improvements in the area between the baseline and Government target year.

10.2.11. **Plate 10-1** illustrates the fast and quiet routes surrounding the Swanscombe Peninsula, under the Government target scenario, 388 commuters are expected to travel on London Road between Dartford and Gravesend by 2024 with a 3% increase in cycling, this would also be a key east-west connection in to the Swanscombe Peninsula.

10.2.12. There is an additional quiet route shown running parallel to London Road accommodating EB trips, the PCT shows there are up to 486 commuters travelling on Alkerden Lane, with a 6% increase in cycling under the Government Scenario.

10.2.13. 60 commuters are expected to use the route adjacent to Ebbsfleet international between Dartford and Gravesend via London Road. The commuting trips reflect all journeys to work in the area which are expected to be made by bicycle by 2024.

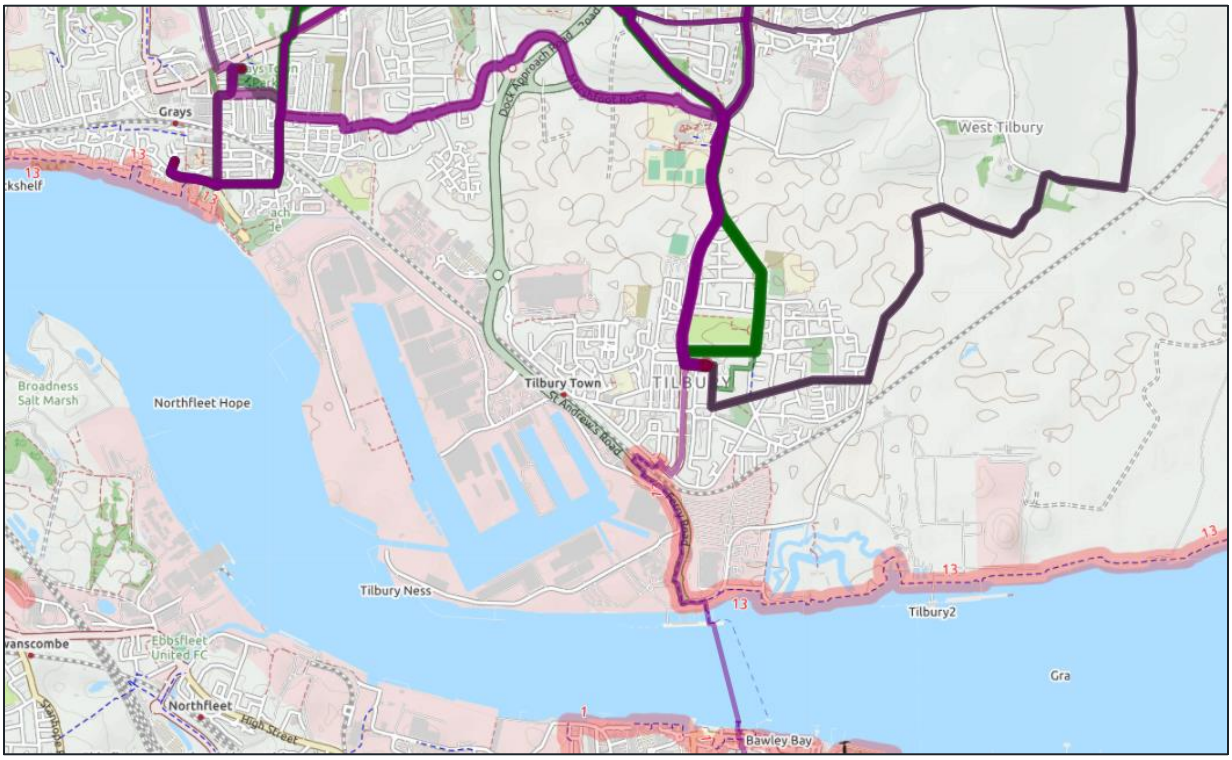


Plate 10-2: **Top 20 Government Target Cycle Routes in Tilbury**

10.2.14. The PCT identifies key connections to Tilbury Port on the NCN 13 to Grays, with up to 411 commuters taking this route between the two town centres, 12 commuters were identified to continue their route into Gravesend using the Tilbury ferry.

CYCLE INFRASTRUCTURE PRIORITISATION TOOLKIT (CYIPT)

10.2.15. The Cycle Infrastructure Prioritisation Toolkit (CyITP) is an interactive map developed by the University of Leeds with funding from the DfT to assist in the design, planning and prioritisation for new cycling infrastructure. It uses the PCT to provide data on the existing and future cycling flows of each road, and Ordnance Survey and OSM (OpenStreetMap) data to determine existing cycle infrastructure, street widths and speed limits to help identify potential routes for cycle improvements.

10.2.16. The '*top ranked new cycleways*' represents the roads with the highest cycling potential which also have available space to accommodate improvements, as such these are either of a sufficient width or have two or more road lanes in one direction and are capable of accommodating infrastructure changes. The analysis focuses on roads with spare lanes since there already is the capacity to incorporate new cycleways whilst maintaining two-way traffic.

10.2.17. The tool also identifies what a 'cohesive network' for cycling might look like if we were to consider a wider range of interventions such as modal filters and creating one-way systems. Unlike the 'top ranked new cycleways' layer, the cohesive network comprises all of the major high cycle potential corridors, including sections where the roads are narrower.

10.2.18. **Plate 10-3** highlights the existing and potential network in Swanscombe, identifying opportunities to provide a cohesive network west of Ebbsfleet International and connections into Northfleet and Gravesend, supporting commuter trips between these origins to the London Resort. An additional Top ranked new cycle way has been identified west of Greenhithe on London Road highlighting there is sufficient space for a physically segregated cycle way serving commuter trips from Dartford.

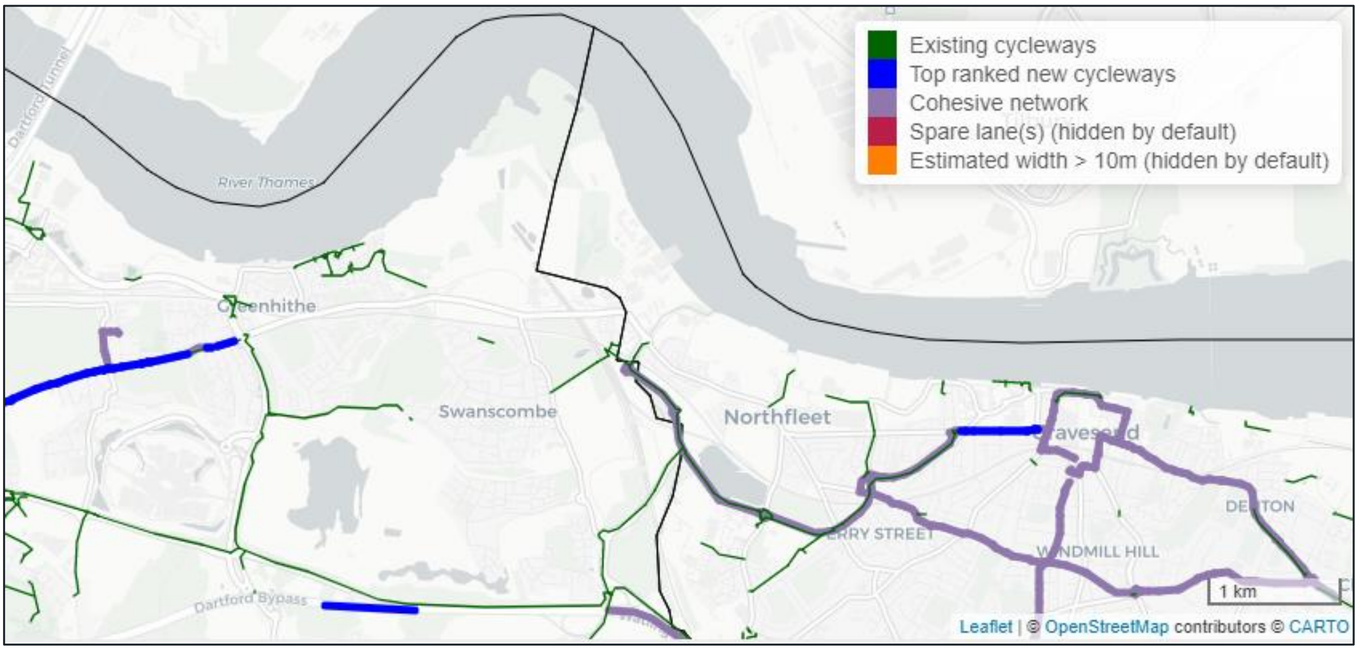


Plate 10-3: CyIPT outputs for Swanscombe

10.2.19. **Plate 10-4** illustrates the CyIPT outputs for Tilbury, which has identified two key opportunities providing connectivity to the port, and the proposed Park and Glide service. A cohesive network has been identified between Tilbury and Grays supporting trips on the NCN 13. Top ranked new cycleways have been highlighted for Calcutta Road which serves Tilbury Town Railway Station and the A1089. This will support both visitors and staff travelling by bike from urban areas in South Essex including Grays, but also support journeys via train. As well as trips to the London Resort, the new routes will support and encourage local trips between Grays and Tilbury and increase the uptake of cycling and walking for first mile-last mile trips to central London and Kent.

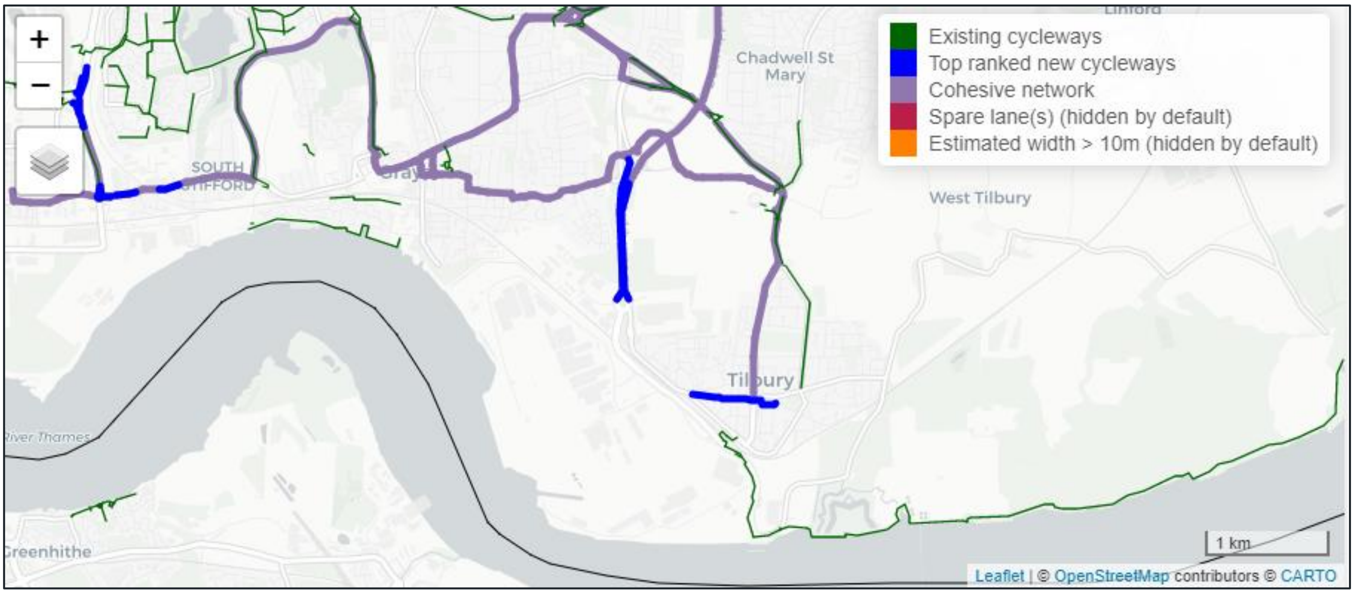


Plate 10-4: CyIPT outputs for Tilbury

10.3 EBBSFLEET DEVELOPMENT CORPORATION

EBBSFLEET IMPLEMENTATION FRAMEWORK

10.3.1. The Ebbsfleet Implementation Framework (EIF) document was developed by Ebbsfleet Development Corporation (EDC) with the aim to bring together 20 years of master planning in the area to deliver the first Government sponsored Garden City.

10.3.2. EDC pledges to prioritise walking and cycling, to support healthy living and develop a cohesive network in the area. Within the document it outlines a defined street hierarchy allowing for greater shared space to accommodate walking and cycling trips. Ebbsfleet Garden City will directly respond to the challenges of the existing topography in the area and establish new vertical connections to negotiate steep level changes ensuring improved pedestrian and cycle links between existing areas and ultimately into the London Resort.

10.3.3. The EIF outlined the following approach when working with developers and partners to deliver an integrated walking and cycling network that will:

- re-open and upgrade historic underpasses and tunnels where feasible;
- investigate new vertical connections (e.g. elevators, ramps and stairs) to negotiate dramatic changes in level and establish a landmark suite of iconic interventions within the Ebbsfleet landscape;
- re-develop bridges and underpasses to negotiate infrastructural barriers;
- improve existing pedestrian and cycle links within existing local communities;
- establish cycling and walking networks that provide direct routes to local centres and facilities;
- support infrastructures for cycling, such as cycle-share facilities and cycle hubs at major transport interchanges; and
- improve general wayfinding and the legibility of pedestrian and cycle networks across Ebbsfleet through physical upgrading of routes, and the promotion and marketing of them.

10.3.4. **Plate 10-5** highlights a network of cycle and pedestrian connections which was the baseline for developing a walking and cycling strategy for Ebbsfleet.

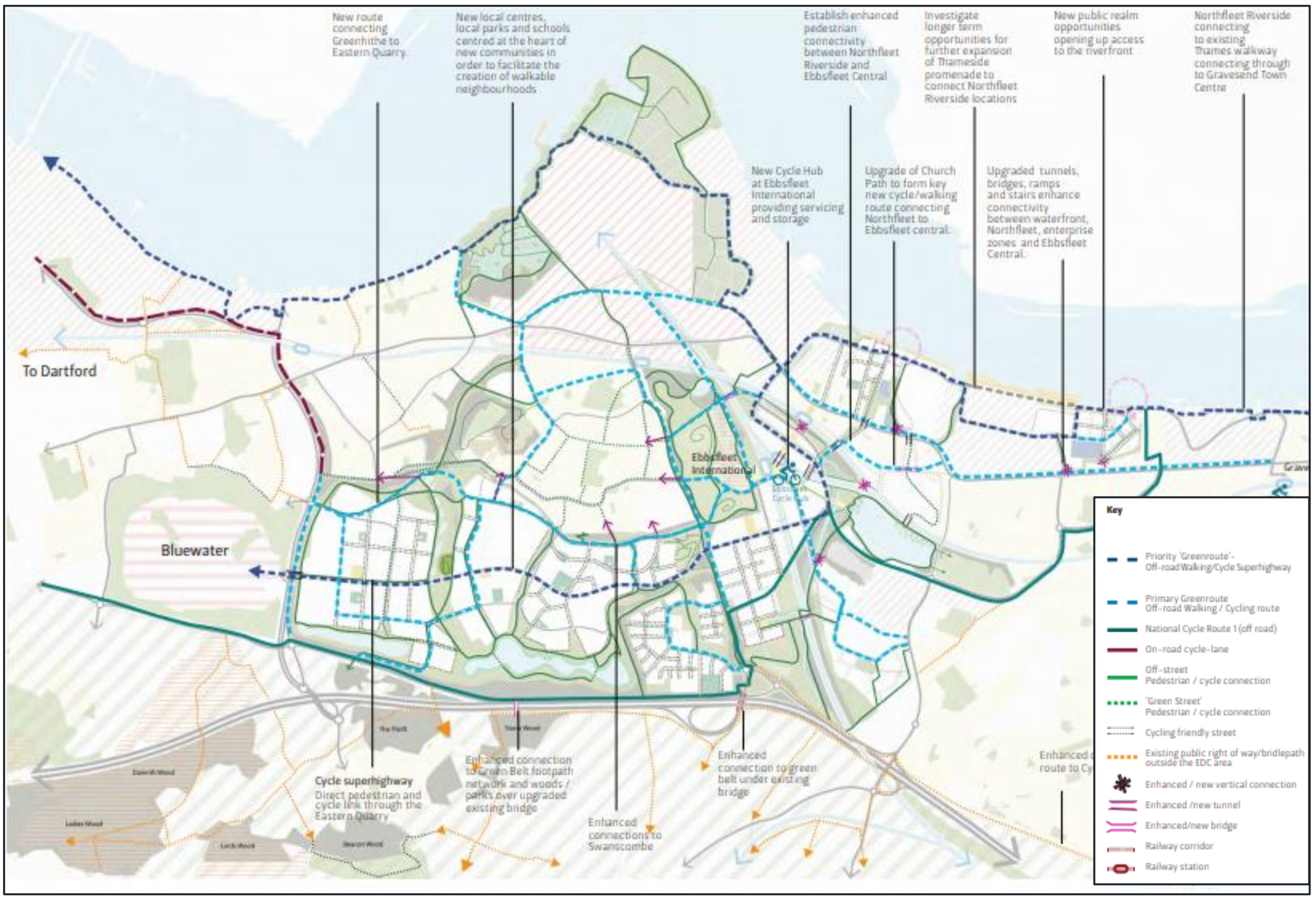


Plate 10-5: **Ebbsfleet Implementation Framework Action Travel Routes**

EBBSFLEET DEVELOPMENT CORPORATION GREEN CORRIDORS

10.3.5. The aim of the Green Corridors project is to encourage a walking and cycling culture within Ebbsfleet, to improve public realm and the quality of life for residents, whilst making routes safer to use, more attractive and less polluted from traffic. It will connect developments around Ebbsfleet Garden City by implementing usable walking and cycling infrastructure within a fully connected active travel network.

10.3.6. EDC has considered options for the routes to be investigated as part of the Green Corridors programme. The long list of routes comprised all the missing walking and cycling links needed to connect the planned new developments with existing destinations. The following routes which have been identified through the Green Corridors Project includes:

- **Route 1a** – Bean Road/Alkerden Lane Junction to London Road;
- **Route 1b** – London Road to Greenhithe Station;
- **Route 3** – Leonard Ave to Stanhope/Swanscombe Street Junction;
- **Route 6** – Northfleet High Street;
- **Route 7** – Ebbsfleet Green to Springhead;
- **Route 12** – Roman Road (NCN177) to Waterdales;
- **Route 13b** – International Way;
- **Route 14a** – Bluewater to Swanscombe;
- **Route 14b** – B225 to Swanscombe Road;
- **Route 18b** – Knockhall Road to London Road;

- **Route 18c** – London Road to B255 and London Road Junction;
- **Route 19** – Springfield Road;
- **Route 20** – Ebbsfleet International to Northfleet Station
- **Route 25** – Grove Road; and
- **Route 26** – College Road,

10.3.7. The routes identified and listed above, have been presented in **Plate 10-6**.

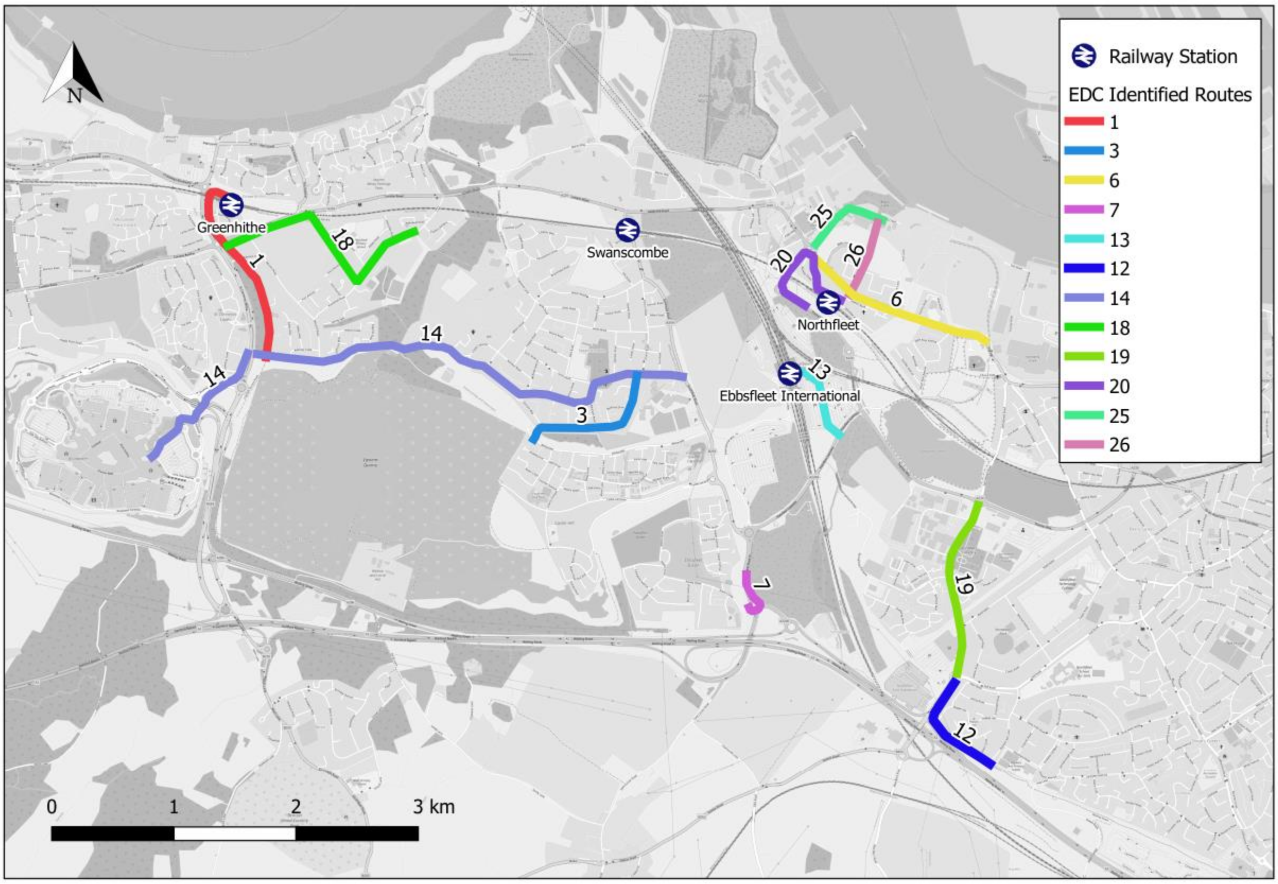


Plate 10-6: EDC Identified Routes

10.3.8. Routes 14 and 13 (**Plate 10-6**) which have been identified through the EDC will support western active travel trips to London Resort connecting to the proposed shared surface west of Ebbsfleet International Railway Station. Route 6 extending from the PRoW network connecting to the Site will form a joined up cohesive route between residents and businesses in Northfleet towards Gravesend into the Peninsula.

10.3.9. Route 7 in **Plate 10-6,** located to the South of Ebbsfleet International Station would support connectivity from residential areas including new developments south and west of Ebbsfleet with further opportunities to provide a connection the proposed shared path into the peninsula.

10.3.10. LRCH have engaged with the EDC on the masterplan for what is called the 'central' area around Ebbsfleet International Station; at a recent workshop it was agreed to improve pedestrian and cycle access alongside the re-aligned International Way. The key pedestrian and cycle routes to the London Resort will benefit from the Garden City and discussions with the EDC will be ongoing as their proposals progress so that a coherent strategy is delivered.

10.4 ACTIVE TRAVEL AUDIT

10.4.1. Walking and cycling audits were carried out at locations expected to have a high demand for cycling and walking trips to the site. The audits reflect the existing provision and how the active travel environment could be improved with measures such as lighting, surfacing, reallocation of road space for cyclists, wider footways and dropped crossings; accessibility, as well as safe crossing points and reduced traffic speeds are also considered to make a safer environment for people travelling by active modes.

10.4.2. Routes to the key origin and destination points were chosen for audit, these included: Tilbury Town Railway Station, Port of Tilbury, Greenhithe Station, Ebbsfleet International Station, Swanscombe Station and Northfleet Station. Further details can be found in the Site Audit Technical Note, included in **Appendix TA - F**.

10.5 BARRIERS TO ACTIVE TRAVEL

10.5.1. The main barriers to walking, cycling and the active travel strategy for the Kent and Essex Project Sites are shown in **Plate 10-7**. Additional barriers and observations are discussed and presented in more detail within the Site Audit Technical Note (**Appendix TA - F**).

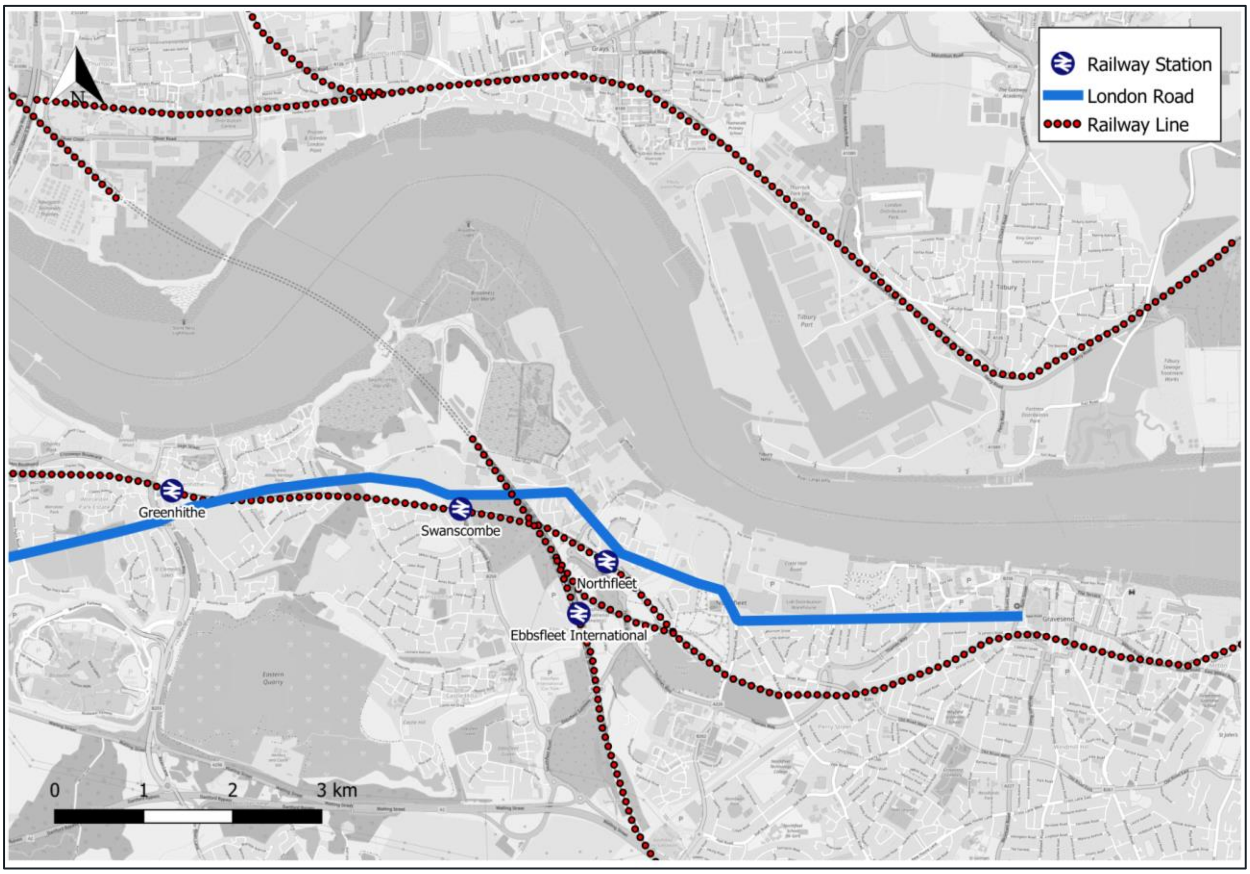


Plate 10-7: Barriers to Walking and Cycling

RAILWAY LINES

10.5.2. A key issue when planning for walking and cycling in relation to the London Resort is overcoming the severance cause by the railway lines and A226 London Road. South of the river HS1 creates a barrier between Swanscombe and Northfleet with the railway line bisecting the Kent Project Site in a north-south direction; additionally, the North Kent Line (NKL) causes severance between the leisure core and Ebbsfleet International Station.

10.5.3. The Essex Project Site in Tilbury is separated from the existing settlement by the railway line serving both the docks as well as Tilbury Town. The railway line creates a physical barrier between the Port of Tilbury, A1089 and residential areas of Tilbury.

A226 LONDON ROAD

10.5.4. The A226 London Road, running along the southern perimeter of the peninsula and connecting Greenhithe, Swanscombe and Northfleet railway stations, also acts as a barrier of pedestrians and cyclists, in particular trips from residential areas in Swanscombe. London Road has a high proportion of observed HGV movements which was noted during the September 2020 as potential to intimidate cyclists.

10.5.5. London Road, between Greenhithe and Northfleet, is a key corridor for cyclists and has been identified as one of the highest potential routes for commuters, demonstrated in **Plate 10-1**, with 388 commuter trips under the Government Scenario – the highest within the study area.

10.5.6. Highlighted in Chapter 4 (Existing Conditions), there are existing advisory cycle lanes on both sides of the carriageway extending approximately 50m either side of the Ingress Park Avenue junction, with Advanced Stop Lines (ASL) at the signals.

10.5.7. There is existing parking located sporadically along London Road, which may require cyclists to overtake and travel in the centre of the carriageway. PIA analysis also demonstrated that London Road has seen multiple accidents involving cyclists within the last five years, with the recurring citation of vehicles over-taking cyclists and miss-judging the distance as the primary cause of the incident. It is therefore imperative that the active travel strategy considers the safe passage of pedestrians and cyclists to and across London Road in order to access the primary pedestrian access of the London Resort at the A226 London Road / High Street / Pilgrims Road signalised junction.

10.5.8. An upgraded cycle route along London Road would serve commuter trips travelling to/from places within Greenhithe and Gravesend, providing a coherent and direct route along the southern perimeter of the peninsula. It would also support longer journeys to/from Dartford, where the western extent of London Road is identified as a potential top ranked cycle way within the CyIPT, showing potential to develop an attractive cycle friendly route between Dartford and the London Resort.

10.5.9. However, in line with the DfT's Gear Change and LTN 1/20 guidance, the upgrade of cycle facilities along London Road would require a mandatory segregated cycle lane to improve both the safety and comfort for cyclists. Highway constraints along London Road, due to its location along a narrow chalk spine to the west of Galley Hill and to the east of the High Street junction, mean that space limitations prevent the provision of an advisory cycle lane or a mandatory segregate cycle lane without reducing traffic lane widths below standards. As such, the strategy would see alternative routes being promoted to access the London Resort, notably from the west which have been detailed within Section 10.6.

10.5.10. The London Resort proposals will include a cycle connection from Titman Avenue into the main development and a tunnel under the A226 London Road for staff. The staff accommodation located at Craylands Lane Pitt together with improvements to the Titman Avenue access will improve the east-west links for pedestrians and cyclists.

SWANSCOMBE HIGH STREET

10.5.11. The High Street in Swanscombe is constrained with narrow footways, with little land availability to extend. As noted in the site audit parts of the footways required maintenance and resurfacing, and side roads lacked dropped kerbs and tactile paving.

OTHER CONSIDERATIONS

10.5.12. Subsequent to the railway lines and A226 London Road, the gradient of the terrain surrounding the Kent Project Site and the existence of a chalk spine offer additional barriers to developing LTN 1/20 compliant walking and cycling proposals to enhance connectivity within the vicinity of the Resort.

10.5.13. As part of the EDC Garden City, discussed in Section 10.3, significant additional enhancements are being made along the east-west corridor. Where possible, the proposals outlined in this chapter will seek to join up with the EDC proposals to provide a cohesive and connected walking and cycling network.

10.6 OPPORTUNITIES AND RECOMMENDATIONS

10.6.1. This section highlights the barriers to and opportunities for active travel, identified through the site audits and data analysis, presented earlier in this chapter, to provide a joined up cohesive route for staff and visitors accessing the London Resort. It is important to consider the key public transport connections and residential areas, where staff or visitors may travel from or live, west, south and east of Resort how accessible they are for pedestrians and cyclists. Where achievable, the active travel strategy proposals for the London Resort follow the design guidance outlined in LTN 1/20 for active travel infrastructure, as noted in the Summer 2020 consultation responses.

10.6.2. The London Resort site is to be inclusive and easily accessible for everyone. The opportunities and recommendations will look to address the key barriers where feasible including the provision of cycle and walking friendly links into the site, these recommendations include the cycle-proofing of the local road network, improvements to existing crossing points and legible signage and wayfinding from the surrounding area and key transport hubs.

10.6.3. Chapter 5 of this TA detailed the access arrangements to the London Resort for walking and cycling, proposed within the DCO Order Limits (red line boundary). These proposals within this Active Travel Strategy refer to opportunities and recommendations on the wider walking and cycling network and outside of the core development proposals, in order to maintain a cohesive network connecting existing and proposed routes. It is important to consider the dedicated walking and cycling connection will be promoted to link Ebbsfleet International Station with the Resort (shown in **Plate 5-4**). This provision ensures visitors/staff travelling by rail to Ebbsfleet International Station or living in areas south and east of the Kent Project Site are able to access direct connections into the Resort. This connection is therefore pivotal in connecting existing facilities into the Resort.

A226 LONDON ROAD / HIGH STREET / PILGRIMS ROAD

10.6.4. The main off-site pedestrian and cyclist connection to the London Resort via Pilgrims Road, the existing northern arm of the existing A226 London Road / High Street / Pilgrims Road junction. The proposals will see this link downgraded to walk and cycle only with improvement along the full route into the London Resort. To support this connection, it is proposed to upgrade the cycling and pedestrian facilities at the junction. This will see the guard railings being removed and the staggered crossing upgraded to a direct signalised crossing point with facilities for cyclists and pedestrians. The current crossing time is not sufficient to accommodate all users, a walking speed of 1.2 m/s is conventionally used to calculate timings for crossings and should be applied here.

10.6.5. A drawing showing the proposed improvements at Swanscombe High Street/London Road/Pilgrims Road can be found in **Appendix TA - T**.

10.6.6. It is noted that the changes will see a reduction in green time, with straight ahead movements however benefits to pedestrian connections into Swanscombe are considered to outweigh the reduced capacity at the junction. An initial assessment has shown that the junction will however continue to operate within its theoretical capacity.

10.6.7. A network of signage and wayfinding directing cyclists and pedestrians should be installed within the town centre area and directing visitor and local trips to the DS3 PRoW which will connect to footways within the study boundary into London Resort and towards residential areas within Greenhithe. It is proposed that finding can be made available through the S106 to deliver upgrades on this route.

SOUTH OF THE KENT PROJECT SITE

10.6.8. Chapter 5 outlines the access arrangements for staff and visitors walking or cycling to the London Resort and proposes a dedicated off-road walking and cycling connection between Ebbsfleet International Station and the Resort. The proposed access route (**Plate 5.4**) to Swanscombe and links to the existing east-west connection into Northfleet. The dedicated walking and cycling link between Ebbsfleet International Station and the London Resort will require maintenance including cutting back of vegetation to increase the space available on the shared use path, this is to be complimented with segregation between cyclists and pedestrians. Lighting and surveillance are to be installed on this route to improve personal security, particularly in the winter months and at night when visibility is poor.

10.6.9. The dedicated north-south walking and cycling connection between Ebbsfleet International Station and The London Resort will be supported by much improved cycle and walking facilities on International Way, which is a key link between Ebbsfleet International Station and the NCN 1, serving trips to residents in south Swanscombe and the new developments at Ebbsfleet Valley in the east and Northfleet in the west, with associated footway upgrades on International Way and the A2260.

WEST OF THE KENT PROJECT SITE

Route 1

10.6.10. To accommodate visitors and staff wishing to walk or cycle to the London Resort from Greenhithe Station or residential areas west of the B255, two alternative routes have been identified that reduce the reliance upon London Road and are presented in **Figure 10-1**. It is considered that Route 1 might be used by cyclists or pedestrians travelling from the west of the development, north of London Road (Stone Crossing and Greenhithe) whilst Route 2 might be used by cyclists travelling from the south west of the Resort, south of London Road from residential areas such as Stone or Fleet Estate.

10.6.11. Motor traffic free routes, or routes that are considered be lightly trafficked, away from London Road can form important links for everyday trips and be attractive to those who prefer to avoid motor traffic. To achieve their full potential, off-highway routes need to be designed and maintained to a high level of quality, particularly in terms of surfacing, accessibility and lighting. They also need to be well maintained and kept free of leaf debris, ice and snow in winter.

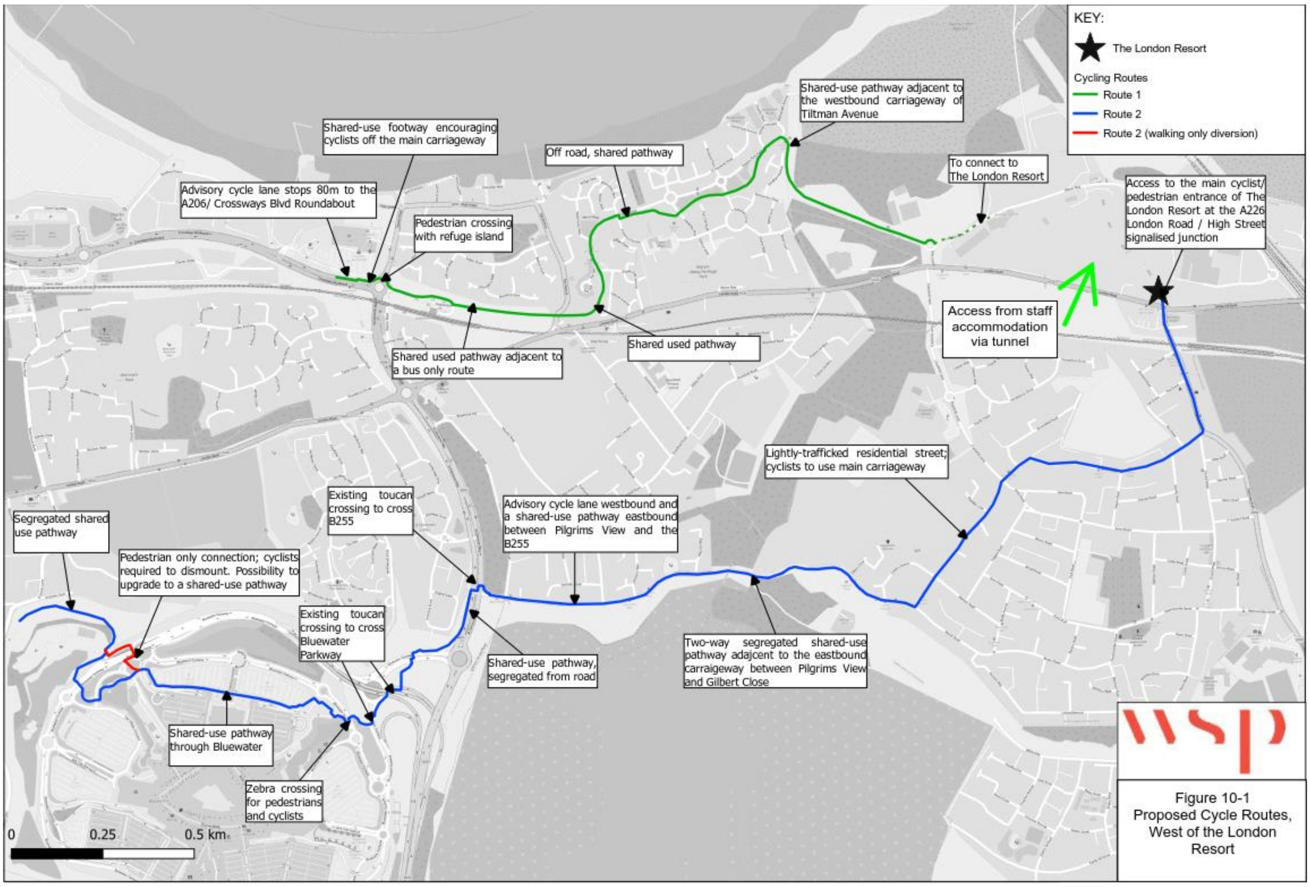


Figure 10-1: Proposed Cycle Routes, West of The London Resort

10.6.12. Route 1, shown in green in **Figure 10-1,** utilises the existing advisory cycle lane along A206 Crossways Boulevard before following signage to leave the main carriageway and use the shared-used cycle pathway and island crossing facilities to navigate across B255 Station Road, the northern arm of the A206 Crossways Boulevard / B255 Station Road priority controlled roundabout. The identified route travels along the shared-use cycle pathway adjacent to the bus only connection between Greenhithe Station and Ingress Park Avenue; this low trafficked bus-only route allows cyclists to be segregated from private use vehicles and the high HGV volumes observed along London Road.

10.6.13. As the bus only-route re-joins private vehicle traffic, cyclists have the option of utilising the shared-use cycle pathway which continues along the northern of Ingress Park Avenue before crossing at the Watermans Way junction to Stonely Crescent and on to Liverymen Walk. Alternatively, the low volumes of vehicles along Ingress Park Avenue mean that cyclists may also choose to remain on the main carriageway. Cyclists can then access the existing shared-use cycle pathway on Tiltman Avenue. The London Resort proposals will include a cycle connection from Titman Avenue into the main development and a tunnel under the A226 London Road for staff. The staff accommodation located at Craylands Lane Pitt together with improvements to the Titman Avenue access will improve the east-west links for pedestrians and cyclists.

10.6.14. Whilst Ingress Park Avenue and Tiltman Avenue are less direct that London Resort in its entirety, they offer a safer cycle route, segregated from low trafficked highway via an existing shared-use cycle pathway. In addition, Route 1 avoids the steep gradient of London Road between The Avenue and Tiltman Avenue and routes via public spaces, such as Stonely Crescent and Liverymen Walk, which are well designed places where people wish to cycle, in line with LTN 1/20. Through Section 106 (S106) agreement, it will be possible for LRCH to fund any identified upgrades or improvements along the proposed Route 1 and will secure implementation of appropriate wayfinding, signage and additional lighting or security to guide visitors and staff towards the Resort.

Route 2

10.6.15. Route 2, shown in blue in **Figure 10-1**, targets staff and visitors travelling from residential areas south west of the Resort and utilises the existing shared-use pathway connections and toucan crossings to navigate through Bluewater development and onto the B225. The section of Route 2 shown in red identifies an existing pedestrian connection that would require cyclists to dismount if they wish to use this shorter connection; as Bluewater Parkway is adopted highway, there is potential to upgrade the existing pedestrian connection to a shared-use pathway.

10.6.16. The shared-use pathways through Bluewater join back up to the B225 and cyclists and pedestrians are able to use the toucan crossing at the B255 / Mounts Road junction to access the eastbound shared-use pathway, and WB advisory cycle lane between the junction and Pilgrims View. On Alkerden Road east of Pilgrims View, there is a two-way segregated shared-use pathway adjacent to the eastbound carriageway that extends for approximately 400m to Gilberts Close. Signage instructs cyclists travelling westbound on the advisory cycle lane east of Gilberts Close and west of Pilgrim's way to cross the carriageway and join the two-way shared-use pathway. At the Alkerden Road / Milton Street priority-controlled roundabout, cyclists can use the lightly trafficked residential streets to follow the carriageway to the High Street.

10.6.17. To give a greater perception of safety and in line within the LTN 1/20 guidance, through the S106 agreement it will be possible for LRCH to fund an upgrade of the existing westbound advisory lane through the implementation of visual segregation by painting the advisory cycle lane; it will be possible for LRCH to help fund the upgrading of the two-way shared-use pathway to a footway level cycle track by providing solid white-line segregation for pedestrians and cyclists. This off-road route requires maintenance including cutting back of vegetation to increase the space available on the shared use path, this will complement the segregation between cyclists and pedestrians. The S106 agreement will support the implementation of additional lighting and surveillance are to be installed on this route to improve personal security, particularly in the winter months and at night when visibility is poor.

10.6.18. As discussed in Section 10.3, EDC have identified improvements to Route 14 along Alkerden Road (shown in **Plate 10-6**); as part of the S106 agreement and subject to ongoing discussions with Local Authorities, LRCH will look to help fund further upgrades to ensure that the London Resort proposes tie in to the EDC identified route to form a cohesive and connected walking and cycling network.

Upgrading DS1 PRoW

10.6.19. To accommodate general access to the London Resort jetty, it is proposed that DS1 ProW between Greenhithe and the London Resort jetty is improved to provide a quieter off road connection for cyclists and pedestrians, away from London Road which was identified as one of routes in the area with the highest propensity to cycle through the PCT. This is shown in **Plate 5-4**.

10.6.20. The 622m DS1 footpath is currently closed between Swanscombe and Greenhithe for planned works, and whilst it is proposed to be maintained as part of the London Resort development proposals, it is recommended that the following upgrades should also be considered to support westerly trips. The upgraded DS1 PRoW cycle route should be formed of a footway level cycle track, which will require widening to ensure there is sufficient space for cyclists and pedestrians, travelling in both directions. Where there is sufficient space to separate the pedestrian and cycle paths, a different surface texture should be used to clearly indicate separate surfaces intended for either cycle or pedestrian use. The design elements of the retained DS1 can be determined as part of the S106 agreement and obligations.

10.6.21. As this will possibly look to serve trips all year-round it is proposed that as part of the S106 agreement funding could be provided for street lighting this will assist in offering a good degree of personal security.

Complimentary measures should be provided on the route such as street furniture to provide spaces to stop and rest along the route, as the footway is a PRoW this will be used by locals and in itself be a destination as well as a route to the London Resort jetty.

10.6.22. The route will benefit the local area and provide a connection to the Swanscombe Ferry supporting onward commuter trips via the clipper boats service to central London. A network of signage and wayfinding for cyclists and pedestrians will highlight the key destinations and provide information about the Resort, ferry services and the local area.

EAST OF THE KENT PROJECT SITE

Route 3

10.6.23. Following the analysis undertaken as part of the cycling audits and discussed in detail within this chapter, London Road has been identified as a key direct route between Northfleet and Ebbsfleet International railway stations but due to the constrained nature of London Road, and high volumes of HGVs passing through this route, there are limited opportunities to provide appropriate cycling and walking interventions which meet the requirements of LTN 1/20. As such Thames Way, located east of Ebbsfleet International Station, has been identified through the CyIPT as a route with high cycling potential to support a cohesive network; this link is also of strategic importance as it forms part of the NCN 1.

10.6.24. There is currently an existing shared use path located adjacent to the SB carriageway of Thames Way; as outlined in the LTN 1/20 shared use is appropriate alongside interurban and arterial roads where there are few pedestrians, such as Thames Way. A shared use path should be a minimum of 3m in width where there is high propensity of cyclists using this route on Thames Way based on the PCT Government Scenario.

10.6.25. The existing road layout doesn't include a footway, cycle lane or shared-use pathway on the NB carriageway but as part of the active travel strategy and to support walking and cycling trips from Gravesend and residential areas east of the Resort, it is proposed to provide a footway-level cycle track. The provision will measure approximately 3m in width and be located between A226 Thames Way / B262 Springhead Road roundabout and the A226 Ebbsfleet Gateway / International Way signalised junction. The proposals for a footway-level cycle track will build upon the existing footway provision for access to the NB bus stop, 150m north of the A226 Thames Way / B262 Springhead Road roundabout.

10.6.26. The proposed walking and cycling route along Thames Way, targeting areas to the east and south east of the London Resort is shown in **Figure 10-2**. The identified improvements will connect Thames Way and International Way to the dedicated walking and cycling link between Ebbsfleet International Station and the Resort.

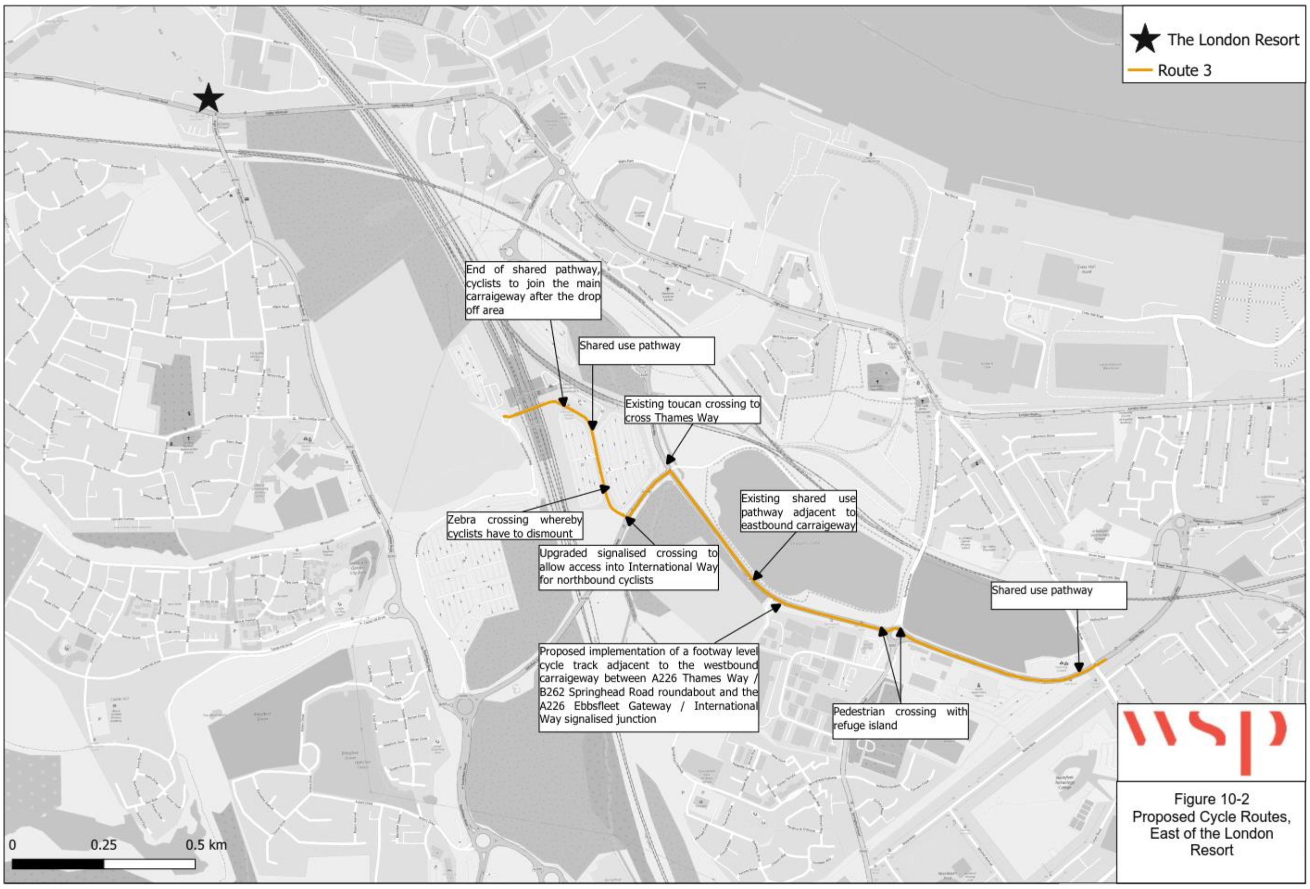


Figure 10-2: Proposed Cycle Routes, East of The London Resort

10.6.27. It is considered that the Thames Way footway-level cycle track proposals will connect the route to Ebbsfleet International Station, the existing shared-used pathway that routes through the station and ultimately will link areas east of Ebbsfleet to the dedicated walking and cycling connection proposed within the red line boundary, between Ebbsfleet International Station, the Resort and the London Resort jetty. Upgrade of cycling provision to this route, will support the CyIPT in developing a cohesive network, and further provide an attractive route to Gravesend and Ebbsfleet international, whilst serving communities within Northfleet and Springhead.

10.6.28. As part of the S106, it recommended the existing shared use path is upgraded to a footway level cycle track at least 1.5m in width in both directions and can be achieved through visual segregation and solid white line marking, supported by funding from LRCH. If upgraded, the existing shared-use pathway should be widened to install a footway level cycle track with segregation from pedestrians in the form of a markings or surface changes.

10.6.29. Route 13, which has been identified by EDC as a potential improvement in **Plate 10-6**, is International Way between A226 Ebbsfleet Gateway and Ebbsfleet International Station; subject to ongoing discussions with Local Authorities, LRCH will help fund improvements in collaboration with EDC and tie into the Garden City proposals as part of the Section 106 agreement.

NORTH OF THE ESSEX PROJECT SITE

10.6.30. The Port of Tilbury will attract active travel users from the north of the river and the strategy for walking and cycling aims to benefit both visitors and staff to the London Resort as well as the general public and commuters.

10.6.31. The PCT highlighted there is potential for cycling between Tilbury and Kent, with the crossing included within the Top 20 routes in the area. There is opportunity to develop a high-quality cycle route through Tilbury with a forecast 411 trips identified under the government scenario between the Port of Tilbury and Grays.

10.6.32. At present the main pedestrian bridge to the dock is traffic only with poor signage; a new access point will be installed and will connect to the NB shared use path which extends between the Port of Tilbury and Tilbury Town Centre. An upgrade to the pedestrian/cycle bridge will provide a more attractive route for cyclists over the railway track, improving lighting, and surveillance which may be quite intimidating for users.

10.6.33. The proposed walking and cycling routes between Tilbury Town Railway station, the residential areas of Tilbury and the Port of Tilbury are demonstrated in **Figure 10-3**.

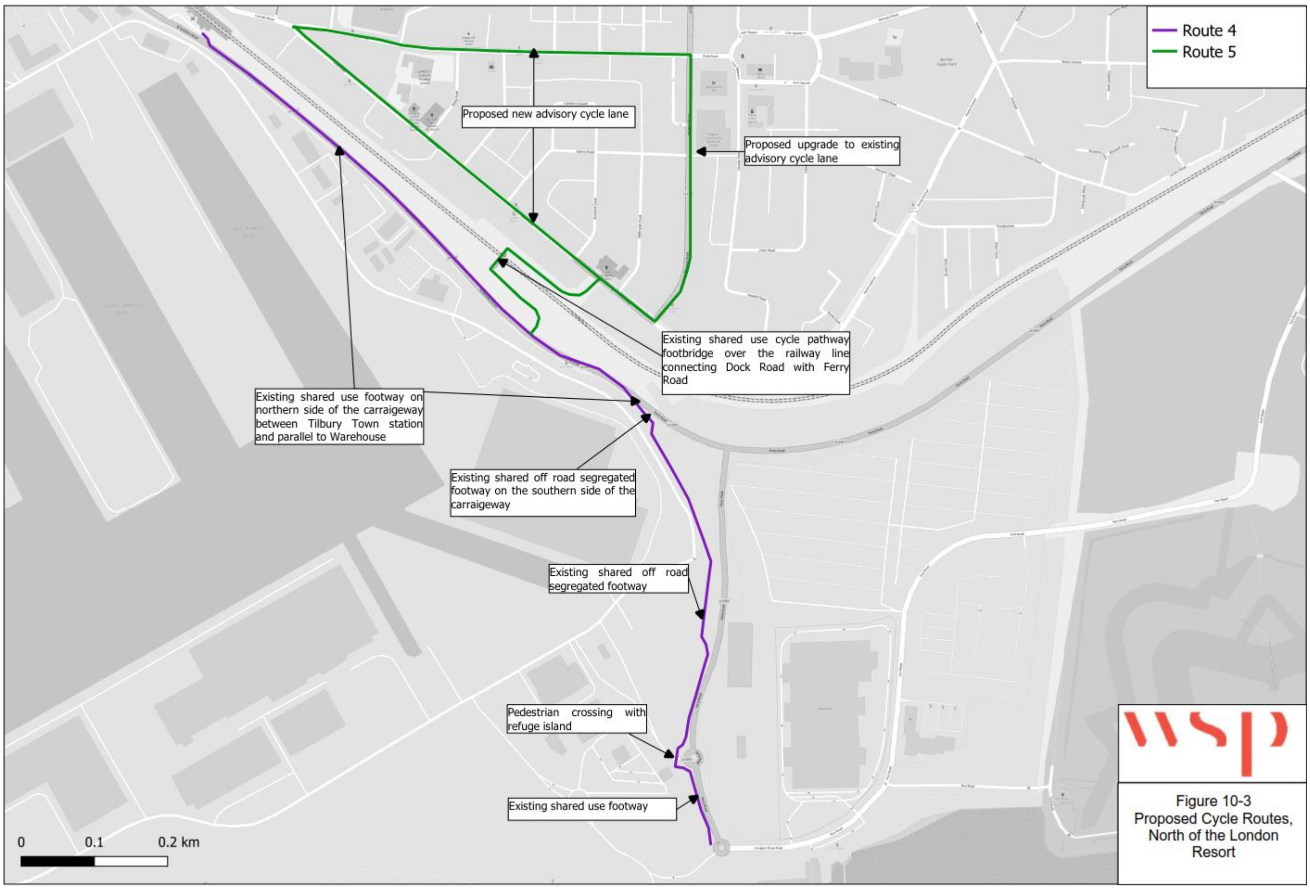


Figure 10-3: Proposed Cycle Routes, North of The London Resort

Route 4

10.6.34. An existing shared-use pathway connects the south-western side of Tilbury Town Railway Station to the Port of Tilbury along the A1089. This provides safe and efficient pedestrian and cycle access from the station to the 'Park and Glide' ferry provision

Route 5

10.6.35. Calcutta Road was identified as a top ranked new cycleway as such this route has the potential to deliver trips into Tilbury. In order to improve access for visitors and staff to the pedestrian cycle bridge over the railway line and onwards to the Port from residential areas of Tilbury, it is considered that the following improvements could be part-funded by LRCH as part of the S106 agreement to support the authority to implement improvements:

- speed limits reduced to 20mph on Dock Road, Calcutta Road and Montreal Road;
- speed cushions removed to improve comfort for cyclists, with the removal of road markings to aid the speed reduction of motor vehicles on Dock Road;
- cycle markings on the carriageway and at each junction with arrows directing cyclists at Dock Road and Montreal Road junctions;
- a zebra crossing at the pedestrian bridge on Dock Road to enable safer crossing for pedestrians;
- the junction radii between Dock Road and Montreal Road is to be tightened to reduce the turning speed of motor vehicles and increase visibility for all road users;
- the existing advisory cycle route on Montreal Road requires maintenance and should be upgraded to a mandatory facility with coloured asphalt these markings should be continued over the junction with Sydney Road; and
- the mandatory cycle lane should be continued on Calcutta Road with light segregation such as wands or orcas. This was identified as a top ranked new cycle way through the CyIPT, showing the route has a high cycling potential, with spare space for reallocation of carriageway space. This route is a key east-west connection through Tilbury Town Centre and would support onward trips to Grays.

10.6.36. The connection to the Port will facilitate onward trips via the Tilbury Ferry to London Resort jetty and the leisure core via the Park and Glide, where passengers will be allowed to take their bikes onboard.

10.7 SIGNAGE AND WAY-FINDING

10.7.1. Appropriate signage and wayfinding should be implemented, and users must feel like they are being guided along the route from starting point to their destination. Directions should be provided at every decision point and sometimes in between for reassurance. Signs should be clear, easily visible and legible, whilst not adding to street clutter.

10.8 CYCLE HIRE SCHEMES

10.8.1. Cycle hire schemes have become increasingly popular and have frequently been cited to solve 'last mile' journeys, connecting transport hubs to their final destinations. As such the installation of cycle hire facilities is being considered at key transport hubs including Greenhithe Station, Ebbsfleet International Station and the London Resort.

10.8.2. Implementation of this will contribute towards:

- increasing the number of residents cycling within the local area;
- raising awareness and increase the visibility and appeal of cycling as a mode of travel;
- improve cycle security; and
- improve customer satisfaction with station and interchange facilities in the area.

10.9 FURTHER RECOMMENDATIONS FOR CONSIDERATION

10.9.1. Given the scale of the site and opportunities which have come out the strategy, it is recommended an area-wide Local Cycling and Walking Infrastructure Plan (LCWIP) should be considered to develop a cohesive cycle network supporting visitor, commuter and leisure trips on the Swanscombe Peninsula and surrounding residential and employment areas.

10.9.2. The LCWIP would follow the six-stage process including network planning for walking and cycling, with appropriate engagement with relevant partners and stakeholders.

10.10 SUMMARY

10.10.1. As one of the main active travel entrances to the Resort, it is proposed that the A226 London Road / High Street / Pilgrims Road junction is upgraded to improve crossing facilities for pedestrians and cyclists, particularly those travelling from Swanscombe Railway Station and Routes 1, 2 and 3 demonstrated in **Figure 10-1** and **Figure 10-2** in addition to the dedicated walking and cycling connection from Ebbsfleet Railway Station (discussed in Chapter 5).

10.10.2. Using the future mobility mode share tool and the target mode shares identified as part of the TDM plan, WSP has been able to identify key areas where visitors and staff are likely to cycle or walk to the London Resort, for ease these have been described as being south, west or east of the Kent Project Site and north of the Essex Project Site.

10.10.3. A summary of the indicative proposals has been provided in **Table 10-1**. It is intended that the proposed improvements and funding from LRCH can be secured either through the DCO or by way of the S106 agreement.

Table 10-1: Summary of Opportunities and Recommendations

Area Identified	Opportunities and Recommendations
A226 London Road / High Street / Pilgrims Road:	▪ improved crossing facilities for pedestrians and cyclists accessing the main active travel entrance of The London Resort; ▪ a network of signage and wayfinding directing cyclists and pedestrians should be installed within the town centre area and directing visitor and local trips to the DS3 PRoW which will connect to footways within the study boundary into London Resort and towards residential areas within Greenhithe
South of the Kent Project Site:	▪ dedicated walking and cycling route identified within the Development Proposals (Chapter 5) to connect Ebbsfleet International Station, the Resort and London Resort jetty; and ▪ to link with the proposed improvements along Thames Way, East of the Kent Project Site
West of the Kent Project Site:	▪ upgrade to existing DS1 PRoW between Greenhithe and London Resort jetty; ▪ shared used path with segregation between cyclists and pedestrians; ▪ LRCH to help fund improvements to lighting, security and route maintenance through the S106 agreement; ▪ Route 1 identified through Ingress Park and Tiltman Avenue, utilising existing shared use pathways as an alternative parallel route north of London Road; ▪ Route 2 identified through Bluewater and along Alkerden Road, utilising existing shared-used pathways, toucan crossing facilities and advisory cycle lanes as an alternative parallel route south of London Road; and

Area Identified	Opportunities and Recommendations
	▪ opportunity to upgrade a pedestrian only connection along Route 2 to a shared-use pathway
East of the Kent Project Site:	▪ upgrade of existing shared use path along SB carriageway through visual segregation; ▪ proposed footway level cycle track between A226 Thames Way / B262 Springhead Road roundabout and the A226 Ebbsfleet Gateway / International Way signalised junction; ▪ to support this improvement, A226 Ebbsfleet Gateway / International Way signalised junction will be upgraded to include a straight-across pedestrian crossing on the A226 Ebbsfleet Gateway north-eastern approach; and ▪ a network of signage for pedestrian and cyclists.
North of the Essex Project Site:	▪ improve signage and pedestrian access to the dock; ▪ upgrade to pedestrian bridge to accommodate cyclists with associated lighting improvements; ▪ zebra crossing point on Dock Road; ▪ removal of road markings and speed cushions on Dock Road; ▪ mandatory cycle lane on Montreal Road; ▪ removal of guard railing on the route, replacing with planters; and ▪ mandatory cycle route with light segregation on Calcutta Road

10.10.4. This strategy has set out and identified numerous key routes into the London Resort, Kent and Essex Project Sites to accommodate both commuter and visitor trips undertaken by Active Travel Modes. With the support of the future network developed by EDC and subject to ongoing discussions with local authorities, through S106 LRCH can help fund additional connections to ensure be a cohesive network serving the site, overcoming the existing barriers such as London Road and the railway lines.

10.10.5. Each route alignment has been developed, where possible, in line with the new LTN 1/20 guidance to provide a network which follows the 22 design principles. As such, this network is likely to encourage trips to the site via active modes which will increase the potential mode shares to the site.

10.10.6. As well as trips into The London Resort, improving the active travel infrastructure and streetscapes within the study area will encourage more local residents to take up active travel as part of their commuter, school or leisure trips with the provision of new infrastructure.

10.10.7. The schemes identified support the findings within the propensity to cycle tool and CyIPT, as such show they are already a popular route for commuters with forecasted trips set to increase. The routes will be completed with associate signage, cycle hire schemes, ferry access and parking, improving the users overall experience.

CHAPTER 11

PUBLIC TRANSPORT STRATEGY

11 PUBLIC TRANSPORT STRATEGY

11.1 INTRODUCTION

11.1.1. The London Resort is well positioned in terms of its proximity to frequent rail, bus and ferry services and the existing conditions of each of these modes is discussed in detail within chapter 4. It is recognised that Public Transport needs to play a major role in facilitating the movement of both visitors and staff to/from the London Resort. The management of Public Transport is therefore a key element in ensuring sustainability and helping to reduce reliance on private vehicles.

11.1.2. The Public Transport strategy seeks to ensure that seamless and co-ordinated connectivity is achieved, as well as addressing capacity requirements and, where appropriate, the introduction of new and/or enhanced services. **Plate 11-1** shows the strategy for public transport connectivity in terms of the modes that will be available to travel to/from the Resort.

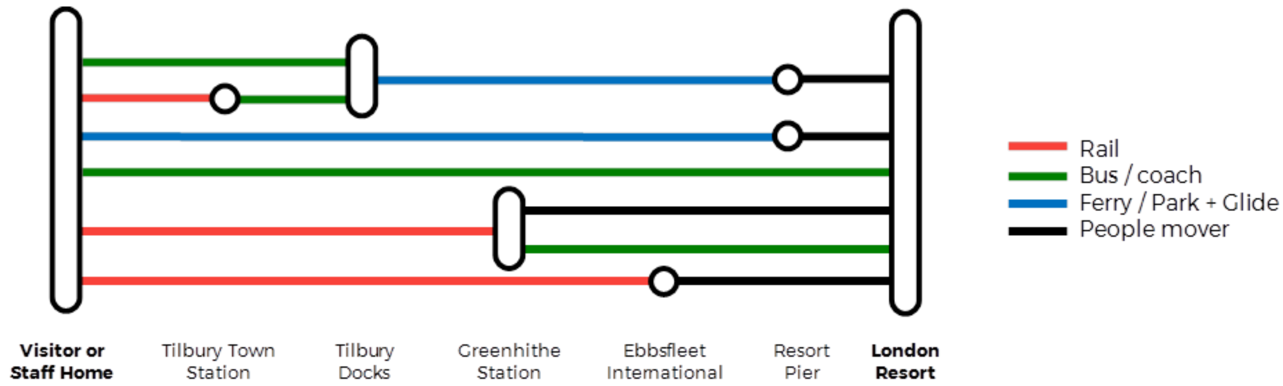


Plate 11-1: Public Transport Connectivity

11.1.3. It is envisaged that the majority of visitors to the Resort likely to use public transport will arrive by rail services, whilst a significant proportion of the large numbers of staff requiring transport to and from the Resort will be accommodated by Bus Rapid Transit and local bus services. Ferry services via the Essex Project Site will be implemented to transport visitors and staff between central London and the Kent Project Site, in addition to operating a Park and Glide between Tilbury and the leisure core.

11.2 FUTURE MOBILITY MODE SHARE TOOL

11.2.1. The Future Mobility team estimated the mode shares for staff and unique visitor person groups using a bespoke mode share estimation tool that was developed for the project. A Description of the tool is provided in TN4 produced by the Future Mobility team, included within **Appendix TA - P**.

11.2.2. In this section the resulting mode share for public transport modes is displayed. These results are assuming Scenario 1 - Base Case. The resulting mode shares are displayed in **Table 11-1**.

Table 11-1: Public Transport Mode Shares

Mode	Staff	UK Home Origin	Nearby Daytrip	From Off-Site Hotel (Domestic)	To On-Site Hotel (Domestic)	From Off-Site Hotel (International)	To On-Site Hotel (International)	Average Mode Share for all Person Groups
Rail / tube	22%	22%	29%	31%	15%	31%	33%	24%
Public bus	30%	2%	1%	1%	0%	1%	0%	8%
Ferry	1%	1%	1%	2%	0%	2%	0%	1%
Shuttle	0%	0%	0%	1%	0%	1%	0%	0%
Walk	4%	1%	0%	0%	0%	0%	0%	1%
Bike / scooter	13%	3%	1%	1%	0%	1%	0%	4%
Non-PT modes	30%	71%	68%	64%	85%	64%	67%	61%

11.3 RAIL STRATEGY

11.3.1. Rail is a core component of the public transport strategy and, due to the proximity to the HS1 railway line, represents the fastest way to get to the Resort from central London among other key destinations in the South East. The strategy uses rail as much as possible as both an attractive and sustainable access mode and will build upon existing capacity in order to meet forecast visitor demand. This section summarises the strategy with further detail provided in **Appendix TA - U**.

11.3.2. The network around the London Resort site has three key stakeholders who have been engaged with this process throughout and whose concerns and priorities regarding capacity are critical to the success of the rail access strategy. The three stakeholders are:

- London & South Eastern Railway Limited (Southeastern), the Train Operating Company (TOC) along the high-speed and conventional lines;
- HS1 as the owner and operator of the high-speed infrastructure; and
- Network Rail (NR) as the owner and operator of the conventional railway infrastructure.

11.3.3. Due to the highly commercially sensitive nature of the franchised passenger rail system of the UK, baseline observed demand data has remained undisclosed by Southeastern. However, we have continued to engage with key rail stakeholders to deliver a joined-up industry approach in order to identify the proposed rail strategy, as discussed later in paragraph 11.3.6. The rail network within the vicinity of the London Resort is presented and discussed in detail within Chapter 4.

CURRENT PASSENGER SERVICES

11.3.4. The rail access points being promoted as part of our rail strategy include Ebbsfleet International for International and Domestic High-Speed services, Tilbury Town for Domestic services north of the River Thames, and Greenhithe, Swanscombe and Northfleet for Domestic services south of the river. The Domestic services are operated as part of franchises procured by the DfT who have ultimate control over the minimum Train Service Specification (TSS) for the given line of route.

11.3.5. From the perspective of domestic passenger rail services, there are two domestic passenger service operators relevant to the Resort:

- London & South Eastern Railway Limited (Southeastern, owned by Govia) are the current operators of the South Eastern Franchise (also known as the Integrated Kent franchise) until their contact expires on 16 October 2021. This includes the operation on Network Rail (North Kent Line) and HS1 infrastructure.
- Trenitalia c2c Limited (c2c) are the current operators of the Essex Thameside Franchise until their contract expires on 10 November 2029. This is the access point on the London, Tilbury and Southend Line.

11.3.6. WSP, LRCH and the three key rail stakeholders Southeastern, HS1 and NR have formed a joint working group to assess, discuss and agree the infrastructure improvements required to accommodate visitor and staff demand to and from the Resort (primarily work at Ebbsfleet International Station) and any requirements for additional rolling stock to support the demand forecasts. The group has devised a roadmap to reach an agreement and an ultimate Statement of Common Ground. An independent study by a third-party supplier is being commissioned as part of this process.

11.3.7. Alongside our submission we have provided a Memorandum of Understanding from each of the three stakeholders confirming that the joint industry approach is being adopted and that a roadmap has been devised to ensure the delivery of capacity is sufficient to meet forecast Resort demand. These can be found in **Appendix TA - U**.

11.3.8. Eurostar, the other operator of train services in Kent, provides international rail services to Brussels and Paris. From the perspective of international passenger rail services, while currently not serving Ebbsfleet International with international services due to the COVID-19 pandemic, Eurostar International Limited (Eurostar) has scheduled services to visit at Ebbsfleet International in the past, primarily as an outer London hub for UK-based passengers travelling to Paris or Brussels for business or leisure. It is envisaged that international visitors to the Resort will grow in numbers in the post-2029 period. Eurostar is not a franchised rail operator, and it responds commercially to the opportunities which it perceives.

CORE AND PHASED STRATEGY

11.3.9. Our core strategy is centred around the HS1 route, with Ebbsfleet International station being the primary rail access point to the Resort, ensuring there is sufficient capacity from an on-train and station concourse perspective whilst using demand management interventions to push/incentivise/manage demand to this access point and away from the North Kent Line stations. This core strategy includes limited access to and from the North Kent Line stations at Greenhithe, with an onward transfer by bus to the London Resort, and to Northfleet, with onward transfer to Ebbsfleet International Station. We are aware that additional station infrastructure capacity along with new rolling stock investments will be required to meet demand and we have been working closely with the stakeholder group to ascertain the scale of the challenges and the necessary interventions.

11.3.10. Through ongoing consultation with the stakeholders and responses to statutory consultation, an upgrade to Swanscombe station has subsequently been identified as a potential rail access solution on the North Kent Line, with funding understood to be available from Network Rail. However, at this time the Transport assessment and associated ES Chapters do include this as part of the assessment. Should this be delivered, it will provide added resilience and capacity for growth in line with theme park Gate Two.

ASSESSMENT METHODOLOGY

11.3.11. A full description of our modelling methodology can be found as part of **Appendix TA - U** which was used to calculate the rail demand forecast for the London Resort and the distribution of demand across possible rail access points to the site. The forecast informs Southeastern's analysis to determine the Resort's impact on the commuter rail network in terms of on-train loadings on the North Kent Line (NKL), and it feeds into the impact analysis work undertaken by an independent third party to identify the need for capital investment on the HS1 network to accommodate increased demand generated by the Resort.

FORECAST DEMAND

11.3.12. We have calculated the demand for rail across a series of dimensions in order to provide the stakeholders with the necessary disaggregation to assess capacity and necessary mitigation, including the following:

- Arrivals and Departure Demand by Time of Day (hourly demand);
- HS1, North Kent Line and London, Tilbury and Southend Railway;
- Up (Towards London) and Down (From London);
- Visitor and Staff Demand;
- Peak and Design (85th percentile) Day;
- Years 2025 (Gate One opening), 2029 (Gate Two opening) and 2038 (Resort maturity); and
- Minimum and maximum mode shares.

11.3.13. For this analysis, we have used target mode shares of 30% for rail access to the Resort. This is a **higher** figure than the baseline mode share calculated in the Mode Share Model (i.e. the organic mode share anticipated) and is a provisional mode share in order to test the available capacity and subsequent necessary interventions as part of our joint industry approach with stakeholders. This will support the indication of how aggressive demand management measures can be in order to attract people towards rail and away from road.

11.3.14. **Plate 11-2** indicates the total Design Day demand for each rail line access route: HS1 (Ebbsfleet International station), NKL (Greenhithe, Swanscombe and Northfleet stations) and LTSR (Tilbury Town station). This is the 85% day in 2029 and includes visitor and staff demand combined. This includes one-directional demand (i.e. individual visitors and not journeys, which would be double these figures).

Table 11-2: Design Day Total Demand (one-direction) by Rail Line Access Route

	From London	Towards London	Total
HS1	15,020	1,409	16,430
NKL	4,295	4,313	8,608
LTSR	503	505	1,007
Total	**19,819**	**6,227**	**26,045**

11.3.15. **Plate 11-2** indicates the Design Day arrival and departure numbers by time of day for each rail line access route. Again here, this is the 85% day in 2029 and includes visitor and staff demand combined. The rail strategy has been included in full within **Appendix TA - U**.

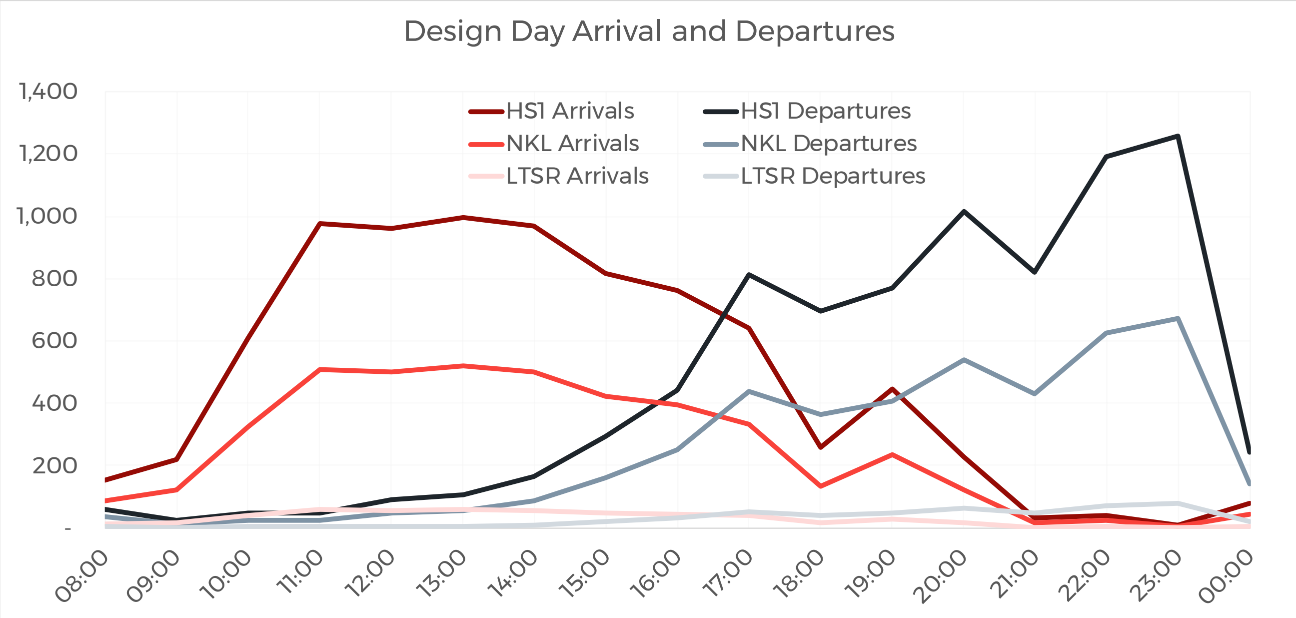


Plate 11-2: Design Day Arrival and Departure Profiles by Rail Line Access Route

11.4 BUS STRATEGY

11.4.1. This section sets out the provisional proposed bus enhancements required to accommodate the London Resort staff and visitors who are likely to travel by bus. A Technical Note has been prepared to detail the Bus Strategy and is included within **Appendix TA - V** and summarised within this section.

BASELINE MODE SHARE

11.4.2. While the highway modelling assessment is underpinned by a worst-case private vehicle mode share, the public transport strategy focuses on a more optimistic use of public transport to ensure it can cope with demand. The bus mode share has been determined by the future mobility analysis and the resulting Mode Share Model which presents a base case scenario together with the potential to significantly decrease private car mode share.

11.4.3. The Mode Share Model provides a maximum and minimum percentage of bus usage and the average between these two levels has been used to define the Bus strategy. All figures presented in the Bus strategy are provisional based on the interpretation of the Future Mobility Mode Share Model. Overall the staff represent the largest part of the potential demand for buses.

DEMAND

Visitors

11.4.4. The Future Mobility Mode Share projections for visitors estimate that between 1.1% and 1.2% of visitors will use the Bus as a main mode to reach the London Resort. The small proportion of International Visitors who are expected to stay locally using private accommodation excluding hotel and may therefore use the bus network to reach the Resort has also been accounted for.

11.4.5. On a typical weekday in 2025, it is estimated that around 660 trips will be made using bus as a main mode, and this will increase to 913 on a peak day. In 2029, it is estimated that up to 868 will be made by bus and

37% more on a peak day. In 2038, around 1,310 bus trips are expected to be made by staff on a typical day and around 1,789 bus trips on a peak day.

Staff

11.4.6. The Future Mobility Mode Share Model provided a forecast mode share for bus only trips. These are based on an assessment of all mode performances in journey time, coverage and other relevant aspects described in **Appendix TA - V.** The mode share from buses is expected to range between 24% and 30% of the full staff trips. The bus demand figures have been estimated using an average figure of 27% share on arrivals and departures.

11.4.7. On a typical weekday in 2025, it is estimated that around 3,655 staff trips will be made using the bus as a main mode, and this will increase to 4,600 on a peak day. In 2029, it is estimated that up to 5,200 staff trips will be made by bus and 25% more on a peak day. In 2038, around 5,500 bus trips are expected to be made by staff on a typical day and around 6,800 bus trips on a peak day.

BUS STRATEGY PRINCIPLES

11.4.8. The Bus strategy for the London Resort is based on the both the demand and existing network analysis and underpinned by the following principles:

- provide a range of convenient and attractive Bus connections to fit different scenario years, day types and user types;
- build-on and optimise existing network rather than duplicating and dispersing resources across overlapping routes;
- build on KCC's ambitious strategy, policies and tools, such as Fastrack and MasS (Mobility as a Service);
- differentiate solutions for high demand and lower demand areas;
    - consider high frequency bus service for area with high demand within a direct bus route catchment, prioritising the premium Fastrack service where appropriate;
    - consider practical, smart, flexible solution to accommodate lower demand areas such as Demand Responsive Travel (DRT);
    - consider a shuttle service for areas of high demand where no good public transport connections are available, and where DRT is not suitable; and
    - consider Mass transit solution for train interchanges;
- Where possible, and within the vicinity of the Project Site, provides Bus priority; and
- Improve interchanges with convenient bus stop locations, integrated schedule fare and information.

IMPACT AND OPPORTUNITIES

Fastrack B

11.4.9. To serve the London Resort; the Fastrack service will need to be rerouted to the Interchange plaza via the new road as presented in chapter 5 within the Access Proposals. This diversion will be provided with full bus priority. While this diversion will omit some existing bus stops, journey time shall be speed up using the dedicated new road. It has not yet been agreed if all Fastrack B bus trip will be diverted or only a proportion of them. This will be decided with/by the KCC Fastrack team considering the overall trip pattern on Fastrack B.

11.4.10. Fastrack B capacity will also need to be enhanced to cater for the expected demand. It is expected that the potential additional daily total demand for Fastrack could be between 1270 in 2025 up to 1977 trips in 2038 on Fastrack. Presenting an increase of 24% of existing pre-COVID weekday demand, and up to 37% in 3038.

11.4.11. The additional capacity could be provided by either increasing frequency or changing vehicle type to articulated. If the frequency increase is chosen, the additional capacity required in both directions will be between one bus per hour (bph) in peak hours on an 85th percentile day for 2025 and two buses per hour in 2038. This will be raised by another one bus per hour on peak days.

Fastrack C

11.4.12. Ingress Park is a large developed residential area located to the south west of the London Resort. Increasing the number of buses in this area has been contentious, and the benefits of further additional capacity should be carefully assessed to ensure the impacts on emission, noise and safety are understood and mitigated. The Fastrack team is currently investigating a potential new route along the alignment below to avoid increasing bus volumes operating through Ingress Park while continuing to improve the level of service on Fastrack.

11.4.13. The potential alignment for the new route, based on WSP's assessment of how the route would work, could potentially be:

Greenhithe Station, the London Resort, Ebbsfleet International, Bluewater and the hospital [Darent Valley], ultimately linking Dartford and potentially Abbey Wood, operating at 1 BPH in each direction (every 60 minutes) growing organically with demand.

11.4.14. The potential new Fastrack Route C could cater for some of the additional demand expected from Greenhithe and potentially expand the catchment area of Fastrack to additional members of staff.

Urban Bus Network

11.4.15. The spatial analysis of staff locations in Dartford and Gravesham, added to the visitor bus demand, which is expected to be distributed evenly across the counties shows few other areas which are likely to generate additional bus demand.

11.4.16. **Plate 11-3** illustrates these six areas of interest and the potential proportion of demand they could generate.

- **Area 1:** East of Gravesham (40% of Gravesham demand);
- **Area 2**: South West of Gravesham (20% of Gravesham demand);
- **Area 3**: West of Ebbsfleet (20% of Dartford demand);
- **Area 4:** West of Dartford (20% of Dartford demand); and
- **Area 5 and 6**: pocket of potential demand south of Dartford (10%+10% of Dartford demand).

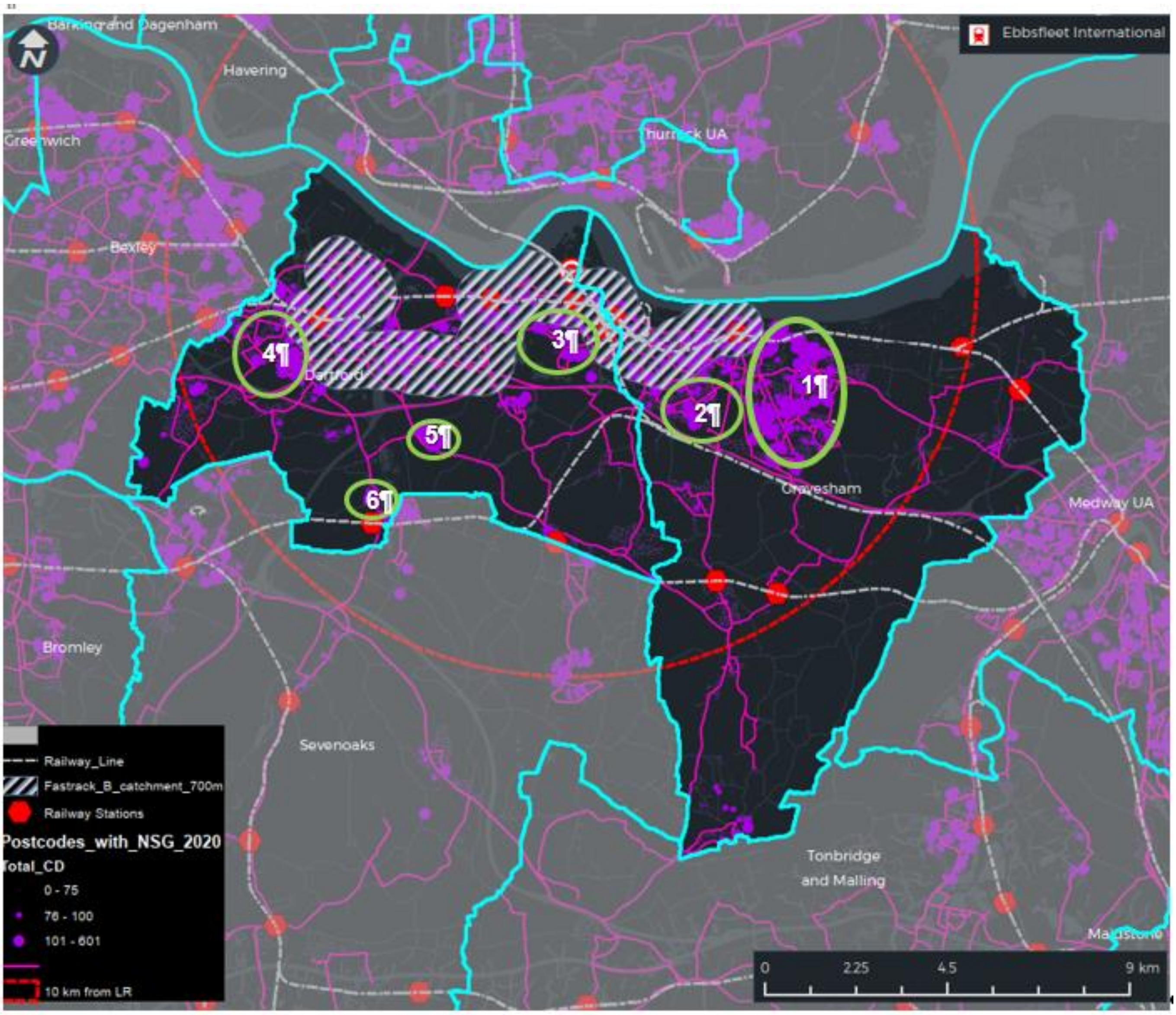


Plate 11-3: **Area of Potential Bus Demand**

11.4.17. The potential opportunities and solutions in each of these areas is discussed in detail within the Bus Strategy (**Appendix TA - V**) and summarised below:

- **Area 1:** East Gravesham will require increase capacity in the order of 1 or 2 bph in peak time, 85th %ile Day. This could target route 480 and 490 up to the London Resort, with some buses terminating at interchange plaza or Swanscombe only rather than all continuing to Dartford Station. The peak day services will require an increase of 1 bph. Route 480/490 will be as important as Fastrack to support staff and visitors travelling by bus.
- **Area 2:** To cater for additional demand, it may be possible to extend the current route 484 which currently operates between Bluewater/Swanscombe / Ebbsfleet International off peak. The service would need to be extended to area 2 follow the routeing of route 483 until Perry street, operating 1 bus per hour from 8:00 to midnight. The extension is estimated to require a 30 min round trip. Alternatively, a DRT route could be provided directly to the Interchange plaza, using 1 vehicle

- **Area 3:** it is not proposed share the DRT for area 2 or route 484 resources to serve this area.
- **Area 4:** A potential extension of route 480/490 could be consider in off peak, otherwise a DRT service focus on this area.

11.4.18. **Area 5** and **Area 6** are locations of potential demand but represent a very small proportion of the overall demand. With an expected number of trips per peak hours of 12 in 2025, increasing to 20 in 2038, a direct bus link to the Resort cannot be justified. However, should some staff live in the area, a DRT bus service could be provided. The Mobility As A Service (MasS) project provide exactly the right platform to support such kind of services. Providing a bus service on demand also raises the opportunity to continuously monitor bus usage and understand when/if the established demand requires a regular scheduled bus service at a later stage

11.4.19. Based on the limited direct bus connections to the Ferry terminal at Tilbury which is only served by Route 99 and a train network required changes to reach Tilbury Town station for local residents, the bus strategy proposes the following for the north of the river:

- [Extension of Route 73 or 66 to The Ferry terminal, requiring an additional 10 minutes per direction.]
- Provision of a new shuttle route with the only objective to provide a fast link between Tilbury Town Station and The Tilbury ferry terminal. This service will be scheduled to meet train arrivals or every 20 minutes, using one vehicle (which subject to demand could repeat the journey). This service may also be increased by another vehicle on peak days.

People Mover

11.4.20. A significant number of visitors and staff are expected to arrive by train. The rail passengers will be provided with an option to make the first/last leg of their journey to reach the Resort by bus. Different solutions will be implemented for each station:

- **Greenhithe Station**: visitors and staff will be able to use the existing Fastrack B and potential new Fastrack C to reach the Resort. However, at busiest times these services will be supplemented with three additional 12m people mover vehicles which will operate between Greenhithe station and the Resort.
- **Northfleet Station**: visitors and staff will be able to use the existing Sapphire route 480/490 which picks up and drops off in the High Street. To improve this connection, the Resort is in discussion with the Operator, Arriva, about a potential diversion on one of the service 480 or 490 to directly serve Northfleet Station Road. This will add 1.5 minutes per direction.
- **Ebbsfleet International Station**: it is expected that the majority of rail passengers will be using Ebbsfleet International station; to cater for these passengers the Resort aims to operate a very high frequency people mover service to the Interchange plaza, continuing to the London Resort jetty when required and using articulated buses.
- **The London Resort ferry terminal (South of the River):** the visitors and staff using the 'Park and Glide' ferry from Tilbury terminal will require a people mover to reach the main Resort. The bus connection will run at a very high frequency and operated with articulated vehicles.

11.4.21. It is intended that the People Mover operation should be contracted by The London Resort, with the latter able to control the deployment of vehicle resources according to demand on different days and at different times of the day. To aid flexibility, it is proposed that, whilst the majority of the vehicles should be 18m articulated buses, a number of 12m single deck buses should also be in the fleet. For example, if the volume of arrivals at Greenhithe Station in the early years of operation of the Resort is higher than can be accommodated by Fastrack, the latter buses could be deployed to provide the required additional capacity. The vehicles operating the People Mover service should be powered by battery electricity in the interest of zero emissions.

11.4.22. The People Mover will use the dedicated new People Mover Route to be built between Ebbsfleet International Station and the Interchange Plaza. The journey is expected to last less than 5 minutes.

11.4.23. To encourage and facilitate a seamless interchange, the mass transit fare should be either integrated in the cost of the door to door journey or the Resort ticket or provided for free. The Resort will work with KCC to achieve seamless and through fare capability on the local bus network

INFRASTRUCTURE

11.4.24. It is expected that the proposed bus strategy will require enhancements to supporting bus infrastructure. These improvements will be finalised when the services plans are agreed.

11.4.25. Improvements are anticipated to be required at:

- Ebbsfleet International station, to accommodate the people mover;
- Tilbury Ferry terminal and Tilbury Town Station to accommodate additional bus services in between these two locations;
- bus stop arrangements in Greenhithe;
- bus stops in Northfleet;
- bus stops around Swanscombe, to optimise the last/first mile to the Resort;
- bus priorities shall be implemented wherever physically possible;
- interchange plaza will require a number of lay-by and bus terminus where vehicle can take a layover and should be equipped with electric charging infrastructure for buses; and
- opportunity charging infrastructure will almost certainly be necessary to ‘top-up’ electric buses during the day, and this would most likely be located at the Interchange Plaza.

SUMMARY

11.4.26. The demand analysis demonstrated that a large portion of staff and some visitors are likely to travel by bus. The proposed improvements are envisaged to be enhanced and support active use of public transport for visitors and staff to the London Resort, details of which are summarised below.

South of the Thames:

- Fastrack B diversion;
- Fastrack B capacity increased;
- partial Introduction of Fastrack C between Greenhithe and the Resort;
- increased frequency on routes 480/490;
- potential restructuring of Route 484 or a DRT to serve Perry Street (Area 2) and improve service in Area 3.
- potential extension of routes 480 or 490 in East Dartford or introduction of DRT for area 4
- potential Diversion of routes 480 or 490 to service Northfleet Station Road;
- proposed DRT in Area 3/4, Area 5 and Area 6; and
- introduction of a People Mover network of 3 routes linking Ebbsfleet International station(People Mover E), the Ferry terminal (People Mover E) and Greenhithe (People Mover G) to the Resort Interchange Plaza. The capacity delivered by the People Mover will be reconsidered in 2029 in the light of progress with major work at Swanscombe Station to facilitate a fully accessible approach to the Resort.

North of the Thames:

- extension of route 73 or 66 to Tilbury Ferry terminal; and
- introduction of a new dedicated shuttle service between Tilbury Town Station and Tilbury Ferry Terminal Only.

Implementation:

- the Transport Demand Management Steering Group will be set up to monitor and overview the adoption and implementation of the Bus Strategy in a flexible manner. The Working Group will be composed of representatives of the London Resort, relevant councils and local bus operators;
- the London Resort will take the responsibility to implement and operate the People Mover network as well as the Tilbury Terminal Shuttle;
- it is predicted that the fares generated by the additional demand on the local bus services, including Fastrack, will cover the cost of capacity increases required. Should this not be the case, The Resort would be prepared to pump-prime the services. The potential shortfall will be monitored by the PT Working Group;
- the Resort hopes to include the operation of the potential 5 DRT routes into the KCC MaaS project and contribute financially to cover the net cost of operating these services;
- peak days additional capacity requirements will be specified and tendered as and when required by the Steering Group; and
- infrastructure will be implemented in partnership and following the relevant Authorities' processes.

11.4.27. More details are provided in The Bus Strategy in **Appendix TA - V**.

11.5 RIVER OPERATIONAL PROPOSAL

11.5.1. Due to the London Resort's location adjacent to the River Thames, development proposals include plans to utilise the waterborne network for both construction/operational and visitor traffic, arriving via the Port of Tilbury and central London respectively. Exploiting the Resort's location and sustainable accessibility via the river, will enable a reduction in vehicle movements on the local highway network within Kent and utilise existing capacity in Tilbury.

11.5.2. WSP has been in communication with Uber Boats by Thames Clippers, the existing lead ferry operator along the Thames, and the PoTL to develop a proposed River Strategy for The London Resort. The Uber Boats by Thames Clipper Operational Proposal has been summarised within this chapter and included in full in **Appendix TA - W**.

TO/FROM CENTRAL LONDON

11.5.3. It is considered that a 75-minute river service from central London to The London Resort will offer a sustainable and attractive alternative to private vehicle or rail trips for visitors with a UK Home Origin within London, or international tourists staying in hotels within London boroughs.

11.5.4. The London route will serve key connections with an average frequency of 3-minutes throughout the typical operational day. Indicative proposals from Thames Clippers outline a 2-minute embarkation/disembarkation time at each calling point, with 5-minutes alongside the London Resort jetty for The London Resort and the Port of Tilbury. The London route will incorporate connections with the following disembarkation points along the River Thames:

- Westminster (in 75 mins);
- Blackfriars, for Thameslink services (in 69 mins);
- London Bridge (in 61 mins);
- North Greenwich (in 35 mins); and
- Woolwich for Elizabeth Line (Crossrail) services (in 25 mins).

11.5.5. The proposed operational strategy developed by Uber Boats by Thames Clippers outlines the timetable required to accommodate up to 15% of visitor and staff arriving via ferry. The indicative timetable has been designed to meet the requirements of the Resort and serves key transport connections; the frequency of the service has been designed around the hourly arrival and departure profiles bespoke to the London Resort and would in time require seven 400-seater vessels..

PARK AND GLIDE

11.5.6. '*Park and Glide'* refers to the transport strategy to incorporate 25% of visitor car and coach parking north of the River, at the Port of Tilbury, and use a ferry service to transport visitors arriving by car or by public transport (from Tilbury Town station or via bus route 99) across the river to the Kent Project Site. The Park and Glide service will also be used to accommodate staff movement from Thurrock or other local authorities in Essex across to the Resort.

11.5.7. The Park and Glide service will provide a cross-river shuttle between Tilbury and the London Resort with an average crossing time of 8-minutes. The average frequency of service is expected to be approximately every 15 minutes in the peak periods and every 30 minutes in the off-peak. Indicative timetables are included within the Uber Boats by Thames Clippers' Operational Proposal in **Appendix TA - W**.

11.5.8. The existing ferry connection between Gravesham and Tilbury is operated by Jetsteam. On occasions, Jetstream are unable to provide a service due to weather conditions, poor visibility or technical faults. Concerns were raised during the statutory consultation period (July-September 2020) about the reliability of a Park and Glide service and questioned what management strategy would be in place to ensure limited impacts.

11.5.9. On infrequent occasions when technical faults or unforeseeable weather condition result in the inability to safely operate the Park and Glide ferry crossing, coaches will be provided between the Tilbury car park and The London Resort's main transport interchange at the Kent Project Site, crossing via the Dartford Crossing or, if consented and once open, the LTC. Specific numbers of coaches required, and frequency of operation will be dependent on the demand on the day in question however since bad weather conditions are more likely to occur in the low season, the additional number of coaches is considered to be minimal and will have negligible impacts on the highway network. During the low season and where car parking demand is forecast to be lower, visitors will be redirected to the Kent Project Site for parking.

11.6 SUMMARY

11.6.1. It is recognised that public transport needs to play a major role in facilitating the movement of both visitors and staff to and from the London Resort as a key element in ensuring sustainability and addressing future potential traffic congestion issues in the area. A public transport strategy has been developed to facilitate the expected demand associated with visitors and staff to the London Resort.

11.6.2. From the perspective of passenger rail services, the franchise operator is currently Southeastern, whose franchise is responsible for both local train services in the Kent Thameside area (including the North Kent Line) and domestic high-speed trains on (HS1).

11.6.3. A dedicated high frequency People Mover system will be provided to transfer visitors from Ebbsfleet International Station to the Resort using a new road-based connection, which will not be open for public usage by private vehicles.

11.6.4. In relation to bus-based public transport, Kent County Council already has proposals for the continued development of the Bus Rapid Transit service (‘Fastrack’), and negotiations are on-going with regard to future routeing and required capacity, including diverting one of the services to operate via the dedicated link between Ebbsfleet International Station and the main entrance to the Resort, as well as providing a direct connection between the Resort and Greenhithe Station.

11.6.5. Additionally, there will be a key role for the network of local bus services, primarily operated by Arriva, which is being developed, for the 480/490 services, which connect Dartford with Gravesend and the Gravesham area passing close to the main entrance to the Resort. Other local bus services are being considered for enhancement in order to provide connections either to the Resort itself or to Ebbsfleet International Station, where transfers to either the People Mover or to Fastrack are easily achieved.

11.6.6. For the Tilbury area, it is envisaged that direct bus links will be provided from the surrounding areas of Grays with an improvement to the connection between Tilbury Town Station and Tilbury Ferry terminal.

11.6.7. It is considered that the 75-minute high-speed river service from central London to The London Resort and 25-minute service from Woolwich for the Elizabeth Line (Crossrail), will offer a sustainable alternative to private vehicle or rail trips for visitors with a UK Home Origin within London, or international tourists staying in hotels within London boroughs. The Park and Glide service will provide a cross-river shuttle between Tilbury and the London Resort jetty enabling the efficient transportation of visitors choosing to arrive at Tilbury Town station or park within the proposed car park at PoTL.

CHAPTER 12

PARKING STRATEGY

12 PARKING STRATEGY

12.1 INTRODUCTION

12.1.1. This chapter provides a summary of the accumulation presented in London Resort Car Park Accumulation Technical Note which is included in **Appendix TA - X** of this document. The second half of this chapter will present a summary of the Off-Site Parking Plan the full document can be found in **Appendix TA - Y**. A comment throughout the numerous consultation exercises related to the potential for visitors and staff to park in the nearby local streets to access the site. The purpose of the strategy is to monitor whether off site, on street parking takes place that is attributable to the Resort and if this proves to be the case, provide management measures to prevent this and avoid adverse impacts arising.

12.2 PHASED APPROACH

12.2.1. The London Resort will seek between 10,000 visitor spaces at the site in total as part of the DCO. It is important to note that at opening, the site will have approximately 5,000 visitor spaces constructed.. This will increase in line with uptake in visitor numbers up to a maximum of 10,000 spaces.

12.2.2. LRCH are committed to developing world leading mobility strategies at the London Resort, and whilst some car parking will be provided, it is the intention that reliance on private vehicles is kept to a minimum wherever possible and feasible.

12.2.3. Car parking and coach parking numbers form part of the DCO application and therefore are a fixed number. Therefore no more than 10,000 visitor car park spaces and no more than 200 coach parking bays will be allowed on site.

12.2.4. Visitors to the Resort will be expected to purchase tickets and decide their mode of travel in advance. This way, The London Resort has control over how people travel and promoting other modes of travel when the car park is operating at capacity.

12.3 CAR PARK ACCUMULATION

12.3.1. The London Resort Car Park Accumulation presents the analysis on arrival and departure of cars on the assumption it is full; this section provides a summary of how the car park accumulation has been calculated. It presents an example assessment from 2029 with the robust private vehicle mode share and the Travel Demand Strategy private vehicle mode share.

12.3.2. An accumulation exercise has been undertaken for the Visitor, Hotel and Staff Car Parks using the forecast arrivals, offset against the calculated departures at the site for each hour period, this is dependent on which mode share is selected. To ensure the assessment provides a robust forecast of demand, the calculation allows for visitors to depart up to one hour after their forecast departure time to ensure that the time associated with parking circulation, transfers and security of arrivals/departures is accommodated by allowing sufficient parking capacity for these operations to occur. The parking accumulation forecasts broadly follow Formula C1 below:

Formula C1: *Accumulation @ 11001100 – 12001200 = Accumulation @ 10001000 – 11001100 + Forecast Arrivals (11001100 1200) – Forecast Departures (1000 – 1100)*

12.3.3. By allowing up to an hour lag in the parking accumulation, this methodology provides a robust assessment which ensures that potential delays in these operations should not adversely affect the amenity of drivers travelling to the site, identifying a parking space or leaving the site after a visit. The methodology also contemplates the potential for unforeseen delays exiting the resort and car parks. This is deemed less likely to occur at the Staff Car Park but for robustness Formula C1 will be used there as well.

12.3.4. The Visitor, Hotel and Staff Car Park capacities for The London Resort are outlined in detail in chapter 5 of this TA. This is a summary of the Vehicular Accumulation Section which is included as part of the Technical Note Visitor Car Park document, this is presented in **Appendix TA - L**. The following will present the accumulation of the Visitor, Hotel and Staff car park in 2029.

2029 Car Park Capacity

12.3.5. The Capacity of the Visitor Car Park has been reduced by 5% from the full 6,435 spaces to take account of the circulation of the car park and in particularly for specialist parking such as disabled spaces, this is considered a prudent approach. **Table 12-1** presents the breakdown in car park capacity in 2029 for the Kent Project Site and Essex Project Site in terms of total capacity and with the 5% reduction.

Table 12-1: Visitor Car Park Capacity in 2029

Car Parks		2029
Main Visitor Car Park	Kent Project Site Car Park	4,560
	Essex Project Site Car Park	1,875
	Total	6,435
Main Visitor Car Park (5% reduced capacity)	Kent Project Site Car Park	4,332
	Essex Project Site Car Park	1,781
	Total	6,113

12.3.6. As outlined in chapter 5 the Main Visitor Car Park at the Kent Project Site will incorporate the Hotel Car Park. The Hotel Car Park will in 2029 will accommodate 1,065 spaces, there will be no 5% reduction applied to the car park capacity as the parking management strategy for the Hotel car park will allow for maximum utilisation of spaces.

12.3.7. The Staff Car Park will have a capacity of 500 spaces, no capacity adjustment has been provided due to the size of the car park and the day to day usage of knowledgeable staff.

Accumulation based on Car Parks being at full capacity

12.3.8. This assessment is based on the accumulation of the car parks utilising the robust private car mode share, this is outlined in further detail in Chapter 8 of this document. The tables present when the car parks will reach their peak capacity throughout the day. The subsequent bullet points provide details on the car park accumulation and outlines which scenario is presented in the following tables.

- **Table 12-2** and **Table 12-3** – shows the 2029 visitor car park accumulation on the 85th Percentile Day and the Peak Day respectively;
- **Table 12-4** and **Table 12-5** – shows the 2029 hotel car park accumulation on the 85th Percentile Day and the Peak Day respectively; and
- **Table 12-6** and **Table 12-7** – shows the 2029 staff car park accumulation on the 85th Percentile Day and the Peak Day respectively.

Table 12-2: Visitor Car Park Accumulation 85th Percentile Day 2029

	Before 1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Accumulation	458	1,498	2,477	3,386	4,355	5,054	5,590	6,009	5,522	5,078	4,476	3,480	2,539	1,216	20

Table 12-3: Visitor Car Park Accumulation Peak Day 2029

	Before 1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Accumulation	456	1,536	2,592	3,583	4,589	5,262	5,741	6,109	5,680	5,447	4,949	3,933	2,897	1,354	34

Table 12-4: Hotel Car Park Accumulation 85th Percentile Day 2029

	Bef 0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Acc	1061	1051	1033	1004	1002	998	1020	995	1024	1065	1061	1059	1030	1020	1020	1020	1020

Table 12-5: Hotel Car Park Accumulation Peak Day 2029

	Befor e 0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Acc	1028	1019	1001	973	973	974	1001	983	1020	1065	1065	1065	1038	1029	1029	1029	1029

Table 12-6: Staff Car Park Accumulation 85th Percentile Day 2029

	Before 0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Acc	50	132	247	296	348	428	451	500	500	403	316	363	345	259	252	201	92

Table 12-7: Staff Car Park Accumulation Peak Day 2029

	Before 0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Acc	47	132	243	294	348	421	446	497	500	405	321	362	340	257	248	195	86

Accumulation based on Travel Demand Strategy Mode Share

12.3.9. This assessment is based on the accumulation of the car parks utilising the Travel Demand Strategy (TDM) mode share, as per the methodology presented in Chapter 8 and outlined in further detail in Chapter 14 of this document. The subsequent bullet points provide the information on car park and scenario is shown in the following tables:

- **Table 12-7** and **Table 12-8**– shows the 2029 visitor car park accumulation on the 85th Percentile Day and the Peak Day respectively;
- **Table 12-9** and **Table 12-10** – shows the 2029 hotel car park accumulation on the 85^{th} Percentile Day and the Peak Day respectively; and
- **Table 12-12** and **Table 12-13** – shows the 2029 staff car park accumulation on the 85^{th} Percentile Day and the Peak Day respectively.

Table 12-8: **Visitor Car Park Accumulation 85th Percentile Day 2029**

	Before 1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Accumulation	312	1,026	1,701	2,327	2,991	3,469	3,834	4,118	3,789	3,494	3,085	2,400	1,753	839	16

Table 12-9: **Visitor Car Park Accumulation Peak Day 2029**

	Before 1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Accumulation	404	1,360	2,295	3,172	4,062	4,657	5,081	5,406	5,027	4,820	4,380	3,480	2,562	1,197	29

Table 12-10: **Hotel Car Park Accumulation 85th Percentile Day 2029**

	Before 0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Acc	783	776	762	741	739	736	752	734	755	785	782	781	760	752	752	752	752

Table 12-11: **Hotel Car Park Accumulation Peak Day 2029**

	Before 0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Acc	783	776	762	741	741	741	762	749	776	811	811	811	791	784	784	784	784

Table 12-12: **Staff Car Park Accumulation 85th Percentile Day 2029**

	Before 0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Acc	28	73	135	162	191	235	248	274	274	221	174	199	189	142	138	110	50

Table 12-13: **Staff Car Park Accumulation Peak Day 2029**

	Before 0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-2100	2100-2200	2200-2300	2300-0000
Acc	33	91	168	203	240	290	307	342	345	279	222	250	235	177	171	135	59

12.3.10. It should be noted that the TDM strategy sets out an indicative set of measures and appropriate initiatives that would be applied in varying levels of scale and combination to positively influence visitor, hotel and staff travel. As such, the measures in the TDM are variable, and will be monitored throughout the London Resort's lifetime.

12.3.11. The TDM measures set out at this time however indicate that a shift could occur away from sole private vehicle use, which in turn reduces the parking stress on site. Focusing on the visitor car parking profiles, Tables 12-2 and 12-3 can be compared against those with the TDM measures applied as set out in Tables 12-8 and 12-9 above. In both the 85th percentile and peak days, using 2029 as an example, the TDM measures are shown to decrease maximum parking demand on site. On the 85th percentile days, visitor car parking numbers could be expected to reduce by approximately 1800 spaces, whereas on the peak day, maximum parking demand could reduce by approximately 700 vehicles. The TDM strategy will encourage visitors to alter modes and or re-time their journeys and in turn balance the parking demand more efficiently across the day.

12.3.12. When comparing the TDM car parking accumulation for the hotel car park (Tables 12-10 and 12-11) against the non TDM profile (Tables 12-4 and 12-5) – it is evident that the hotel users would see an equally high benefit from adoption of the TDM. The maximum parking demand is reduced by approximately 250 to 280 vehicles in the 85th percentile and peak days respectively.

12.3.13. Staff, whilst different in terms of what TDM measures or initiatives that would apply compared to the visitors of the Resort, are expected to benefit from applicable strategies in reducing car use. As shown in Table 12-12 and 12-13, versus 12-6 and 12-7, the maximum parking demand for staff could reduce between approximately 150 and 220 vehicles depending on the day type.

12.4 OFF-SITE PARKING STRATEGY

12.4.1. An Off-Site Parking Strategy has been produced to address a key concern raised by local residents during the numerous consultations exercises that related to parking and the potential for visitors and staff to misuse local streets to access the site. This section will provide a summary of the Off-Site Parking Plan which is included within **Appendix TA -Y**. The document outlined the following:

- **Existing Parking Conditions** – A parking survey was undertaken by Streetwise Services during April 2015 to understand the existing level on-street parking in the vicinity of the London Resort. The survey included the type and duration of stay;
- **Parking Survey Results** – Areas were categorised depending on their distance from The London Resort in 500m distance splits, as presented in **Plate 4-2**. The Technical Note reviewed each area's car parking capacity, average occupancy and peak occupancy, as well as highlighting the type of parking restrictions on the roads within in each of the areas; and
- **Nearby Car Parks** – A review of the nearby car parks that could provide visitors a park and ride/ stride to the Resort. These car parks include the Bluewater and Ebbsfleet International station (to the south of the Thames), and Lakeside and Tilbury Fort (to the north of the Thames). The review included the likely journey time and cost for visitors travelling from these car parks.

12.4.2. As such, a strategy has been developed to assess this risk and identify suitable mitigation measures. This will enable the Proposed Development to integrate itself within the local area without affecting local residents and creating additional pressures to the local highway network. The proposed off-site parking strategy is presented below.

Off Site Parking Strategy

12.4.3. WSP would suggest a five-tiered monitoring process is undertaken. This would be based on the walking distance between the London Resort and the local area. The suggested five-tiered monitoring zones are outlined below, having regard to the OSPP:

- the zones that are **500 metres from The Site** are considered higher risk areas for visitor parking as they are located in proximity to The London Resort.
- the zones that are within **1,000 metres of The Site** are considered medium risk areas for visitor parking as they are further from The London Resort. A monitoring program would only be implemented in this area if there is significant visitor parking or implementation of a CPZ within the red tier above.
- the zones that are within **1,500 metres of The Site** are considered low risk areas for visitor parking as they are further from The London Resort. A monitoring program would only be implemented in this area if there is significant visitor parking or implementation of a CPZ within the orange tier above.
- the zones that are beyond 1,500 metres of the Site are considered very low risk areas for visitor parking as they are a significant distance from The London Resort. A monitoring program would only be implemented in this area if there is significant visitor parking or implementation of a CPZ within the green tier above.
- the zones located within Thurrock are considered to be medium to low risk for visitors parking to the north of the river to access the ferry crossing at Tilbury. A monitoring program would be implemented if significant visitor parking occurs within the area and if this continues a CPZ would be implemented as a last resort.

12.4.4. The proposed strategy consists of the following:

- a working group consisting of key stakeholders including resident representatives of each area;
- contact with LRCH, through phone or online for residents to make complaints this will be shared with all the residents of GBC, DBC and TC;
- consider incentives within Resort or updates to advanced information to pre-warn visitors not to park in proximity; and
- last resort, CPZ in a phased approach should issues persist. Enforcement of the CPZ areas could be via the use automatic number plate recognition (ANPR) cameras on the streets to monitor the vehicles parking on-street.

12.4.5. A detailed version of the Off-Site Car Parking Strategy is presented within **Appendix TA -Y**. As Section 106 negotiations take place, funding will be set aside based upon the identified CPZ zones above, LRCH will then discuss with the relevant Councils over how those funds will be used for both delivery and enforcement.

12.5 SUMMARY

12.5.1. The accumulation exercise for the Visitor car parks presents the robust methodology used, which allowed for an hour lag time for the accumulation to take account for any delays in identifying a parking space or leaving the site. The Staff and Hotel Car Parks have not had the 5% reduction applied, as the staff will understand how the car park operates to just the lag time and the Hotel Car Park will have parking management to maximise the usage of each space.

12.5.2. The accumulation profile has been used to outline the maximum demand and time periods between visitors, hotel users and staff separately. This has been based on the maximum vehicle demand, assuming the full utilisation of parking spaces available on the site. The standard profiles, shown in Tables 12-2 to 12-7 above, outline that maximum parking accumulation is variable between the user's groups, accounting for elements such as staff shift change or typical hotel arrival profiles.

12.5.3. In comparison, the accumulation profiles have been re-analysed using the mode shares set out in the TDM strategy. The TDM, is discussed further in Chapter 14, and sets out the measures and interventions that could be adopted for visitors, hotel guests and staff that will positively alter the travel behaviour to and from the site. The measures could be focused at getting guests to alter their modes or alter their timings to correlate better with the wider network demand, or to use the space within the Resort more efficiently. The benefits of the TDM are shown in Tables 12-8 to 12-13, where forecast reductions in maximum car parking demand is observed across the three user groups analysed (visitors, hotel and staff).

12.5.4. The Off-Site Car Parking strategy will be split into five zones dependent on the walking distance from the Resort. A monitoring process involve creating a working group with key stakeholders, provide a contact a LRCH to be contacted by local residents, incentives for visitors to park at the Resort and provide pre-warning to visitors. The last resort will be to provide a phased CPZ, this will be funded at the S106 obligation and enforcement and delivery will be given to the local councils.

CHAPTER 13

HIGHWAY IMPACT

PUBLIC

13 HIGHWAY IMPACT

13.1 INTRODUCTION

13.1.1. The modelling methodology, outlined in chapter 9, detailed the assessments undertaken to determine the transportation impacts of the London Resort on the strategic and local highway network using spreadsheet-based modelling, VISSIM micro-simulation modelling, local junction assessments and merge/diverge analysis. This chapter presents the highway impacts identified in the modelling assessment and presents locations on the network where the London Resort trip generation is likely to add the most significant increases in flows.

13.1.2. A strategic highway impact assessment has been undertaken using a spreadsheet-based model to determine the increases in vehicle volumes as a result of incorporating trip generation associated with the various assessment years of the London Resort. The strategic modelling was primarily undertaken to inform the environmental Air Quality and Noise (AQ&N) assessment through the provision of AADT information.

13.1.3. A Do Something VISSIM model has been developed using the Atkins A2BE VISSIM model and assesses the impacts of the Resort trip generation on the local and strategic highway network within the vicinity of the Kent Project Site. The Do Something model includes the dedicated Resort access road and proposed improvements to the A2 Ebbsfleet junction roundabouts. Impacts on journey time and average queue length have been extracted and presented within this chapter.

13.1.4. Further to the strategic and microsimulation model, this section considers the localised junctions and the merge diverges discussed in chapter 9.

13.2 STRATEGIC HIGHWAY IMPACT ASSESSMENT

13.2.1. An impact assessment for the strategic highway links has been undertaken using the spreadsheet model described in Chapter 9. Traffic forecasts for Swanscombe and the surrounding area were developed, and resort traffic added directly to these forecast flows to show the likely impact of London Resort.

13.2.2. The impacts of The London Resort trip generation on the highway network, with and without LTC have been presented in detail within Chapter 4 of the Strategic Modelling Methodology (**Appendix TA – S**) and are summarised within this chapter.

2023 CONSTRUCTION YEAR

13.2.3. From the worker job creation perspective, work undertaken by Volterra has identified that between 3,500 – 5,500 roles, with a maximum of 6,000 roles will be required during the peak construction period. This will reduce during later stages of the buildout. For assessment purposes however a worst case figure of 6,000 has been assumed to be working each day at The London Resort during the peak construction period. It is proposed that 25% of the construction workers will live on-site during the week and the remaining 75% will be daily commuters. During the peak construction period in Phase 1, it is anticipated that the Kent Project Site will generate 1,008 movements a day (2,016 two-way trips) which will be split across the day between 06:00 – 19:00. The Essex Project Site will generate 206 movements a day (412 two-way trips) that will be split over the arrival (06:00 – 08:00) and departure (18:00 – 19:00) period for the construction workers.

13.2.4. The assessment of the construction flows in the 2023 model scenario demonstrated a maximum increase of approximately:

- 1,617 two-way AADT on the A2 (between Ebbsfleet and M25 J2) which is an average increase of 1.19%;
- 637 two-way AADT on the M25 (south of the A2) which is an average increase of 0.46%;
- 400 two-way AADT on the A1089 which is an average increase of 1.33%; and
- 35 two-way AADT on the A13 which is an average increase of 0.04%.

13.2.5. The AM peak construction work arrivals are anticipated to be between 07:00 – 08:00 and the PM peak construction work departures are expected to be between 18:00 – 19:00 however the peak arrivals and departures have been assessed within the traditional AM peak (08:00 – 09:00) and PM peak (17:00 – 18:00) to ensure worst case impacts are mitigated against and managed within the Construction Traffic Management Plan (CTMP), presented in Chapter 15.

2025 GATE ONE OPENING

13.2.6. Within this TA, the 2025 has been assessed as the first full operational year after Gate One opening; Buro Happold Environment team required Air Quality and Noise outputs for 2024, the year Gate One is forecast to open and as such, the spreadsheet modelled represents background growth for 2024 but still includes 2025 visitor and staff trip generation.

13.2.7. The difference in AADT flows in 2024, with and without The London Resort (DS vs DM) are presented in **Figure 13-1**. The thickness of the bars denotes the volume of actual increase in AADT however it is noted that the increases on the dedicated Resort road are non-comparable as the road will only be built if The London Resort is build and so doesn't exist in the DM.

13.2.8. It should be noted when reviewing the change in traffic flows within this chapter, that the proposed development located on the Swanscombe peninsular has been removed for suitable comparisons. This is reflected in the AADT flows on the key links within Kent.

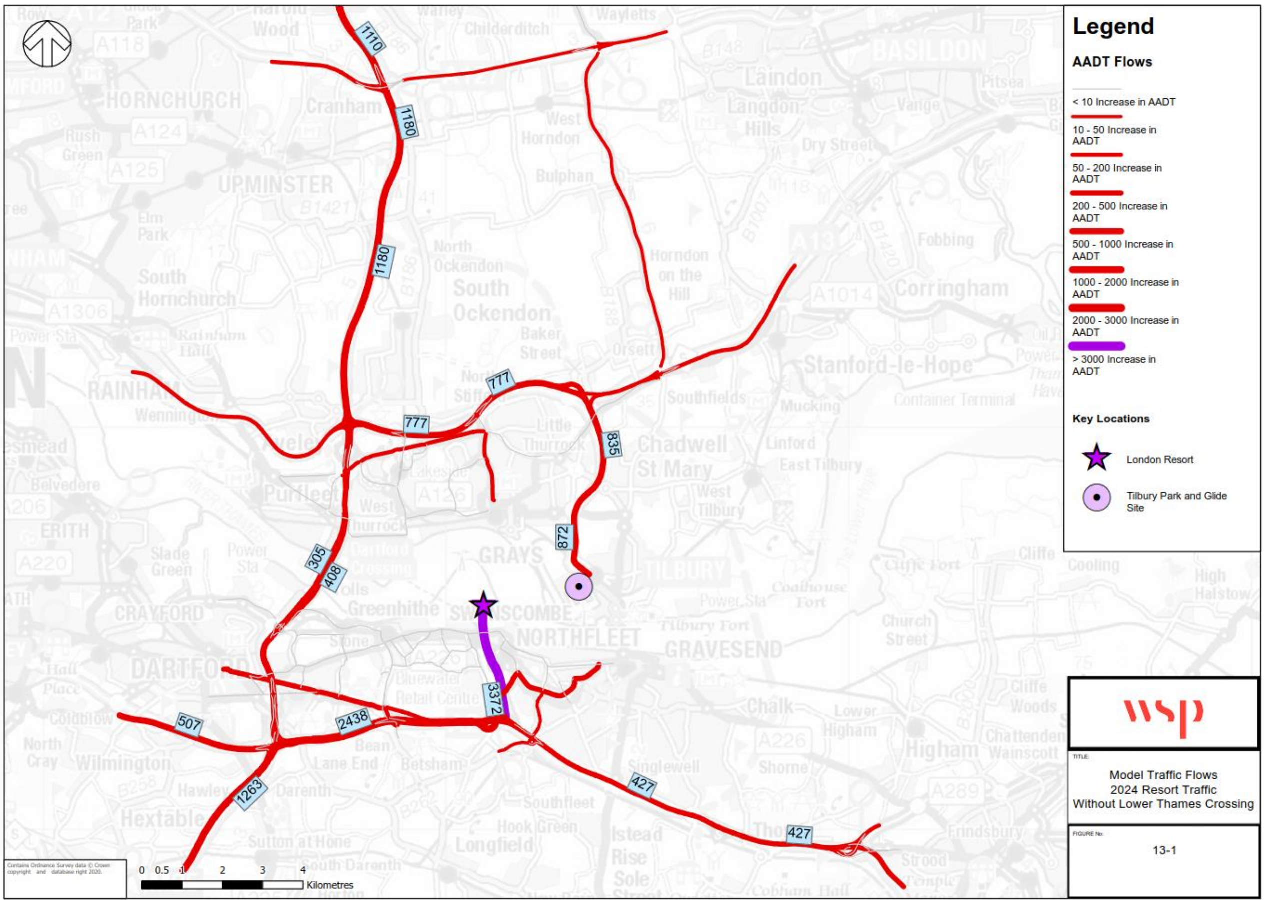


Figure 13-1: Model Traffic Flows 2024 Resort Traffic Without Lower Thames Crossing

13.2.9. The first full operational year after Gate One opening, 2025, is expected to generate a maximum increase of approximately:

- 2,438 two-way AADT on the A2 (between Ebbsfleet and M25 J2) which is an average increase of 1.89% and approximately 413 of the two-way movements are in the AM and PM peaks combined;
- 1,263 two-way AADT on the M25 (south of the A2) which is an average increase of 0.90% and approximately 209 of the two-way movements are in the AM and PM peaks combined;
- 1,180 two-way AADT on the M25 (north of the A13) which is an average increase of 0.94% and approximately 199 of the two-way movements are in the AM and PM peaks combined;
- 872 two-way AADT on the A1089 which is an average increase of 2.84% and approximately 130 of the two-way movements are in the AM and PM peaks combined; and
- 777 two-way AADT on the A13 which is an average increase of 0.75% and approximately 113 of the two-way movements are in the AM and PM peaks combined.

13.2.10. Within the vicinity of the Resort, the visitor and staff demand in 2025 is expected to increase the AADT on the strategic road network by between 0.75 – 2.84%, with a maximum increase in two-way movements of 413 vehicles on the A2 across the AM and PM peak hours. The impacts of The London Resort trip generation in 2025 have been assessed within a microsimulation model, local junction model and merge/diverge assessments which are all presented within Section 13.3, 13.4 and 13.5 of this chapter respectively.

2029 GATE TWO OPENING

13.2.11. The difference in AADT flows in 2029, with and without The London Resort (DS vs DM) are presented in **Figure 13-2**. The thickness of the bars denotes the volume of actual increase in AADT however it is noted that the increases on the dedicated Resort road are non-comparable as the road will only be built if The London Resort is built and so doesn't exist in the DM.

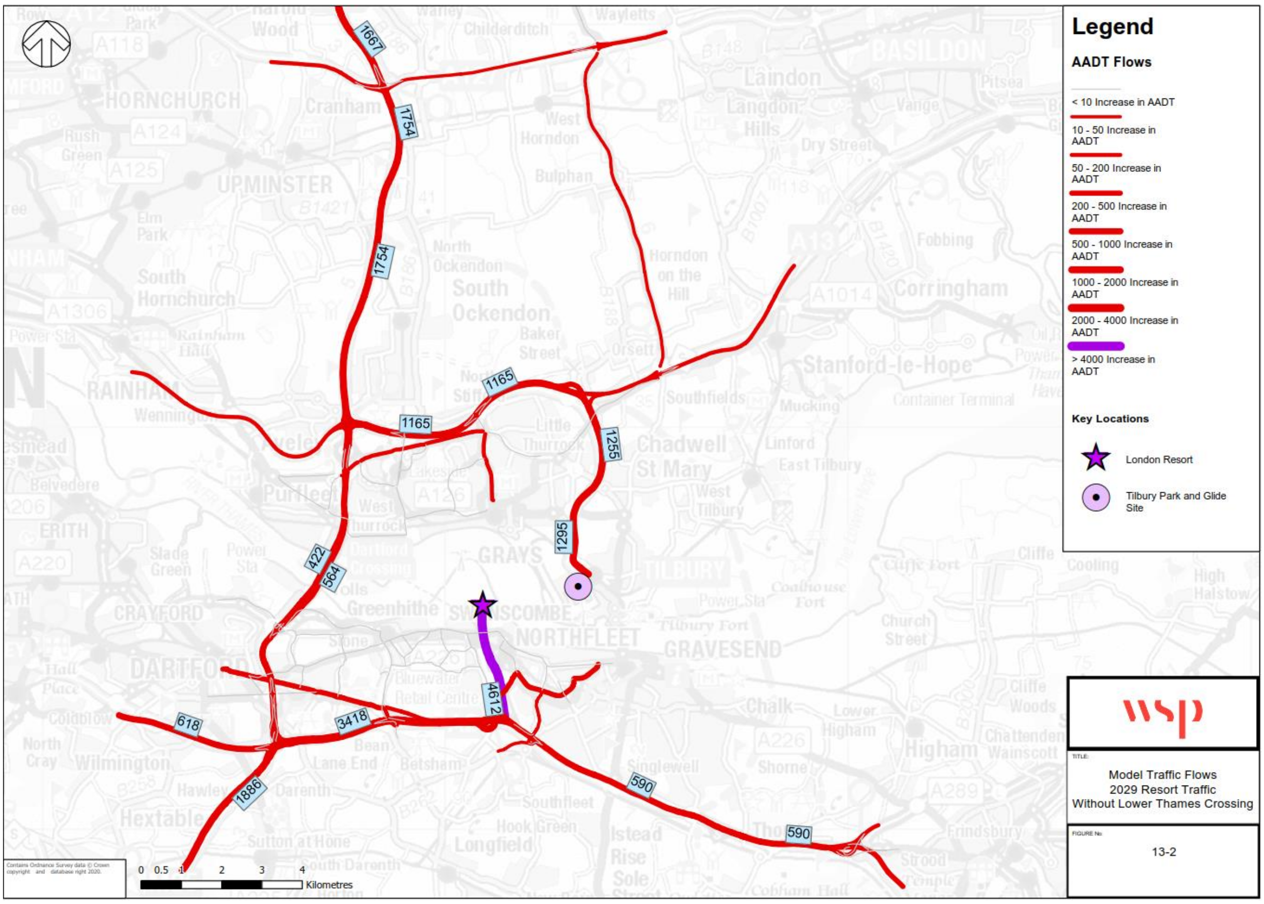


Figure 13-2: **Model Traffic Flows 2029 Resort Traffic Without Lower Thames Crossing**

13.2.12. The second assessment year in which Gate Two is forecast to open, 2029, is expected to generate a maximum increase of approximately:

- 3,418 two-way AADT on the A2 (between Ebbsfleet and M25 J2) which is an average increase of 2.31% and approximately 531 of the two-way movements are in the AM and PM peaks combined;
- 1,886 two-way AADT on the M25 (south of the A2) which is an average increase of 1.29% and approximately 290 of the two-way movements are in the AM and PM peaks combined;
- 1,754 two-way AADT on the M25 (north of the A13) which is an average increase of 1.27% and approximately 274 of the two-way movements are in the AM and PM peaks combined;
- 1,285 two-way AADT on the A1089 which is an average increase of 3.98% and approximately 207 of the two-way movements are in the AM and PM peaks combined; and
- 1,165 two-way AADT on the A13 which is an average increase of 1.34% and approximately 185 of the two-way movements are in the AM and PM peaks combined.

13.2.13. Within the vicinity of the Resort, the visitor and staff demand in 2029 is expected to increase the AADT by between 1.27 – 3.98%, with a maximum increase in two-way movements of 531 vehicles on the A2 across the AM and PM peak hours. The Strategic Modelling Methodology (**Appendix TA – S**) also considers the impacts and increases associated with The London Resort demand in 2029, with inclusion of the Lower Thames Crossing which is forecast to relieve background demand on the Dartford Crossing and provide an additional connection between the A1089 and M25 that removes the A13 from the Resort flows routing.

2038 RESORT MATURITY

13.2.14. **Figure 13-3** below shows the increase in daily traffic associated with London Resort in the final model year of 2038, when the resort is expected to reach full operational maturity.

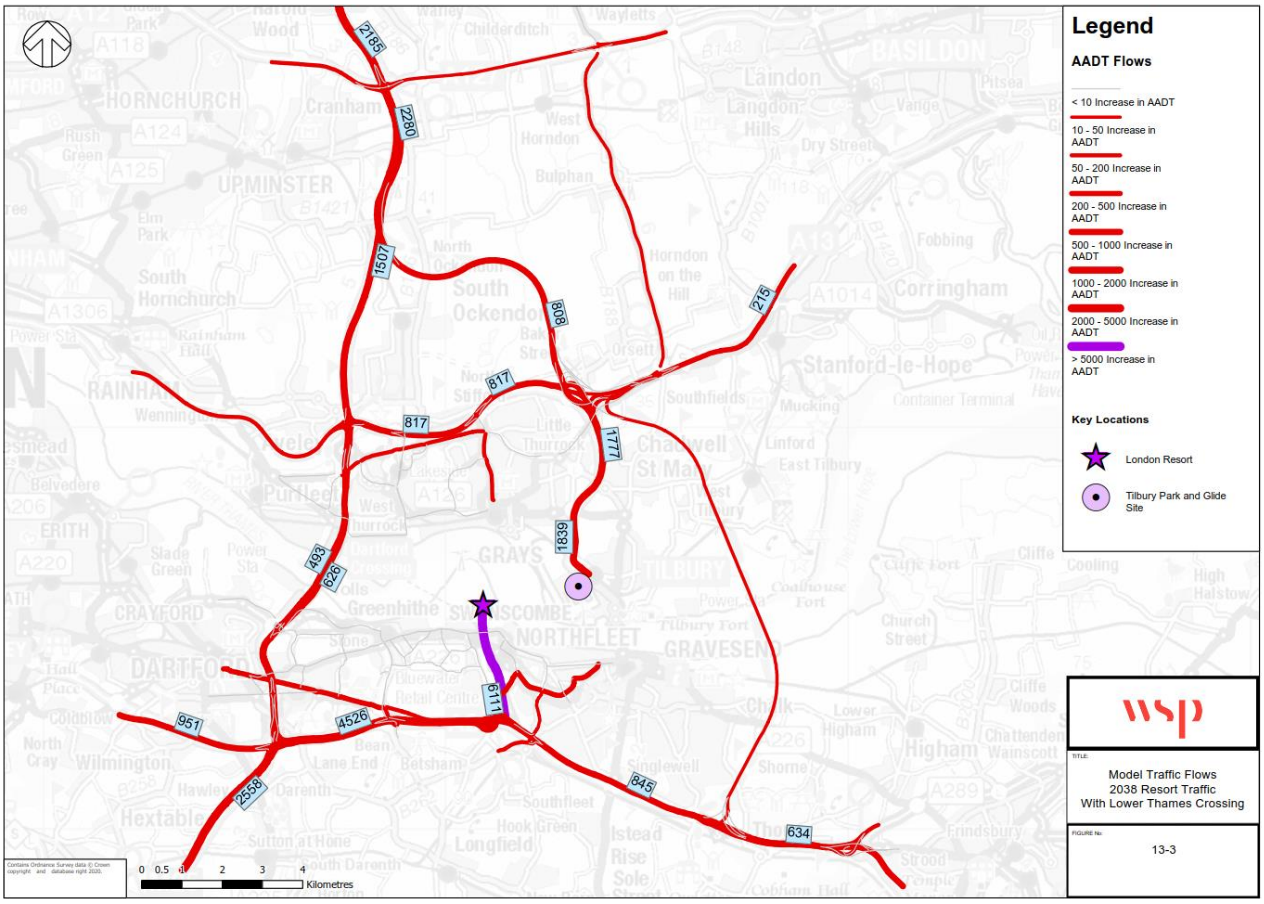


Figure 13-3: Model Traffic Flows 2038 Resort Traffic With Lower Thames Crossing

13.2.15. Traffic to and from the London Resort is expected to add an additional 6000 vehicle movements to and from the main entrances in Swanscombe and an additional 1800 vehicles movements to and from the Park and Glide site in Tilbury.

13.2.16. Approximately 75% of traffic from Swanscombe will use the A2 westbound to access the M25 and from there the wider strategic road network. The remainder will use local roads to access sites in and around Gravesham and will use the A2 eastbound to access Kent.

13.2.17. When the London Resort is forecast to reach maturity in 2038, it is expected to generate a maximum increase of approximately:

- 4,564 two-way AADT on the A2 (between Ebbsfleet and M25 J2) which is an average increase of 2.88% and approximately 692 of the two-way movements are in the AM and PM peaks combined;
- 2,558 two-way AADT on the M25 (south of the A2) which is an average increase of 1.63% and approximately 390 of the two-way movements are in the AM and PM peaks combined;
- 2,295 two-way AADT on the M25 (north of the A13) which is an average increase of 1.53% and approximately 354 of the two-way movements are in the AM and PM peaks combined;
- 1,839 two-way AADT on the A1089 which is an average increase of 5.20% and approximately 284 of the two-way movements are in the AM and PM peaks combined; and
- 1,642 two-way AADT on the A13 which is an average increase of 1.38% and approximately 254 of the two-way movements are in the AM and PM peaks combined.

13.2.18. Within the vicinity of the Resort, the visitor and staff demand at park maturity in 2038 is expected to increase the AADT by between 1.38 – 5.20%.

13.2.19. The most significant percentage increase in AADT is forecast to be on the A1089 between the Port of Tilbury and the A13; in comparison to the A2, M25 and A13, the A1089 has the lowest level of background vehicle volumes and as such any increase in demand from The London Resort will have a more significant increase..

13.2.20. The impacts of the Resort trip generation on the A1089 Asda roundabout have been assessed and are presented within Section 13.4; subsequent junction improvements have been considered to mitigate against any impacts of The London Resort on this junction and are outlined in Section 13.4.

Impacts of Lower Thames Crossing

13.2.21. Traffic for London Resort is not generally expected to use the Lower Thames Crossing (LTC), as traffic approaching from north of the river is expected to mostly use the Tilbury Park and Glide site. As the proposed arrangement for the A13 / A1089 / LTC junction does not include a direct link between LTC and the A1089 it is anticipated that traffic travelling towards Tilbury will use the M25 and A13. However, as the LTC can be accessed from the A1089 it is anticipated that traffic travelling away from Tilbury will use the LTC northbound towards the M25 before using the wider strategic network.

13.2.22. **Figure 13-4** and **Figure 13-5** shows the differences in traffic with and without the Lower Thames Crossing in 2038. **Figure 13-4** shows the difference without London Resort traffic, whereas **Figure 13-5** includes the impact of London Resort.

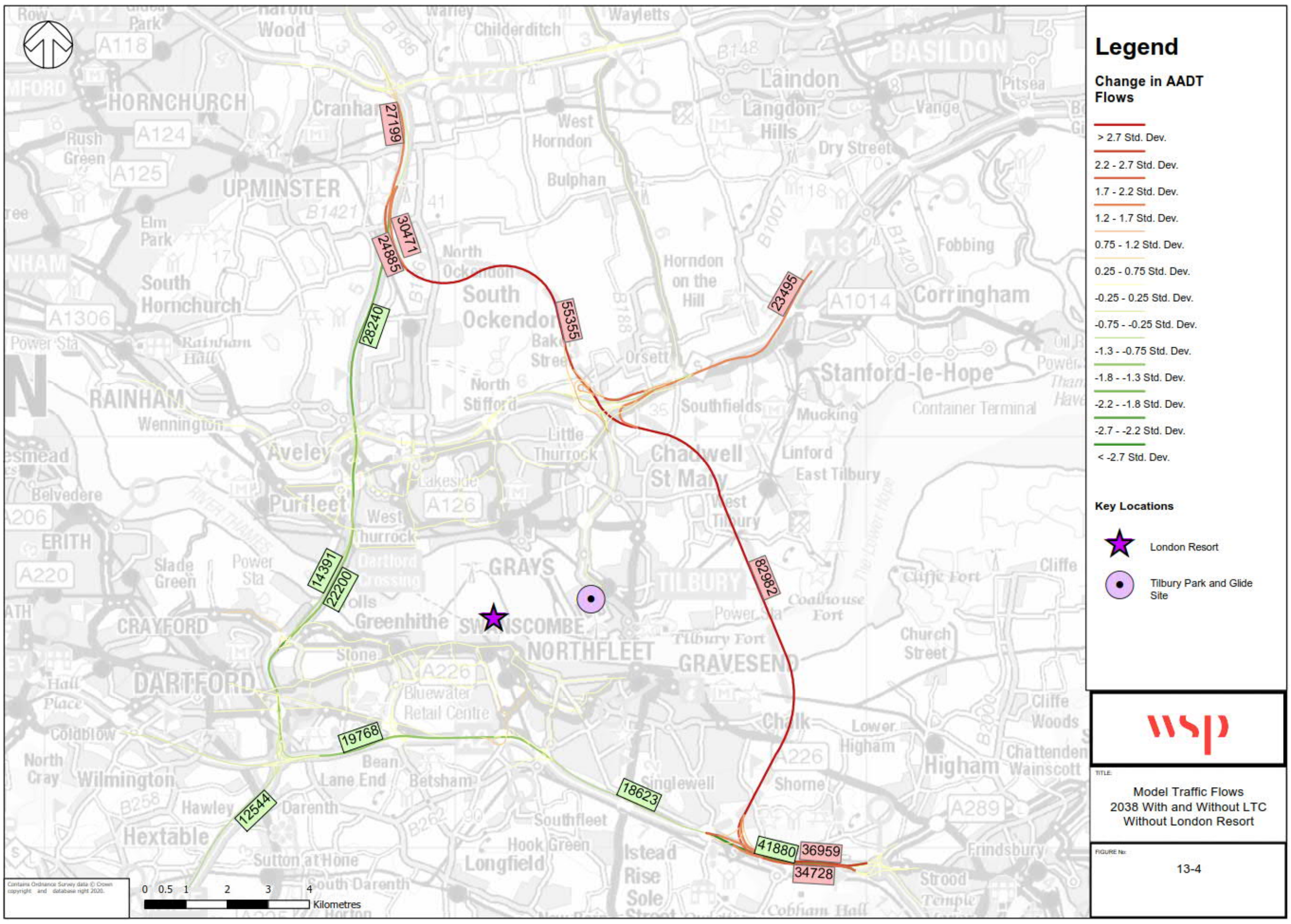


Figure 13-4: Model Traffic Flows 2038 With and Without LTC Without London Resort

13.2.23. **Figure 13-4** shows the change in traffic levels due to the LTC. Numbers in red indicate increases whereas green indicate reductions. The overall impact of the LTC is to move traffic away from the A2, M25 and Dartford crossing, with a reduction of approximately 20,000 vehicles from the A2 and 35,000 from the Dartford Crossing.

13.2.24. The section east of the A2 / LTC junction appears to show a substantial decrease and increase in traffic along the same section. This is the result of the creation of parallel distributor roads either side of the A2 as part of the LTC improvements that link the LTC with junction 1 of the M2. The observed reduction is therefore on the mainline of the A2 and the increases are on the parallel distribution links (which are new).

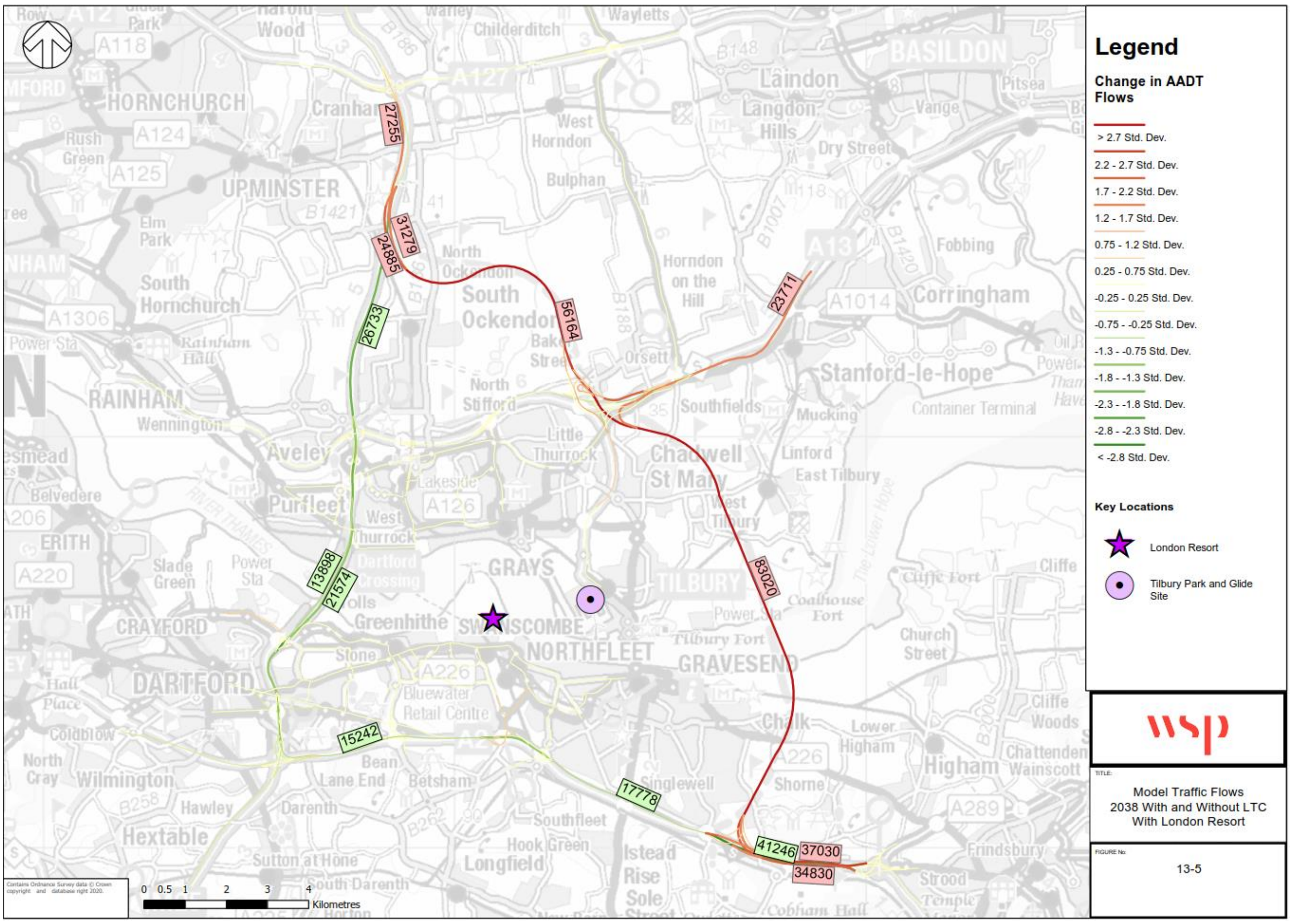


Figure 13-5: Model Traffic Flows 2038 With and Without LTC With London Resort

13.2.25. Comparing **Figure 13-4 and Figure 13-5** shows that the impact of London Resort traffic reduces the observed traffic on the A2 by approximately 25%. This would indicate that the London Resort development would be appropriating 25% of the additional capacity that the LTC is expected to provide to the A2 and M25 corridors in Dartford and Gravesham.

SUMMARY

13.2.26. This section has reviewed the impacts of The London Resort construction, visitor and staff forecast demand in the 2023, 2025, 2029 and 2038 assessment years. The methodology for developing these models and their results is presented in detail within **Appendix TA – S**.

13.2.27. The approximate increases in two-way AADT on the strategic road network within the vicinity of the Kent and Essex Project Sites has been presented and is determined that the percentage increases are unlikely to results in significant congestion.

13.2.28. Comparing the scenarios with and without LTC in 2038, it can be deemed that the likely impact of London Resort on the strategic network will be mitigated by the completion of the LTC and is therefore unlikely to result in significant congestion across the wider strategic road network.

13.2.29. The demand associated with the Resort has been further assessed in a microsimulation model, discussed in Section 13.3, to determine the impacts of the development on the operational performance of the A2 Ebbsfleet access junctions and the proposed improvements as part of The London Resort.

13.2.30. Turning flow movements at key junctions which are forecast to experience the most significant increases in vehicle volumes as a result of the Resort and as show in the strategic modelling exercise, have been assessed in local junction models and their impacts have been mitigated against – as presented in Section 13.4..

13.3 MICROSIMULATION IMPACT ASSESSMENT

13.3.1. As discussed in chapter 9 a Do Something VISSIM model, including trip generation, the dedicated access road and junction improvements associated with The London Resort, has been developed using the A2BE VISSIM model (Do Minimum). The VISSIM models have been used to assess the impacts of the development proposals and levels of trip generation in 2025, 2029 and 2038 AM and PM peaks on the local and strategic highway network within the vicinity of the Kent Project Site and primarily, the operation of the proposed junction improvements at the A2 Ebbsfleet junction roundabouts.

13.3.2. The Do Minimum refers to the Highways England proposed junction improvements and the linear background growth only; all references to the Do Something include the trip generation association with The London Resort and the proposed junction improvements to improve the capacity at the A2 Ebbsfleet access junction in order to accommodate the proposed development. The only exception is 2023, the construction year, where the network remains the same between the Do Minimum and Do Something. Comparison of journey time and queue data between the Do Minimum and Do Something for each year therefore considers the operation of the proposed junction improvements and access arrangement for the Resort.

13.3.3. The journey time, in seconds, along eight routes has been extracted from the AM and PM peak, Do Minimum and Do Something models for each of the assessment years: 2025, 2029 and 2038. In the 2023 construction scenario, journey times have not been extracted for routes that include the dedicated Resort Access Road.

13.3.4. For each of the model scenarios, journey times have been extracted for comparison of the following routes:

- **Route 773**: A2EB;
- **Route 774**: A2 WB;
- **Route 775**: The London Resort to A2 EB;
- **Route 776**: A2 WB to The London Resort;
- **Route 777**: The London Resort to A2 WB;
- **Route 778**: A2 EB to The London Resort;
- **A2EBTW**: A2 EB off-slip to Thames Way; and
- **TWA2WB**: Thames Way to A2 Westbound on-slip.

13.3.5. The 8 journey time routes analysed, and their identification are presented in **Plate 13-1**.

Plate 13-1: VISSIM Journey Time Routes

13.3.6. The average queue lengths, in metres, have been extracted from stop lines within the VISSIM model extent to demonstrate increases or decreases in queueing at approach to junctions in the scenarios that include the London Resort. For each of the model scenarios, average queue length (in metres) has been extracted for comparison of the stop lines listed below, and presented in **Plate 13-2**:

- **Stop Line 8**: The London Resort Access Road, east roundabout approach;
- **Stop Line 9**: A2 EB off-slip, east roundabout approach;
- **Stop Line 10**: A2260 Spur Road EB, east roundabout approach;
- **Stop Line 11**: A2260 Spur Road SB (SB), west roundabout approach;
- **Stop Line 12**: A2260 Spur Road WB, west roundabout approach;
- **Stop Line 13**: A2 WB off-slip, west roundabout approach;
- **Stop Line 14**: Ackers Drive, west roundabout approach;
- **Stop Line 108**: East roundabout, The London Resort Access Road stop line;
- **Stop Line 109**: East roundabout, A2 EB off-slip/ westbound on-slip stop line;
- **Stop Line 110**: East roundabout, A2260 Spur Lane stop line;
- **Stop Line 310**: A2260 northbound (NB);
- **Stop Line 311**: B259 Southfleet Road;
- **Stop Line 312**: A2260 Ebbsfleet Gateway SB; and
- **Stop Line 321**: Station Quarter South exit onto A2260 Spur Road

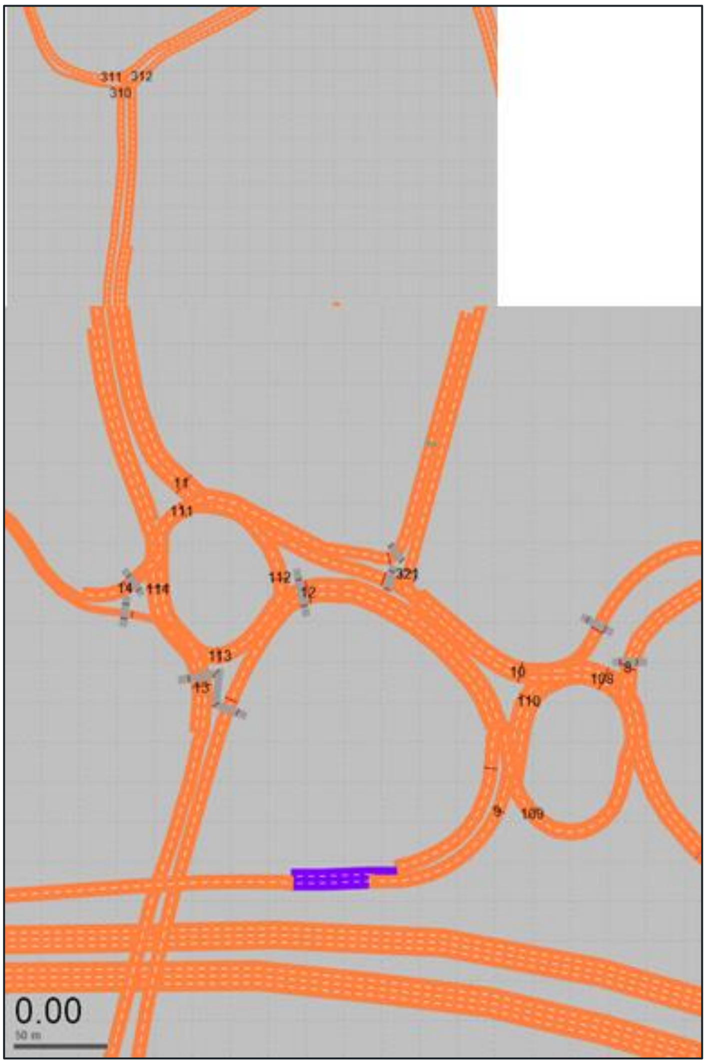


Plate 13-2: VISSIM Queue Analysis

2023 CONSTRUCTION SCENARIO

13.3.7. The journey times (in seconds) have been extracted from the 2023 models, with and without the Resort construction traffic, to demonstrate the impacts that the arrivals and departures of construction workers have on journey times along the A2 and through the upgraded A2 junction. The extracted journey times routes are shown in **Plate 13-1** and the time, in seconds, is presented in **Table 13-7.**

13.3.8. It is noted that journey times for 2023 Do Minimum and Do Something have only been extracted for routes without the dedicated Resort Access Road. The arrivals and departures included in the Do Something are expected to arrive between 0700-0800 and depart between 0600-0700 but have been assessed within the traditional network AM and PM peak hours as a worst-case assessment.

Table 13-1: VISSIM Journey Time Analysis, 2023

2023 Journey Time Analysis (in seconds)	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	2023 Do Minimum	2023 Do Something	2023 Do Minimum	2023 Do Something
Route 773: A2 Eastbound	93	100	97	97
Route 774: A2 WB	142	142	77	78
A2EBTW: A2 Eastbound off-slip to Thames Way	305	306	303	308
TWA2WB: Thames Way to A2 WB on-slip	249	340	233	242

13.3.9. **Table 13-1** demonstrates that the implementation of construction worker arrivals and departures has negligible impacts on journey times along the A2 with route 773 increasing by approximately 7 seconds in the AM peak and route 774 increasing by only 1 second in the PM peak. Similarly, the route from A2 EB to Thames Way increase by 1 second in the AM peak and 5 seconds in the PM peak.

13.3.10. The most significant increases in journey times are seen on the route from Thames Way to the A2 WB on-slip, which increases by approximately 91 seconds in the AM peak and 9 seconds in the PM peak; the increases, primarily in the AM peak, are due to background traffic having to give way to construction workers arrivals at the A2 Ebbsfleet access west roundabout. This is considered to be a worst case assessment, given that the majority of construction traffic will be outside of the peak hour.

13.3.11. The average queue length (in metres) has been extracted from the 2023 Do Minimum and Do Something scenarios, for the AM and PM peaks, to demonstrate the impacts construction trip generation on the length of queues at junction approaches. It is noted that as the dedicated Resort Access Road and relocated Station Quarter South Access don't exist in either 2023 scenario, the queueing has not been presented. The extracted queue lengths are presented in **Table 13-2**.

Table 13-2: VISSIM Queue Length Analysis, 2023

2023 Queue Length Analysis (in metres)	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	2023 Do Minimum	2023 Do Something	2023 Do Minimum	2023 Do Something
9: A2 Eastbound Off-slip	46.1	30.7	57.4	52.2
10: A2260 Spur Road Eastbound to East Roundabout	12.8	15.9	36.8	52.7
11: A2260 SB to West Roundabout	24.9	16.3	25.4	58.3
12: A2260 Spur Road WB to West Roundabout	11.1	41.6	20.4	26.5
13: A2 WB Off-slip	26.4	24.8	18.6	16.1
14: Ackers Drive	15.6	15.8	10.7	10.6
108: East Roundabout North Stop Line	20.4	21.6	28.8	29.6
109: East Roundabout South Stop Line	4.2	3.9	5.8	9.6
110: East Roundabout East Stop Line	4.6	1.3	14.5	11.1
310: A2260 NB	45.2	108.3	45.1	60.9
311: B259	41.8	45.4	39.6	44.3
312: A2260 Ebbsfleet Gateway SB	46.0	48.2	61.6	112.5

13.3.12. The extraction of queue length data for 2023 construction scenarios, demonstrates a **decrease** of queue length (in metres) in the AM and PM peaks on the following links:

- Stop Line 9: A2 EB off-slip by approximately 15m in the AM and 5m in the PM;
- Stop Line 13: A2 WB off-slip by approximately 2m in the AM and 3m in the PM; AND
- Stop Line 110: East roundabout east stop line by approximately 3m in the both peaks.

13.3.13. Whilst the 2023 Do Something doesn't include any network changes, improvements in queueing are attributed to the optimisation of signals to balance the performance and forecast operation of the junction with the addition of the London Resort construction worker traffic.

13.3.14. The 2023 Do Something which includes the construction traffic has a slight impact on queue counter 12, as a result of trips going towards A2260 and Thames Way. This is highlighted in queue counter 310 experiencing 108m of queue. However, this can be mitigated by signal timing optimisation during the construction year at the B259/A2260 junction to allow more green time for A2260 Northbound traffic in the AM and southbound in the PM as a result of the tidal flow of construction traffic. This alongside further optimisation of signal timings at the A2260/Thames Way junction will improve the queueing at this junction. Furthermore, the queue counter 310 A2260 Northbound has a very large stacking capacity with a link length of over 320m..

2025 GATE ONE OPENING

13.3.15. The journey times (in seconds) have been extracted from the 2025 VISSIM models, with and without the London Resort, to demonstrate the impacts that the incorporated of the Resort and associated infrastructure improvements have on journey times along the A2 and through the upgraded A2 junction. The extracted journey times routes are shown in **Plate 13-1** and the time, in seconds, is presented in **Table 13-3**.

Table 13-3: VISSIM Journey Time Analysis, 2025

2025 Journey Time Analysis (in seconds)	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	2025 Do Minimum	2025 Do Something	2025 Do Minimum	2025 Do Something
Route 773: A2 Eastbound	93	93	96	96
Route 774: A2 WB	143	142	78	78
Route 775: The London Resort to A2 Eastbound	136	110	135	104
Route 776: A2 WB to The London Resort	187	250	156	202
Route 777: The London Resort to A2 WB	166	171	189	176
Route 778: A2 Eastbound to The London Resort	137	100	138	98
A2EBTW: A2 Eastbound off-slip to Thames Way	304	299	304	284
TWA2WB: Thames Way to A2 WB on-slip	253	274	226	251

13.3.16. **Table 13-3** demonstrates that the implementation of the London Resort trip generation in 2025, AM and PM peak hours, shows no changes to journey times along the A2 for vehicles not leaving or joining the A2 at the Ebbsfleet junction.

13.3.17. The dedicated Resort Access Road and improvements to the A2 Ebbsfleet junction in the Do Something create a reduction in journey time for vehicles travelling from The London Resort to join the A2 EB (route 775) – 26 seconds in the AM peak and 31 seconds in the PM peak – but demonstrates an increase of 5 seconds in the AM peak for vehicles joining the A2 WB (route 777); this is due to increased queuing on the A2260 between the east and west roundabouts. It is important to note that Station Quarter South access is relocated from the north of the A2 Ebbsfleet roundabouts to the A2260 spur road, also being a contributing factor to improvements in journey time to and from the London Resort as the dedicated Resort road in the Do Something was assumed to be the Station Quarter South access as detailed in chapter 9.

13.3.18. The average queue length (in metres) has been extracted from the 2029 Do Minimum and Do Something scenarios, for the AM and PM peaks, to demonstrate the impacts of The London Resort trip generation and associated infrastructure improvements have on the length of queues at junction approaches. The extracted queue lengths are presented in **Table 13-4**.

Table 13-4: VISSIM Queue Length Analysis, 2025

2025 Queue Length Analysis (in metres)	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	2025 Do Minimum	2025 Do Something	2025 Do Minimum	2025 Do Something
8: London Resort Access Road	-	5.6	-	27.1
9: A2 EB Off-slip	44.8	28.8	48.0	30.0
10: A2260 Spur Road Eastbound to East Roundabout	12.7	24.1	37.0	26.7
11: A2260 SB to West Roundabout	26.2	21.8	26.5	18.6
12: A2260 Spur Road WB to West Roundabout	10.9	33.4	19.8	38.7
13: A2 WB Off-slip	27.0	27.5	18.9	18.7
14: Ackers Drive	15.7	21.1	10.8	18.5
108: East Roundabout North Stop Line	21.0	20.6	25.4	24.9
109: East Roundabout South Stop Line	5.1	10.0	7.2	36.1
110: East Roundabout East Stop Line	4.1	2.2	9.6	2.7
310: A2260 NB	45.9	67.7	46.8	63.8
311: B259	42.4	42.4	40.0	32.7
312: A2260 Ebbsfleet Gateway SB	45.0	47.7	63.6	41.5
321: Station Quarter South Exit	-	16.2	-	13.8

13.3.19. The extraction of queue length data for 2025 scenarios, with and without the London Resort trip generation, demonstrates a **decrease** of queue length (in metres) in the AM and PM peaks on the following links:

- Stop Line 9: A2 Eastbound off-slip by approximately 16m in the AM and 18m in the PM as a result of improvements to the A2 Ebbsfleet access east roundabout and signal timing optimisation as well as the relocation of Station Quarter South traffic with vehicles now being able to use the dedicated left turn lanes and not having to go through the roundabout stoplines;
- Stop Line 11: A2260 southbound by approximately 4m in the AM and 8m in the PM as a result of improvement of throughput on the A2260 for Station Quarter South traffic; and
- Stop Line 110: East Roundabout East Stop Line by approximately 2m in the AM and 7m in the PM as a result of redistributed Station Quarter South traffic and junction improvements as well as signal timing optimisation.

13.3.20. The extraction of queue length data for 2025 scenarios, with and without The London Resort trip generation, demonstrates an **increase** of queue length (in metres) in the AM and PM peaks on the following links:

- Stop Line 12: A2260 Spur Road westbound by approximately 23m in the AM and 19m in the PM however there is no queuing back affecting junctions downstream and this increase can also be attributed as a result of the relocation of the Station Quarter South access previously mentioned;
- Stop Line 14: Ackers Drive by approximately 5m in the AM and 8m in the PM;
- Stop Line 109 East roundabout south stop line by approximately 5m in the AM and 29m in the PM as a result of London Resort traffic however the queueing capacity is high, and the queue does not affect the circulatory traffic; and
- Stop Line 310: A2260 northbound by approximately 22m in the AM and 17m in the PM although there is no queuing back affecting junctions downstream with spare capacity on this link.

13.3.21. The improvements proposed at the two A2 Ebbsfleet junction roundabouts as part of the development proposals to accommodate the London Resort dedicated access road and associated trip generation is forecast to decrease the queue length on A2 eastbound off-slip by approximately 16m in the AM peak and 18m in the PM peak; this link sees the most significant decrease in queueing in both peaks and equates to approximately 3 PCUs in both peaks.

13.3.22. The inclusion of the London Resort trip generation in 2025 is forecast to increase the queue length on A2260 Spur Road WB approach to the west roundabout by approximately 23m in the AM peak and 19m in the PM; this link sees the most significant increase in queueing in both peaks and equates to approximately 4 PCUs in the AM peak and 3 PCUs in the PM peak.

2029 GATE TWO OPENING

13.3.23. The journey times (in seconds) have been extracted from the 2029 models, with and without the Resort construction traffic, to demonstrate the impacts that the arrivals and departures of trip generation have on journey times along the A2 and through the upgraded A2 Ebbsfleet junction. The extracted journey times routes are shown in **Plate 13-1** and the time, in seconds, is presented in **Table 13-5**.

Table 13-5: VISSIM Journey Time Analysis, 2029

2029 Journey Time Analysis (in seconds)	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	2029 Do Minimum	2029 Do Something	2029 Do Minimum	2029 Do Something
Route 773: A2 EB	93	107	97	94
Route 774: A2 WB	145	145	78	77
Route 775: The London Resort to A2 EB	130	98	133	102
Route 776: A2 WB to The London Resort	189	243	158	192
Route 777: The London Resort to A2 WB	168	171	188	172
Route 778: A2 EB to The London Resort	141	98	162	115
A2EBTW: A2 EB off-slip to Thames Way	310	314	307	286
TWA2WB: Thames Way to A2 WB on-slip	247	368	215	261

13.3.24. **Table 13-5** demonstrates that the 2029 trip generation has minimal impacts on journey times along the A2 with route 773 increasing by approximately 14 seconds in the AM peak but reducing by 3 seconds in the PM peak; route 774 has no impact in the AM peak and decreases by 1 second in the PM peak.

13.3.25. Similar to 2025, access to the Resort from A2 WB (route 776) and egress from the Resort back to A2 WB (route 777) demonstrates increases in journey time of 54 seconds and 3 seconds respectively for the AM peak. The PM peak also shows an increase of approximately 34 seconds on route 776; these increases are due to increases queueing on the A226 Spur Road and increase opposing movements at the roundabouts, which the traffic is required to give-way to.

13.3.26. The junction improvements implemented at the A2 Ebbsfleet junction east roundabout, where the A2 EB on and off slips access and egress directly, have a positive impact in reducing journey times on route 775 and route 778 in both the AM and PM peaks. As a result of the improvements at the access roundabout and the minimal 111 vehicle trip arrivals in the 2029 AM culminated by moving the Station Quarter South access on the A2260 away from the London Resort access this has an improvement in journey times. It is important to note that Station Quarter South access relocation to the A2260 spur road, also being a contributing factor to improvements in journey time to and from the London Resort as the dedicated Resort road in the Do Something was assumed to be the Station Quarter South access as detailed in chapter 9.

13.3.27. The average queue length (in metres) has been extracted from the 2029 Do Minimum and Do Something scenarios, for the AM and PM peaks, to demonstrate the impacts of the London Resort trip generation and associated infrastructure improvements have on the length of queues at junction approaches. The extracted queue lengths are presented in **Table 13-6**.

Table 13-6: **VISSIM Queue Length Analysis, 2029**

2029 Queue Length Analysis (in metres)	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	2029 Do Minimum	2029 Do Something	2029 Do Minimum	2029 Do Something
8: London Resort Access Road	-	5.7	-	31.6
9: A2 EB Off-slip	48.9	37.1	70.6	45.9
10: A2260 Spur Road EB to East Roundabout	12.9	22.9	27.4	24.2
11: A2260 SB to West Roundabout	32.8	22.3	26.2	15.8
12: A2260 Spur Road WB to West Roundabout	7.0	48.6	15.9	57.8
13: A2 WB Off-slip	27.5	30.9	16.9	35.9
14: Ackers Drive	15.7	23.4	12.5	27.4
108: East Roundabout North Stop Line	22.7	22.6	47.2	36.4
109: East Roundabout South Stop Line	3.3	9.9	0.4	10.9
110: East Roundabout East Stop Line	10.9	4.1	45.8	22.3
310: A2260 NB	51.6	72.3	46.4	104.8
311: B259	43.1	44.7	49.2	39.9
312: A2260 Ebbsfleet Gateway SB	45.8	49.9	53.1	54.0
321: Station Quarter South Exit	-	16.4	-	13.5

13.3.28. The extraction of queue length data for 2029 scenarios, with and without the London Resort trip generation, demonstrates a **decrease** of queue length (in metres) in the AM and PM peaks on the following links:

- Stop Line 9: A2 Eastbound off-slip by approximately 12m in the AM and 25m in the PM as a result of improvements to the A2 Ebbsfleet access east roundabout and signal timing optimisation as well as the relocation of Station Quarter South traffic with vehicles now being able to use the dedicated left turn lanes and not having to go through the roundabout stoplines;
- Stop Line 11: A2260 southbound by approximately 11m in the AM and 10m in the PM as a result of the two lane Station Quarter South entry and maximising the storage capacity at Stop Line 10; and
- Stop Line 110: East Roundabout East Stop Line by approximately 7m in the AM and 24m in the PM as a result of no Station Quarter South traffic having to pass through this stop line and improvements to the A2 Ebbsfleet access east roundabout and signal timing optimisation;

13.3.29. The extraction of queue length data for 2029 scenarios, with and without the London Resort trip generation, demonstrates an **increase** of queue length (in metres) in the AM and PM peaks on the following links:

- Stop Line 12: A2260 Spur Road westbound by approximately 42m in both the AM and PM this increase can also be attributed as a result of the relocation of the Station Quarter South access previously mentioned , as well as high London Resort departures in the PM although there is no queuing back affecting junctions downstream;
- Stop Line 13: A2 westbound off-slip by approximately 3m in the AM and 19m in the PM;
- Stop Line 14: Ackers Drive by approximately 7m in the AM and 15m in the PM;
- Stop Line 109 East roundabout south stop line by approximately 7m in the AM and 11m in the PM: and
- Stop Line 310: A2260 northbound by approximately 21m in the AM and 59m in the PM although there is no queuing back affecting junctions downstream with spare capacity on this link.

13.3.30. The improvements proposed at the two A2 Ebbsfleet junction roundabouts as part of the development proposals to accommodate the London Resort dedicated access road and associated trip generation is forecast to decrease the queue length on A2 EB off-slip by approximately 12m in the AM peak and 25m in the PM peak; this link sees the most significant decrease in queueing in both peaks and equates to approximately 2 PCUs in the AM peak and 4 PCUs in the PM peak.

13.3.31. The inclusion of the London Resort trip generation in 2029 is forecast to increase the queue length on A2260 Spur Road WB approach to the west roundabout by approximately 42m in both peaks; this equates to approximately 7 PCUs. The B259 also sees the most significant increase in queueing in the PM peak of 59m; this equates to approximately 10 additional PCUs.

2038 RESORT MATURITY (WITH LTC)

13.3.32. The journey times (in seconds) have been extracted from the 2038 VISSIM models, with and without the London Resort, to demonstrate the impacts that the incorporated of the Resort and associated infrastructure improvements have on journey times along the A2 and through the upgraded A2 Ebbsfleet junction. The extracted journey times routes are shown in **Plate 13-1** and the time, in seconds, is presented in **Table 13-7**.

Table 13-7: VISSIM Journey Time Analysis, 2038 with LTC

2038 Journey Time Analysis (in seconds)	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	2038 Do Minimum	2038 Do Something	2038 Do Minimum	2038 Do Something
Route 773: A2 EB	91	91	94	94
Route 774: A2 WB	135	134	77	77
Route 775: The London Resort to A2 EB	238	105	195	117
Route 776: A2 WB to The London Resort	194	242	165	202
Route 777: The London Resort to A2 WB	172	170	176	204
Route 778: A2 EB to The London Resort	170	98	160	132
A2EBTW: A2 EB off-slip to Thames Way	310	301	308	308
TWA2WB: Thames Way to A2 WB on-slip	257	278	224	283

13.3.33. **Table 13-7** demonstrates that the implementation of The London Resort trip generation in 2038, AM and PM peak hours, shows minimal changes to journey times along the A2 for vehicles not routing either to/from the Resort. The proposed improvements to the A2 / A2260 roundabout as part of the incorporation of a dedicated Resort Access Road to access the leisure core, improve the journey times for vehicles accessing and egressing The London Resort compared with how this was modelled in the Atkins model.

13.3.34. Journey times westbound along the A2 and towards the Resort show an increase of approximately 48 seconds in the AM peak and 37 seconds in the PM peak; this is accredited to an increase in opposing traffic movements between the two Ebbsfleet Valley roundabouts. It is also noted that the re-alignments included as part of the junction re-design and new dedicated Resort Access Road lead to an increase in length of journey time by approximately 400m, which would account for a slight increase in seconds too.

13.3.35. The junction improvements at the two A2 Ebbsfleet access roundabouts have a positive impact in reducing journey times on route 775 The London Resort to A2 Eastbound of approximately 133 seconds in the AM and 78 seconds in the PM. This is a result of the improvements at the access roundabout and the minimal as well as by moving the Station Quarter South access on the A2260 away from the London Resort access as the dedicated Resort road in the Do Something was assumed to be the Station Quarter South access as detailed in chapter 9.. Route 778 A2 Eastbound to The London Resort also has an improvement in journey time as a result of the A2 Ebbsfleet right roundabout improvements, the A2 Eastbound-offslip two lane dedicated left turn which operates well in improving the throughput of vehicles through the junction.

13.3.36. In addition to the journey time analysis, average queue length (in metres) has been extracted from the 2038 VISSIM models, with and without The London Resort, to demonstrate the impacts that the incorporation of the Resort and associated infrastructure improvements have on the length of queues at junction approaches. The extracted queue lengths are presented in **Table 13-8**.

Table 13-8: VISSIM Queue Length Analysis, 2038 with LTC

2038 Queue Length Analysis (in metres)	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
	2038 Do Minimum	2038 Do Something	2038 Do Minimum	2038 Do Something
8: London Resort Access Road	-	7.8	-	60.0
9: A2 EB Off-slip	127.5	38.2	99.9	81.1
10: A2260 Spur Road EB to East Roundabout	27.7	42.0	27.8	39.6
11: A2260 SB to West Roundabout	34.5	35.8	23.3	23.1
12: A2260 Spur Road WB to West Roundabout	10.6	48.3	30.0	92.1
13: A2 WB Off-slip	35.6	29.5	35.9	37.2
14: Ackers Drive	23.0	38.9	17.2	24.5
108: East Roundabout North Stop Line	31.7	22.2	42.4	33.1
109: East Roundabout South Stop Line	13.4	20.5	23.1	44.3
110: East Roundabout East Stop Line	55.5	4.5	46.5	44.3
310: A2260 NB	65.1	69.2	103.5	107.5
311: B259	75.7	74.9	61.5	60.8
312: A2260 Ebbsfleet Gateway SB	52.3	57.6	74.0	83.8
321: Station Quarter South Exit	-	134.8	-	180.2

13.3.37. The extraction of queue length data for 2038 scenarios, with and without The London Resort trip generation, demonstrates a **decrease** of queue length (in metres) in the AM and PM peaks on the following links:

- Stop Line 9: A2 Eastbound off-slip by approximately 89m in the AM and 19m in the PM as a result of the A2 Eastbound-offslip two lane dedicated left turn which operates well in improving the throughput of vehicles through the junction as well as the relocation of Station Quarter South traffic with vehicles now being able to use the dedicated left turn lanes and not having to go through the roundabout stoplines;
- Stop Line 108: East Roundabout North Stop Line by approximately 10m in the AM and 9m in the PM; and
- Stop Line 110: East Roundabout East Stop Line by approximately 51m in the AM and 2m in the PM as a result of signal timing optimisation and Station Quarter South traffic no longer travelling through this stop line.

13.3.38. The extraction of queue length data for 2038 scenarios, with and without The London Resort trip generation, demonstrates an **increase** of queue length (in metres) in the AM and PM peaks on the following links:

- Stop Line 10: A2260 Spur Road eastbound by approximately 14m in the AM and 12m in the PM and this increase can also be attributed as a result of the relocation of the Station Quarter South access previously mentioned with vehicles from this development performing a U-turn at the east A2 Ebbsfleet roundabout in order to join the A2 in the westbound direction;
- Stop Line 12: A2260 Spur Road westbound by approximately 38m in the AM and 62m in the PM as a result of rerouted Station Quarter South traffic, as well as high London Resort departures in the PM although there is no queuing back affecting junctions downstream;
- Stop Line 14: Ackers Drive by approximately 16m in the AM and 7m in the PM
- Stop Line 109: East roundabout south stop line by approximately 7m in the AM and 12m in the PM; and
- Stop Line 312: A2260 Ebbsfleet Gateway by approximately 5m in the AM and 10m in the PM.

13.3.39. Station Quarter South Exit (Stop Line 321) queue is not evident in the Do Minimum as it is located elsewhere. This queues back for the length of the link and into the development in both the Do Minimum and Do Something.

13.3.40. The improvements proposed at the two A2 Ebbsfleet access roundabout as part of the development proposals to accommodate the London Resort dedicated access road and associated trip generation is forecast to decrease the queue length on A2 EB off-slip by approximately 89m in the AM peak and 19m in the PM peak; this link sees the most significant decrease in queueing in both peaks and equates to approximately 16 PCUs in the AM peak and 3 PCUs in the PM peak.

13.3.41. The inclusion of The London Resort trip generation in 2038 is forecast to increase the queue length on A2260 Spur Road WB approach to the west roundabout by approximately 38m in the AM peak and 62m in the PM; this link sees the most significant increase in queueing in both peaks and equates to approximately 7 PCUs in the AM peak and 11 PCUs in the PM peak. The WB link between the two A2 Ebbsfleet access roundabouts is approximately 160m in length and so the increase in queueing is not forecast to block back to the east roundabout.

13.4 JUNCTION ASSESSMENTS

13.4.1. It is considered that the primary junctions are assessed within the VISSIM model set out above, however there are a number of additional junctions located within the study area outside of the VISSIM cordon. These additional junctions are;

- ASDA roundabout;
- Tilbury2 A1089 / Ferry Road / Link Road Priority Junction;
- M25 Junction 30; and
- M25 Junction 2.

ASDA ROUNDABOUT

13.4.2. The Asda Roundabout has been assessed within the Junctions 9 software platform and the results are contained within **Appendix TA -AA**.

13.4.3. As set out in Section 4.6 above, as part of the Tilbury2 DCO Transport Assessment, a mitigation improvement scheme at the Asda Roundabout was presented. As the Tilbury2 DCO has been granted – it is pertinent to account for the mitigation scheme within the assessments. The Tilbury2 Transport Assessments assumes that the development will be in operation by 2020, and so any future year assessments with the London Resort is likely to result in the mitigation proposals being already implemented at the junction.

13.4.4. However, to ensure that the London Resort assesses the junction appropriately, a number of scenarios have been undertaken assuming that the Tilbury2 mitigation does not come forward until a later date. This ensures that the Resort adequately assesses the junction during the initial phases to ascertain whether improvements are required. Tilbury2 demand and the mitigation associated will then be included in the assessment. Furthermore, the influence of the LTC proposals has been included as a separate scenario.

13.4.5. The following scenarios have been tested as the Asda Roundabout, as summarised in **Table 13-9**.

Table 13-9: Scenarios Tested – Asda Roundabout

	DM (Do Minimum) – no development	DS (Do Something) – with London Resort	With Tilbury2 demand and Mitigation	With and without LTC
2023 – Gate one Construction Year	✔	✔ - Construction only	✖	✖
2025	✔	✔	✖	✖
2029	✔	✔	✔	✔
2038	✔	✔	✔	✔

2023 Construction Year

13.4.6. The results for the 2023 assessments are shown below in **Table 13-10**.

Table 13-10: 2023 AM and PM - Asda Roundabout – Do Minimum and Do Something assessments

2023 DM	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.21	0.3
B – Dock Road South	0.61	1.7	0.41	0.7
C – A1089 St Andrews Road	0.57	2.6	0.79	4.8
D – Thurrock Park Way	0.38	0.9	0.1	0.1
E – A1089 Dock Road	0.96	21.7	0.69	2.9
2023 DS	**AM Peak (0800 – 0900)**		**PM Peak (1700 – 1800)**	
Arm	**RFC**	**Queue (PCUs)**	**RFC**	**Queue (PCUs)**
A – London Distribution Park	0.09	0.2	0.21	0.3
B – Dock Road South	0.63	1.9	0.41	0.7
C – A1089 St Andrews Road	0.57	2.6	0.92	11.8
D – Thurrock Park Way	0.38	0.9	0.11	0.1
E – A1089 Dock Road	1.01	44.1	0.69	2.9

13.4.7. As shown above, the junction in 2023 is considered to be close or approaching its theoretical capacity in the Do Minimum scenario, noticeable in the AM peak.

13.4.8. Reviewing the impact of the construction traffic flows on the junction, whilst there is an increase in RFC and queues, it is not considered to be a severe impact due to the temporary nature of the construction activity at the site.

2025 Assessment Year

13.4.9. The results for the 2025 assessments are shown below in **Table 13-11**.

Table 13-11: 2025 AM and PM - Asda Roundabout – Do Minimum and Do Something assessments

2025 DM	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.22	0.3
B – Dock Road South	0.61	1.8	0.41	0.7
C – A1089 St Andrews Road	0.58	2.7	0.81	5.3
D – Thurrock Park Way	0.39	0.9	0.1	0.1
E – A1089 Dock Road	0.98	27.9	0.71	3.1
2025 DS	**AM Peak (0800 – 0900)**		**PM Peak (1700 – 1800)**	
Arm	**RFC**	**Queue (PCUs)**	**RFC**	**Queue (PCUs)**
A – London Distribution Park	0.09	0.2	0.22	0.3
B – Dock Road South	0.62	1.9	0.42	0.7
C – A1089 St Andrews Road	0.58	2.7	0.89	9.5
D – Thurrock Park Way	0.39	0.9	0.11	0.1
E – A1089 Dock Road	1.00	38	0.72	3.4

13.4.10. As shown above, and similar to the 2023 assessments, in 2025, the junction is close or approaching its theoretical capacity in the Do Minimum scenario, with the AM peak indicating that Arm E – A1089 Dock Road is near its threshold.

13.4.11. When adding the developments flows, which represent the first full year after Gate One opens, the junction is performing at capacity. The impacts are not viewed to be material considering the DM scenario indicates queuing on A1089 Dock Road already occurs.

2029 Assessment Year

13.4.12. The results for the 2029 assessments are shown below in **Table 13-12**.

Table 13-12: 2029 AM and PM - Asda Roundabout – Do Min, Do Min + Tilbury2, Do Something, Do Something + Tilbury2 assessments – without Tilbury2 Mitigation

2029 DM	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.23	0.3
B – Dock Road South	0.63	1.9	0.42	0.8
C – A1089 St Andrews Road	0.62	3.2	0.86	7.8
D – Thurrock Park Way	0.39	0.9	0.1	0.1
E – A1089 Dock Road	1.03	62.8	0.75	3.9
2029_DM + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.25	0.4
B – Dock Road South	0.65	2.1	0.45	0.8
C – A1089 St Andrews Road	0.77	6.4	0.99	30.9
D – Thurrock Park Way	0.44	1.1	0.11	0.2
E – A1089 Dock Road	1.16	189.5	0.82	6.1
2029_DM + Dev	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.23	0.3
B – Dock Road South	0.63	1.9	0.43	0.8
C – A1089 St Andrews Road	0.62	3.1	0.98	25.9
D – Thurrock Park Way	0.39	0.9	0.11	0.2
E – A1089 Dock Road	1.06	89.6	0.77	4.3
2029_DM + Dev + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.25	0.4
B – Dock Road South	0.65	2.1	0.46	0.9
C – A1089 St Andrews Road	0.76	6.3	1.11	109.1
D – Thurrock Park Way	0.44	1.1	0.12	0.2
E – A1089 Dock Road	1.19	225	0.84	6.8

13.4.13. As shown in **Table 13-12**, the 2029 assessments have been run in Junctions9 without the proposed Tilbury2 mitigation in place. As evident in the Do Minimum scenario, the junction continues to be more congested, with Arm E – A1089 Dock Road outlining RFCs above 1 in the AM peak.

13.4.14. Considering the Tilbury2 DCO has been granted, it is important to understand the impacts from those movements in isolation. As shown within the Table, Tilbury2 flows represent a large proportion of change when compared to the Do Minimum results. When looking at the Tilbury2 impacts in isolation, Arms C and E the South and North arms of the junction respectively are modelled to be over or approaching capacity.

13.4.15. A similar assessment just with the London Resort development traffic has been undertaken. This indicates that when compared to the Do Minimum results, the Resort has a smaller impact comparatively speaking on the junction.

13.4.16. The final assessment combines both the London Resort and Tilbury2 development flows onto the Do Minimum junction. As expected, this scenario indicates that the junction performs over capacity on the A1089 arms in the AM and PM peaks.

13.4.17. Applying the Tilbury2 mitigation proposals, **Table 13-13** summarises the impacts at the junction.

Table 13-13: 2029 AM and PM - Asda Roundabout –Do Min + Tilbury2, Do Something + Tilbury2 assessments – with Tilbury2 Mitigation

2029_DM + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.25	0.4
B – Dock Road South	0.65	2.1	0.45	0.8
C – A1089 St Andrews Road	0.7	4.7	0.91	11.8
D – Thurrock Park Way	0.44	1.1	0.11	0.2
E – A1089 Dock Road	1.16	189.5	0.82	6.1
2029_DM + Dev + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.26	0.4
B – Dock Road South	0.65	2.1	0.46	0.9
C – A1089 St Andrews Road	0.7	4.6	1.02	44.5
D – Thurrock Park Way	0.44	1.1	0.12	0.2
E – A1089 Dock Road	1.19	225	0.84	6.9

13.4.18. The 2029 with Tilbury2 mitigation proposals are considered to demonstrate a small benefit when compared to the without mitigation results. When adding the London Resort traffic on top of Tilbury2 flows, the junction is still forecast to operate over its theoretical maximum capacity, although it should be noted that the Resort traffic only results in a small impact.

13.4.19. This would indicate that the Tilbury2 mitigation scheme is not appropriate for the combined use with the London Resort in 2029 and further mitigation would be required to ensure the continued efficient operation of the junction.

2029 - With Lower Thames Crossing

13.4.20. The influence of the LTC's proposals should be assessed at the junction. As the LTC is forecast to be built before 2029, it is sensible to review what the impacts could be using the alternative baseline. The results for the 2029 assessments with LTC are shown in **Table 13-14**.

Table 13-14: 2029 AM and PM - Asda Roundabout – Do Min, Do Min + Tilbury2, Do Something, Do Something + Tilbury2 assessments – without Tilbury2 Mitigation – With LTC

2029 LTCDM	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.07	0.2	0.21	0.3
B – Dock Road South	0.53	1.3	0.41	0.7
C – A1089 St Andrews Road	0.92	17.3	0.74	3.6
D – Thurrock Park Way	0.49	1.3	0.09	0.1
E – A1089 Dock Road	0.76	4.5	0.69	2.9
2029_LTCDM + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.08	0.2	0.23	0.3
B – Dock Road South	0.59	1.6	0.43	0.8
C – A1089 St Andrews Road	1.07	84.6	0.87	8.2
D – Thurrock Park Way	0.53	1.6	0.1	0.1
E – A1089 Dock Road	0.89	10.8	0.76	4.3
2029_LTCDM + Dev	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.07	0.2	0.22	0.3
B – Dock Road South	0.54	1.3	0.41	0.7
C – A1089 St Andrews Road	0.92	17.2	0.86	7.1
D – Thurrock Park Way	0.49	1.3	0.1	0.1
E – A1089 Dock Road	0.79	5.3	0.71	3.2
2029_LTCDM + Dev + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.24	0.3
B – Dock Road South	0.61	1.8	0.44	0.8
C – A1089 St Andrews Road	1.07	84.2	0.98	26.8
D – Thurrock Park Way	0.53	1.6	0.11	0.2
E – A1089 Dock Road	0.92	14.2	0.78	4.7

13.4.21. The change in traffic patterns with the LTC in place outline that in the 2029 Do minimum scenario, the junction is forecast to operate within capacity. The AM peak identifies that queuing would occur on the A1089 St Andrews arm, but that the PM peak would not show any material constraints.

13.4.22. The addition of Tilbury2 traffic in isolation increases the demand on Arm C, result in a worsening compared to the Do Minimum, with RFC's above 1.

13.4.23. The addition of The London Resort traffic in isolation also shows an increase in queuing, but not to the same extent and forecasts that the junction would operate within capacity in both peak periods.

13.4.24. The combination of The London Resort and Tilbury2 traffic outline that the A1089 St Andrews Road arm would be over capacity in the AM, and close to capacity in the PM peak. Arm E is also shown to increase in queuing and RFC when compared to the Do Minimum.

13.4.25. Similar to the without LTC assessments, the with LTC scenarios have also been assessed with the Tilbury2 mitigation proposals, as shown below in **Table 13-15**.

Table 13-15: 2029 AM and PM - Asda Roundabout – Do Min, Do Min + Tilbury2, Do Something, Do Something + Tilbury2 assessments – with Tilbury2 Mitigation – With LTC

2029_LTCDM + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.08	0.2	0.23	0.3
B – Dock Road South	0.59	1.6	0.43	0.8
C – A1089 St Andrews Road	0.98	34.7	0.79	5.1
D – Thurrock Park Way	0.56	1.7	0.1	0.1
E – A1089 Dock Road	0.89	10.8	0.76	4.3
2029_LTCDM + Dev + Til2	**AM Peak (0800 – 0900)**		**PM Peak (1700 – 1800)**	
Arm	**RFC**	**Queue (PCUs)**	**RFC**	**Queue (PCUs)**
A – London Distribution Park	0.09	0.2	0.24	0.3
B – Dock Road South	0.61	1.8	0.44	0.8
C – A1089 St Andrews Road	0.98	34.6	0.9	10.6
D – Thurrock Park Way	0.56	1.7	0.11	0.2
E – A1089 Dock Road	0.92	14.4	0.78	4.7

13.4.26. Applying both the Tilbury2 mitigation scheme with the LTC traffic profiles indicate that the Asda Roundabout would operate within its theoretical capacity. Arms C and E are shown to experience queues, but with RFC's under 1.

13.4.27. When adding the London Resort traffic on top of Tilbury2 proposals, the junction models continue to forecast operation with minimal change in performance.

2038 Assessment Year

13.4.28. 2038 represents the full maturity of the Resort, and the results are shown below in **Table 13-16**.

Table 13-16: 2038 AM and PM - Asda Roundabout – Do Min, Do Min + Tilbury2, Do Something, Do Something + Tilbury2 assessments – without Tilbury2 Mitigation

2038 DM	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.25	0.4
B – Dock Road South	0.63	1.9	0.44	0.8
C – A1089 St Andrews Road	0.67	4	0.95	18.4
D – Thurrock Park Way	0.41	1	0.11	0.1
E – A1089 Dock Road	1.12	149.8	0.82	5.8
2038_DM + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.27	0.4
B – Dock Road South	0.65	2.1	0.47	0.9
C – A1089 St Andrews Road	0.82	8.7	1.09	86.9
D – Thurrock Park Way	0.46	1.2	0.11	0.2
E – A1089 Dock Road	1.25	301	0.89	10.1
2038_DM + Dev	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.25	0.4
B – Dock Road South	0.64	2	0.45	0.8
C – A1089 St Andrews Road	0.67	3.9	1.13	122.8
D – Thurrock Park Way	0.41	1	0.11	0.2
E – A1089 Dock Road	1.17	200.9	0.84	6.8
2038_DM + Dev + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.28	0.4
B – Dock Road South	0.65	2.1	0.48	1
C – A1089 St Andrews Road	0.82	8.4	1.26	238.4
D – Thurrock Park Way	0.46	1.2	0.11	0.2
E – A1089 Dock Road	1.29	382.6	0.91	12.4

13.4.29. As shown in Table 13-16 above, the 2038 Do minimum results forecast extensive queuing on the A1089 Dock Road in the AM peak. As the RFC's are over 1 in this time period, the queuing results should be treated with some caution as the modelling can over-estimate queuing due to the random arrival nature of the vehicles once capacity has been reached or exceeded.

13.4.30. All scenarios in 2038 indicate an impact beyond the Do Minimum, with the combined Tilbury2 plus London Resort traffic showing the worst results. This scenario indicatives that queuing on the Northern arm in the AM and Southern arm in the PM would occur, resulting in a junction performing over capacity.

13.4.31. Applying the Tilbury2 mitigation proposals, **Table 13-17** summarises the impacts at the junction.

Table 13-17: 2038 AM and PM - Asda Roundabout –Do Min + Tilbury2, Do Something + Tilbury2 assessments – with Tilbury2 Mitigation

2038_DM + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.27	0.4
B – Dock Road South	0.65	2.1	0.47	0.9
C – A1089 St Andrews Road	0.75	5.9	0.99	31.5
D – Thurrock Park Way	0.46	1.2	0.12	0.2
E – A1089 Dock Road	1.25	301	0.89	10.2
2038_DM + Dev + Til2	**AM Peak (0800 – 0900)**		**PM Peak (1700 – 1800)**	
Arm	**RFC**	**Queue (PCUs)**	**RFC**	**Queue (PCUs)**
A – London Distribution Park	0.09	0.2	0.28	0.4
B – Dock Road South	0.65	2.1	0.48	1
C – A1089 St Andrews Road	0.75	5.8	1.16	154.2
D – Thurrock Park Way	0.46	1.2	0.12	0.2
E – A1089 Dock Road	1.29	382.6	0.91	12.6

13.4.32. As with the previous scenarios, the Tilbury2 mitigation proposals show a small benefit when compared to the without mitigation results, however when adding the London Resort traffic on top of Tilbury2 flows, the junction is still forecast to operate over its theoretical maximum capacity.

2038 - With Lower Thames Crossing

13.4.33. Similar to the 2029 scenario, the 2038 assessment year has been undertaken with and without the LTC. The results for the 2038 assessments with LTC are shown below in **Table 13-18**.

Table 13-18: 2038 AM and PM - Asda Roundabout – Do Min, Do Min + Tilbury2, Do Something, Do Something + Tilbury2 assessments – without Tilbury2 Mitigation – With LTC

2038 LTCDM	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.08	0.2	0.23	0.3
B – Dock Road South	0.54	1.3	0.42	0.8
C – A1089 St Andrews Road	0.98	31.4	0.81	5.6
D – Thurrock Park Way	0.5	1.4	0.1	0.1
E – A1089 Dock Road	0.8	5.7	0.76	4
2038_LTCDM + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.25	0.4
B – Dock Road South	0.61	1.8	0.45	0.8
C – A1089 St Andrews Road	1.13	131.6	0.94	16.8
D – Thurrock Park Way	0.53	1.6	0.11	0.1
E – A1089 Dock Road	0.93	15.9	0.83	6.2
2038_LTCDM + Dev	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.08	0.2	0.23	0.3
B – Dock Road South	0.57	1.5	0.43	0.8
C – A1089 St Andrews Road	0.98	31.3	0.99	28.1
D – Thurrock Park Way	0.5	1.4	0.11	0.2
E – A1089 Dock Road	0.85	7.6	0.78	4.5
2038_LTCDM + Dev + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.26	0.4
B – Dock Road South	0.64	2	0.46	0.9
C – A1089 St Andrews Road	1.13	130.2	1.12	114.2
D – Thurrock Park Way	0.53	1.6	0.12	0.2
E – A1089 Dock Road	0.97	27.7	0.85	7.2

13.4.34. With the LTC in place, the 2038 Do minimum scenario indicates that the junction is forecast to operate close to its capacity with queuing occurring on the A1089 St Andrews arm.

13.4.35. The addition of Tilbury2 traffic in isolation increases the demand on Arm C, result in a worsening compared to the Do Minimum, with RFC's above 1 and queues increasing.

13.4.36. The addition of the London Resort traffic in isolation shows an increase compared to the Do Minimum but all RFCs are under 1. This would indicate that whilst close to reaching the maximum capacity, the junction could operate in the future year with the London Resort.

13.4.37. The combination of the London Resort and Tilbury2 traffic outline that the A1089 St Andrews Road arm would be over capacity in the AM and PM peaks. Arm E is also shown to increase in queuing and RFC when compared to the Do Minimum.

13.4.38. Similar to the without LTC assessments, the with LTC scenarios have also been assessed with the Tilbury2 mitigation proposals, as shown below in **Table 13-19**.

Table 13-19: 2038 AM and PM - Asda Roundabout – Do Min + Tilbury2, Do Something + Tilbury2 assessments – with Tilbury2 Mitigation – With LTC

2038_LTCDM + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.25	0.4
B – Dock Road South	0.61	1.8	0.45	0.8
C – A1089 St Andrews Road	1.04	64.1	0.86	8.1
D – Thurrock Park Way	0.56	1.8	0.11	0.1
E – A1089 Dock Road	0.93	16.1	0.83	6.2
2038_LTCDM + Dev + Til2	AM Peak (0800 – 0900)		PM Peak (1700 – 1800)	
Arm	RFC	Queue (PCUs)	RFC	Queue (PCUs)
A – London Distribution Park	0.09	0.2	0.26	0.4
B – Dock Road South	0.64	2	0.46	0.9
C – A1089 St Andrews Road	1.04	63.1	1.02	47.9
D – Thurrock Park Way	0.56	1.8	0.12	0.2
E – A1089 Dock Road	0.98	28.1	0.85	7.3

13.4.39. The results with LTC and the Tilbury2 mitigation indicate that queuing would be reduced or kept similar on the key arms C and E (A0189) compared to the non-mitigation results. The junction is still considered to be operating above capacity and further mitigation would be required.

Asda Roundabout Summary – Existing and Tilbury2 mitigation proposals

13.4.40. As shown in the Junctions9 results, the Asda Roundabout is forecast to be operating close to its theoretical capacity from 2029 onwards. The addition of Tilbury2 traffic indicates a higher proportional impact on junction performance compared to the London Resort impacts when looked at individually.

13.4.41. However, it is evident, regardless of whether The LTC is implemented or not, the combined impact of the London Resort and Tilbury2 results in capacity issues. As such a mitigation strategy has been developed which is discussed in further detail below.

Asda Roundabout With Further Mitigation

13.4.42. As outlined above, the Asda Roundabout with the Tilbury DCO mitigation improvement scheme is forecast to operate beyond the theoretical capacity across a number of the assessment scenarios, full detailed modelling outputs are presented in **Appendix TA - AA**.

13.4.43. WSP has proposed a further mitigation scheme for the Asda Roundabout, which includes signalising the NB and SB approaches from the A1089. The scheme proposed by WSP is presented in 3529-WSP-XX-XX-DR-CH-0100 P01.2, provided in Appendix TA-K. The proposals consist of signalising the approaches from the A1089 in both directions, providing a third lane on the NB approach, a three lane exit on the A1089 Dock Road which tapers down to two lanes and a two lane exit on Thurrock Park Way which tapers down to a single lane within 50m. Thurrock Park Way has reduced to a single lane approach. The proposals include upgrading the existing unsignalised crossings on the A1089 Dock Road to signal controlled and relocating the signalised crossing on Thurrock Park Way approximately 25 metres further west.

13.4.44. The following scenarios have been tested at the Asda Roundabout with further mitigation, as summarised in **Table 13-20**. The assessment will only be undertaken for 2038 traffic scenarios as the forecast traffic flows are at their highest, so it deemed that if the junction can operate within a reasonable level of capacity in these scenarios it would indicate there are no capacity issues with the previous assessment years as the baseline traffic flows will be lower .

Table 13-20: Scenarios Tested – Asda Roundabout with further mitigation

	DM (Do Minimum) – no development	DS (Do Something) – with London Resort	With Tilbury2 demand	With and without LTC
2023 – Gate one Construction Year	✗	✗	✗	✗
2025	✗	✗	✗	✗
2029	✗	✗	✗	✗
2038	✓	✓	✓	✓

2038 Without Lower Thames Crossing

13.4.45. The subsequent bullet points provide details on the junction modelling results for the Asda Roundabout with further mitigation and outlines which scenario is presented in the following tables.

- **Table 13-21**– 2038 AM and PM Peak Do Minimum junction modelling results;
- **Table 13-22**– 2038 AM and PM Peak Do Minimum with Tilbury2 junction modelling results;
- **Table 13-23**Table 13-23– 2038 AM and PM Peak Do Something junction modelling results; and
- **Table 13-24**– 2038 AM and PM Peak Do Something with Tilbury2 junction modelling results.

Table 13-21: 2038 AM and PM Peak Do Minimum Junction Modelling Results

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1	A1089 Dock Road (SB)	88	18	19	70	11	13
1/2	A1089 Dock Road (SB)	88	18	19	70	11	13
2/1+ 2/2	Aldi and Amazon Access	14	1	9	39	2	9
3/1+ 3/2	A126 Dock Road	106	38	153	52	3	5
4/1+ 4/2	A1089 St Andrews Road (NB)	89	9	38	87	12	32
4/3	A1089 St Andrews Road (NB)	74	6	38	80	9	35
5/1	Thurrock Parkway	62	5	9	16	1	6
11/1	Northern Circulatory	77	5	54	30	2	32
11/2	Northern Circulatory	58	3	42	30	2	31
14/1	Southern Circulatory	40	2	5	38	4	7
14/2	Southern Circulatory	39	3	6	40	4	7
14/3	Southern Circulatory	20	4	11	26	3	9
Overall Junction		Overall PRC: -17.1% 60s Cycle time			Overall PRC: 1.6% 60s Cycle time		

Table 13-22: 2038 AM and PM Peak Do Minimum with Tilbury2 Traffic Flows Junction Modelling Results

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1	A1089 Dock Road (SB)	97	30	39	85	16	22
1/2	A1089 Dock Road (SB)	97	30	40	85	16	22
2/1+ 2/2	Aldi and Amazon Access	17	1	14	41	2	13
3/1+ 3/2	A126 Dock Road	132	83	475	57	4	8
4/1+ 4/2	A1089 St Andrews Road (NB)	86	10	33	87	12	28
4/3	A1089 St Andrews Road (NB)	77	8	36	77	10	29
5/1	Thurrock Parkway	65	5	11	17	1	6
11/1	Northern Circulatory	77	5	52	21	2	27
11/2	Northern Circulatory	58	3	40	22	2	26
14/1	Southern Circulatory	41	4	7	43	4	8
14/2	Southern Circulatory	39	4	7	42	4	7
14/3	Southern Circulatory	20	4	17	30	3	14
Overall Junction		Overall PRC: -45.6% 60s Cycle time			Overall PRC: 3.9% 60s Cycle time		

Table 13-23: 2038 AM and PM Peak Do Something Junction Modelling Results

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1	A1089 Dock Road (SB)	91	21	23	89	17	29
1/2	A1089 Dock Road (SB)	91	21	23	89	17	28
2/1+ 2/2	Aldi and Amazon Access	15	1	11	38	2	12
3/1+ 3/2	A126 Dock Road	114	54	264	54	3	6
4/1+ 4/2	A1089 St Andrews Road (NB)	89	9	38	83	12	24
4/3	A1089 St Andrews Road (NB)	74	6	38	73	9	25
5/1	Thurrock Parkway	62	4	9	17	1	7
11/1	Northern Circulatory	77	4	54	17	2	25
11/2	Northern Circulatory	58	3	41	18	2	24
14/1	Southern Circulatory	36	2	5	47	4	9
14/2	Southern Circulatory	38	3	5	46	4	9
14/3	Southern Circulatory	22	5	13	29	4	16
Overall Junction		Overall PRC: -26.4% 60s Cycle time			Overall PRC: 1.6% 60s Cycle time		

Table 13-24: 2038 AM and PM Peak Do Something with Tilbury2 Traffic Flows Junction Modelling Results

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1	A1089 Dock Road (SB)	100	41	64	75	12	13
1/2	A1089 Dock Road (SB)	100	41	64	75	12	13
2/1+ 2/2	Aldi and Amazon Access	18	1	15	44	2	12
3/1+ 3/2	A126 Dock Road	142	97	578	59	3	8
4/1+ 4/2	A1089 St Andrews Road (NB)	87	10	33	90	14	29
4/3	A1089 St Andrews Road (NB)	77	8	36	89	14	38
5/1	Thurrock Parkway	64	5	11	19	1	8
11/1	Northern Circulatory	77	5	51	36	2	42
11/2	Northern Circulatory	58	3	39	38	2	39
14/1	Southern Circulatory	38	4	8	45	4	12
14/2	Southern Circulatory	39	4	7	45	4	12
14/3	Southern Circulatory	20	3	16	33	4	17
Overall Junction		Overall: -57.1PRC: % 60s Cycle time			Overall PRC: 0.8% 60s Cycle time		

13.4.46. As shown in Tables above, in the AM peak all of the approaches will operate within or at capacity except for the A126 Dock Road. While in the PM peak the junction will operate within capacity with the maximum queue of 14PCUs forecast on the approach from the A1089 St Andrews Road with the Tilbury2 demand and the development flows. The additional of a third circulatory arm on the southern approach reduces the possibility of queuing back from the Southern Circulatory blocking the A1089 St Andrews Road exit.

13.4.47. The A126 Dock Road is forecast to operate over capacity in the AM peak across all of the scenarios. The intergreen between A1089 Dock Road (SB) and the Northern Circulatory of seven seconds will provide natural gap's for traffic to exit the A126 Dock Road which would reduce the forecast congestion across all the scenarios. The natural intergreen gaps cannot be accurately modelled within the LinSig software.

13.4.48. This further mitigation option provides a significant improvement on the mitigation scheme presented by the Tilbury2 DCO application.

2038 With Lower Thames Crossing

13.4.49. The subsequent bullet points provide details on the junction modelling results for the Asda Roundabout with the further mitigation and outlines which scenario is presented in the following tables.

- **Table 13-25**– 2038 AM and PM Peak Do Minimum with LTC junction modelling results;
- **Table 13-26**– 2038 AM and PM Peak Do Minimum with LTC and Tilbury2 junction modelling results;
- **Table 13-27**– 2038 AM and PM Peak Do Something with LTC junction modelling results; and
- **Table 13-28**– 2038 AM and PM Peak Do Something with LTC and Tilbury2 junction modelling results.

Table 13-25: 2038 AM and PM Peak Do Minimum with LTC Junction Modelling Results

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1	A1089 Dock Road (SB)	68	10	13	65	9	11
1/2	A1089 Dock Road (SB)	67	10	13	65	9	11
2/1+ 2/2	Aldi and Amazon Access	10	1	5	36	2	8
3/1+ 3/2	A126 Dock Road	73	6	12	50	2	5
4/1+ 4/2	A1089 St Andrews Road (NB)	89	13	32	87	10	33
4/3	A1089 St Andrews Road (NB)	78	9	32	77	8	36
5/1+	Thurrock Parkway	69	6	14	15	1	5
11/1	Northern Circulatory	60	4	34	27	2	33
11/2	Northern Circulatory	46	3	31	28	2	32
14/1	Southern Circulatory	37	3	7	36	3	6
14/2	Southern Circulatory	37	3	7	36	3	6
14/3	Southern Circulatory	26	3	11	26	3	8
Overall Junction		Overall PRC: 1.2% 60s Cycle time			Overall PRC: 3.4% 60s Cycle time		

Table 13-26: 2038 AM and PM Peak Do Minimum with LTC Junction and Tilbury2 Modelling Results

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1	A1089 Dock Road (SB)	85	15	22	77	13	17
1/2	A1089 Dock Road (SB)	85	15	22	77	13	17
2/1+ 2/2	Aldi and Amazon Access	11	1	7	38	2	11
3/1+ 3/2	A126 Dock Road	84	8	26	54	3	6
4/1+ 4/2	A1089 St Andrews Road (NB)	88	13	28	85	11	29
4/3	A1089 St Andrews Road (NB)	80	11	30	73	8	29
5/1+	Thurrock Parkway	74	7	18	16	1	6
11/1	Northern Circulatory	47	4	24	21	2	28
11/2	Northern Circulatory	37	3	24	22	2	27
14/1	Southern Circulatory	46	4	8	38	3	7
14/2	Southern Circulatory	38	4	12	38	3	7
14/3	Southern Circulatory	25	4	19	28	3	10
Overall Junction		Overall PRC: 2.5% 60s Cycle time			Overall PRC: 5.8% 60s Cycle time		

Table 13-27: 2038 AM and PM Peak Do Something with LTC Junction Modelling Results

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1	A1089 Dock Road (SB)	69	11	12	73	11	15
1/2	A1089 Dock Road (SB)	70	11	12	73	11	15
2/1+ 2/2	Aldi and Amazon Access	10	1	5	36	2	9
3/1+ 3/2	A126 Dock Road	77	6	15	51	3	5
4/1+ 4/2	A1089 St Andrews Road (NB)	90	12	31	88	13	31
4/3	A1089 St Andrews Road (NB)	80	9	33	80	12	33
5/1	Thurrock Parkway	69	6	14	16	1	6
11/1	Northern Circulatory	66	5	37	21	2	28
11/2	Northern Circulatory	51	3	33	22	2	27
14/1	Southern Circulatory	36	4	7	38	3	7
14/2	Southern Circulatory	37	4	8	38	3	17
14/3	Southern Circulatory	26	3	11	28	3	10
Overall Junction		Overall PRC: 1.0 60s Cycle time			Overall PRC: 3.1% 60s Cycle time		

Table 13-28: 2038 AM and PM Peak Do Something with LTC and Tilbury2 Traffic Flows Junction Modelling Results

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1	A1089 Dock Road (SB)	84	16	19	87	16	25
1/2	A1089 Dock Road (SB)	84	16	19	87	16	25
2/1+ 2/2	Aldi and Amazon Access	12	1	7	38	2	12
3/1+ 3/2	A126 Dock Road	90	10	34	56	4	7
4/1+ 4/2	A1089 St Andrews Road (NB)	88	13	28	90	14	31
4/3	A1089 St Andrews Road (NB)	80	11	30	81	10	31
5/1	Thurrock Parkway	74	7	22	17	1	7
11/1	Northern Circulatory	55	4	29	17	2	25
11/2	Northern Circulatory	43	3	27	18	2	24
14/1	Southern Circulatory	45	4	9	42	4	8
14/2	Southern Circulatory	39	4	12	40	3	8
14/3	Southern Circulatory	25	4	19	28	3	15
Overall Junction		Overall PRC: 0.9% 60s Cycle time			Overall PRC: 0.3% 60s Cycle time		

13.4.50. The tables above present the forecast modelling results at the Asda Roundabout with further mitigation in 2038 with LTC in place. The results show that in that in the Do Minimum and Do Something scenarios the junction will operate within its theoretical capacity across the AM and PM peak. The approach operating closest to capacity is the A1089 St Andrews Road (SB) when the Tilbury2 demand and development flows are added, the predicated queue of 16PCUs in the AM and PM peak will be cleared each cycle.

13.4.51. The forecast longest queue on a non-signalised approach is 10PCUs on the A126 Dock Road in the AM Peak in the Do Something scenario with the Tilbury demand added this is an increase of four vehicles without Tilbury2 and development traffic.

Asda Roundabout Summary –Further mitigation proposals

13.4.52. Overall, the further mitigation option for the Asda Roundabout provides a significant improvement in terms of the operation of the part signalised roundabout across all the assessment scenarios in 2038. Furthermore, the further mitigation option would provide a safer crossing for pedestrians crossing the A1089 Dock Road approach as this will be signalised.

13.4.53. The signals that will be implemented at the signalised roundabout will operate MOVA which adjusts green time dynamically around the junction in response to demand. This technology cannot be represented by the model, as LinSig v3 is based upon fixed time operations. As a result, the junction would likely operate better than the junction results modelling presented in the tables above.

Tilbury2 – A1089 / Ferry Road / Link Road junction

13.4.54. As with the Asda roundabout, the Tilbury2 DCO has presented plans to create a new junction along A1089 Ferry Road with the development link road as part of its application.

13.4.55. The junction between the proposed link road is proposed to comprise of a ghost island priority junction with traffic between Ferry Road (west) and the link road receiving priority.

13.4.56. The results in the Tilbury2 DCO TA indicate that the proposed junction is forecast to work well within capacity across all scenarios.

13.4.57. To ensure that the design can accommodate the London Resort flows as well, a sensitivity test has been undertaken – on the PM peak hour, which represents the highest Resort development traffic forecast. **Table 13-29** below shows the PM modelling results.

Table 13-29: 2038 PM Peak Sensitivity test - A1089 / Ferry Road Link Road Junction – Tilbury2 plus Development traffic

2038 sensitivity tests + Tilbury2 + LR 2038 Dev Flows	PM Peak Hour		
	Queue (Veh)	Delay (s)	RFC
Stream B-AC - Ferry Road (South) – Left and Right Turns	0.9	9.99	0.48
Stream C-AB - Proposed Link Road – Right Turn	4.7	26.87	0.85

13.4.58. The sensitivity tests indicate that in 2038 in the PM peak, the new junction is forecast to operate within capacity with minimal queuing. The analysis confirms that no further assessments of the proposed Tilbury2 junction is required.

M25 JUNCTION 30

13.4.59. The assessment of the A13/ M25 Junction 30 follows the same assessment approach to the Tilbury2 DCO application which was considered acceptable. The traffic flows on each of the links is calculated before the off slips and after the on slips on each approach. The assessment will look at the percentage increase in traffic on each of the links at the A13/ M25 Junction 30 during the AM Peak (0800-0900) and PM Peak (1700-1800)

2023 Construction Year

13.4.60. The impact of the construction vehicles at the M25 Junction 30 in the AM peak is forecast to be approximately 150 vehicles and nine HGVs. While in the PM peak the increase is forecast to be 300 vehicles and nine HGVs. This increase will be smaller than our operational impact at the Junction and a more detailed assessment is presented below.

2025 Assessment Year

13.4.61. Table 13-30 presents the forecast increase in traffic flow at the A13/ M25 Junction 30 between the 2025 Do Minimum and Do Something scenarios in the AM and PM peaks.

Table 13-30: A13/ M25 Junction 30 Traffic Impact 2025

Peak	Link	2025 Do Minimum	2025 Do Something	Increase (%)
AM Peak (0800-0900)	M25 (North)	9,391	9,419	0.3%
	A13 (East)	7,474	7,496	0.3%
	M25 (South)	10,877	10,889	0.1%
	A13 (West)	6,596	6,598	0.0%
PM Peak (1700-1800)	M25 (North)	10,793	10,963	1.6%
	A13 (East)	9,411	9,503	1.0%
	M25 (South)	12,435	12,540	0.8%
	A13 (West)	7,584	7,596	0.2%

13.4.62. As shown above, there is forecast to be a small increase in traffic flow in the AM peak across all the links, the largest percentage increase will be 0.3% on the M25 (North) and the A13 (East).

13.4.63. In the PM peak, the forecast traffic flows increase of the approaches is likely to be no more than 1.6%. These small increases would no measurable impact on the operation of the junction.

2029 Assessment Year

13.4.64. Table 13-26 summarises the difference in traffic flow on each of the links between the Do Minimum and Do Something in 2029 in the AM and PM peaks. While, Table 13-27 presents the difference in traffic flow on each of the links following the completion of LTC for the Do Minimum and Do Something scenarios in 2029.

Table 13-31: A13/ M25 Junction 30 Traffic Impact 2029

Peak	Link	2029 Do Minimum	2029 Do Something	Increase (%)
AM Peak (0800-0900)	M25 (North)	9,937	9,976	0.4%
	A13 (East)	7,909	7,941	0.4%
	M25 (South)	11,510	1,1522	0.1%
	A13 (West)	6,980	6,982	0.0%
PM Peak (1700-1800)	M25 (North)	11,461	11,696	2.1%
	A13 (East)	9,994	10,146	1.5%
	M25 (South)	13,205	13,353	1.1%
	A13 (West)	8,053	8,068	0.2%

Table 13-32: A13/ M25 Junction 30 Traffic Impact 2029 With LTC

Peak	Link	2029 Do Minimum with LTC	2029 Do Something with LTC	Increase (%)
AM Peak (0800-0900)	M25 (North)	8,943	8,983	0.5%
	A13 (East)	7,909	7,941	0.4%
	M25 (South)	9,693	9,705	0.1%
	A13 (West)	6,980	6,982	0.0%
PM Peak (1700-1800)	M25 (North)	8,720	8,869	1.7%
	A13 (East)	9,994	10,060	0.7%
	M25 (South)	10,343	10,490	1.4%
	A13 (West)	8,053	8,068	0.2%

13.4.65. As shown above in Table 13-26, there is forecast to be a small increase in traffic flow in the AM peak across all the links, the maximum percentage increase will be 0.4% on the M25 (North) and the A13 (East). In the PM peak, the forecast traffic flows increase of the approaches is likely to be no more than 2.1%, which is forecast on the M25 (North). Small increases in traffic flows would have no quantifiable impact on the operation of the junction.

13.4.66. The traffic flows summarised in Table 13-27 with LTC implemented in 2029 forecast the highest growth on the M25 (North) in the AM peak. Similarly, to the 2029 forecast without LTC, the highest forecast increase in the PM peak would occur on the M25 (North) link.

13.4.67. Once LTC is open traffic heading north on the M25 would utilise LTC which removes the impact of the development traffic at the M25 Junction 30.

2038 Assessment Year

13.4.68. Table 13-28 presents the forecast increase in traffic flow at the A13/ M25 Junction 30 between the 2038 Do Minimum and Do Something scenarios in the AM and PM peaks. Furthermore, Table 13-29 presents the difference in traffic flow on each of the links following the completion of LTC for the Do Minimum and Do Something scenarios in 2038.

Table 13-33: A13/ M25 Junction 30 Traffic Impact 2038

Peak	Link	2038 Do Minimum	2038 Do Something	Increase (%)
AM Peak (0800-0900)	M25 (North)	10,787	10,840	0.5%
	A13 (East)	8,586	8,632	0.5%
	M25 (South)	12,495	12,509	0.1%
	A13 (West)	7,577	7,580	0.0%
PM Peak (1700-1800)	M25 (North)	12,478	12,780	2.4%
	A13 (East)	10,880	11,089	1.9%
	M25 (South)	14,377	14,565	1.3%
	A13 (West)	8,768	8,787	0.2%

Table 13-34: A13/ M25 Junction 30 Traffic Impact 2038 With LTC

Peak	Link	2038 Do Minimum with LTC	2038 Do Something with LTC	Increase (%)
AM Peak (0800-0900)	M25 (North)	9,285	9,338	0.6%
	A13 (East)	8,586	8,632	0.5%
	M25 (South)	10,196	10,209	0.1%
	A13 (West)	7,577	7,581	0,1%
PM Peak (1700-1800)	M25 (North)	9,358	9,533	1.9%
	A13 (East)	10,880	10,961	0.7%
	M25 (South)	11,050	11,237	1.7%
	A13 (West)	8,768	8,787	0.2%

13.4.69. As shown above in Table 13-28, there is forecast to be a small increase in traffic flow in the AM peak across all the links, the maximum percentage increase will be 0.5% on the M25 (North) and the A13 (East). In the PM peak, the forecast traffic flows increase of the approaches is likely to be no more than 2.4%, which is forecast on the M25 (North). These small increases would no measurable impact on the operation of the junction.

13.4.70. The traffic flows summarised in Table 13-29 with LTC implemented in 2038 forecast the highest growth on the M25 (North) in the AM peak. Similarly, to the 2038 forecast without LTC, the highest forecast increase in the PM peak would occur on the M25 (North) link.

13.4.71. It should be noted that following LTC being place traffic heading onto the M25 anti-clockwise would utilise the new LTC link which removes the impact of the development traffic at the M25 Junction 30.

Summary

13.4.72. As shown above the forecast increase in traffic flows on the approaches to the A13/ M25 are no more than 2.5% in 2038. These small changes would not have a quantifiable impact on the operation of the junction.

Furthermore, the upgrades to the junction in 2018 provided a free-flowing segregated left turn from the M25 North to the A13 East. Also, a proportion of the traffic will be heading north south or east west through the junction and will not interact at the junction. It is considered the impact of the London Resort at the junction in 2038 would not have an impact on safety and the operation of the junction.

M25 JUNCTION 2

13.4.73. The M25 Junction 2 has been assessed within the LinSig v3 software platform and the results are contained within **Appendix** TA - AA. The following scenarios have been tested as the M25 Junction 2, as summarised in **Table 13-35**.

13.4.74. Table 13-35

Table 13-35: Scenarios Tested – M25 Junction 2

	DM (Do Minimum) – no development	DS (Do Something) – with London Resort	With Tilbury2 demand and Mitigation	With and without LTC
2023 – Gate one Construction Year	✔	✔ - Construction only	✖	✖
2025	✔	✔	✖	✖
2029	✔	✔	✖	✔
2038	✔	✔	✖	✔

2023 Construction Year

13.4.75. **Table 13-36** and **Table 13-37** summarises the junction modelling results for the M25 Junction 2 in the Do Minimum and Do Something in 2023 in the AM and PM peaks.

Table 13-36: 2023 AM and PM – M25 Junction 2 – Do Minimum

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	23	2	19	28	3	13
1/3	M25 SB Off-Slip	32	3	21	75	11	22
2/1+ 2/2	A2 WB Off-Slip	30	2	6	50	3	6
2/3	A2 WB Off-Slip	3	1	26	10	1	31
3/1+ 3/2	M25 NB Off-Slip	24	2	4	65	3	5
3/3	M25 NB Off-Slip	1	0	12	1	1	15
3/4	M25 NB Off-Slip	31	4	14	76	10	26
4/1+ 4/2	A2 EB Off-Slip	21	2	13	42	5	16
4/3+ 4/4	A2 EB Off-Slip	26	3	13	41	5	16
10/1	Northern Circulatory	1	0	17	1	0	19
10/2+ 10/3	Northern Circulatory	32	3	6	80	7	19
10/4	Northern Circulatory	19	3	7	38	6	21
11/1	Eastern Circulatory	21	1	3	26	1	3
11/2	Eastern Circulatory	21	1	3	26	1	3
11/3	Eastern Circulatory	14	1	2	46	1	3
12/1+ 12/2	Southern Circulatory	22	2	8	68	4	8
12/3	Southern Circulatory	3	1	9	5	1	9
13/1	Western Circulatory	25	2	9	35	4	11
13/2	Western Circulatory	3	1	11	6	1	14
13/3	Western Circulatory	31	4	11	60	3	6
Overall Junction		Overall PRC: 185.4% 60s Cycle time			Overall PRC: 13.2% 60s Cycle time		

Table 13-37: 2023 AM and PM – M25 Junction 2 – Do Something

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	30	3	22	28	3	13
1/3	M25 SB Off-Slip	40	3	26	75	11	22
2/1+ 2/2	A2 WB Off-Slip	37	2	7	51	3	6
2/3	A2 WB Off-Slip	3	1	29	10	1	31
3/1+ 3/2	M25 NB Off-Slip	24	1	3	65	3	5
3/3	M25 NB Off-Slip	1	0	9	1	1	15
3/4	M25 NB Off-Slip	39	5	11	76	10	26
4/1+ 4/2	A2 EB Off-Slip	26	3	17	42	5	16
4/3+ 4/4	A2 EB Off-Slip	32	3	17	41	5	16
10/1	Northern Circulatory	1	0	12	1	0	19
10/2+ 10/3	Northern Circulatory	41	2	5	80	7	19
10/4	Northern Circulatory	17	2	3	38	6	21
11/1	Eastern Circulatory	20	1	2	26	1	3
11/2	Eastern Circulatory	20	1	2	26	1	3
11/3	Eastern Circulatory	13	1	2	46	1	3
12/1+ 12/2	Southern Circulatory	27	2	9	68	4	8
12/3	Southern Circulatory	3	1	10	5	1	9
13/1	Western Circulatory	21	2	8	35	4	11
13/2	Western Circulatory	3	1	9	6	1	14
13/3	Western Circulatory	39	6	10	60	3	6
Overall Junction		Overall PRC: 185.4% 60s Cycle time			Overall PRC: 13.2% 60s Cycle time		

13.4.76. As shown in the tables above, the M25 Junction 2 is forecast to operate within capacity in both the AM and PM peaks in the Do Minimum and Do Something scenarios. The signalised junction is forecast to operate very similar between the Do Minimum and Do Something scenarios.

2025 Assessment Year

13.4.77. The results for the 2025 assessments are shown below in **Table 13-38** and **Table 13-39** for the Do Minimum and Do Something scenario respectively.

Table 13-38: 2025 AM and PM – M25 Junction 2 – Do Minimum

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	23	2	18	29	3	13
1/3	M25 SB Off-Slip	30	3	20	76	12	22
2/1+ 2/2	A2 WB Off-Slip	31	2	6	51	3	6
2/3	A2 WB Off-Slip	3	1	26	10	1	31
3/1+ 3/2	M25 NB Off-Slip	24	2	4	66	3	5
3/3	M25 NB Off-Slip	1	1	12	1	1	13
3/4	M25 NB Off-Slip	31	4	14	70	10	22
4/1+ 4/2	A2 EB Off-Slip	22	2	14	39	4	14
4/3+ 4/4	A2 EB Off-Slip	27	3	14	38	4	14
10/1	Northern Circulatory	1	0	18	1	0	8
10/2+ 10/3	Northern Circulatory	33	3	6	81	8	19
10/4	Northern Circulatory	20	3	7	38	6	24
11/1	Eastern Circulatory	21	1	3	26	1	3
11/2	Eastern Circulatory	21	1	3	26	1	3
11/3	Eastern Circulatory	14	1	2	47	3	3
12/1+ 12/2	Southern Circulatory	22	2	8	74	4	10
12/3	Southern Circulatory	3	1	9	6	1	9
13/1	Western Circulatory	24	2	9	38	5	17
13/2	Western Circulatory	3	1	10	6	1	22
13/3	Western Circulatory	30	4	11	65	4	7
Overall Junction		Overall PRC: 176.4% 60s Cycle time			Overall PRC: 13.2% 60s Cycle time		

Table 13-39: 2025 AM and PM – M25 Junction 2 – Do Something

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	24	2	19	28	3	13
1/3	M25 SB Off-Slip	32	3	21	75	11	22
2/1+ 2/2	A2 WB Off-Slip	31	2	6	51	3	6
2/3	A2 WB Off-Slip	3	1	26	10	1	31
3/1+ 3/2	M25 NB Off-Slip	24	2	4	65	3	5
3/3	M25 NB Off-Slip	1	1	12	1	1	15
3/4	M25 NB Off-Slip	32	4	14	76	10	26
4/1+ 4/2	A2 EB Off-Slip	22	2	14	42	5	16
4/3+ 4/4	A2 EB Off-Slip	27	3	14	41	5	16
10/1	Northern Circulatory	1	0	17	1	0	19
10/2+ 10/3	Northern Circulatory	33	3	6	80	7	19
10/4	Northern Circulatory	19	3	7	38	6	21
11/1	Eastern Circulatory	21	1	3	26	1	3
11/2	Eastern Circulatory	21	1	3	26	1	3
11/3	Eastern Circulatory	14	1	2	46	1	3
12/1+ 12/2	Southern Circulatory	22	2	8	68	4	8
12/3	Southern Circulatory	3	1	9	5	1	9
13/1	Western Circulatory	24	2	9	35	4	11
13/2	Western Circulatory	3	1	11	6	1	14
13/3	Western Circulatory	31	4	10	60	3	6
Overall Junction		Overall PRC: 174.4% 60s Cycle time			Overall PRC: 13.2% 60s Cycle time		

13.4.78. Summarised in the tables above, the 2025 assessments of the M25 Junction 2 forecasts the junction to operate well within capacity in the Do Minimum and Do Something across the AM and PM peak. The development traffic flows are forecast to have no considerable impact on the operation of the signalised roundabout in the Do Something scenario. The longest queue is forecast on the M25 SB off-slip in the PM peak with a queue of 12 PCUs, this is an increase of one vehicle from the Do Minimum scenario.

2029 Assessment Year

13.4.79. The subsequent bullet points provide details on the junction modelling results for the M25 Junction 2 and outlines which scenario is presented in the following tables:

- **Table 13-40**– 2029 AM and PM Peak Do Minimum junction modelling results;
- **Table 13-41**– 2029 AM and PM Peak Do Something junction modelling results
- **Table 13-42**– 2029 AM and PM Peak; Do Minimum with LTC junction modelling results; and
- **Table 13-43**– 2029 AM and PM Peak Do Something with LTC junction modelling results.

Table 13-40: 2029 AM and PM – M25 Junction 2 – Do Minimum

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	23	2	18	26	3	10
1/3	M25 SB Off-Slip	32	3	20	69	11	17
2/1+ 2/2	A2 WB Off-Slip	32	2	6	53	3	7
2/3	A2 WB Off-Slip	3	1	26	10	1	31
3/1+ 3/2	M25 NB Off-Slip	25	2	4	69	4	5
3/3	M25 NB Off-Slip	1	1	12	23	3	17
3/4	M25 NB Off-Slip	32	4	14	62	7	22
4/1+ 4/2	A2 EB Off-Slip	22	2	12	35	4	12
4/3+ 4/4	A2 EB Off-Slip	26	3	13	35	4	11
10/1	Northern Circulatory	1	0	18	26	3	11
10/2+ 10/3	Northern Circulatory	34	4	7	71	9	16
10/4	Northern Circulatory	21	4	11	48	3	19
11/1	Eastern Circulatory	22	1	3	27	1	3
11/2	Eastern Circulatory	22	1	3	27	1	3
11/3	Eastern Circulatory	15	1	2	49	4	6
12/1+ 12/2	Southern Circulatory	23	2	7	70	6	14
12/3	Southern Circulatory	3	1	8	5	1	18
13/1	Western Circulatory	27	3	11	47	4	18
13/2	Western Circulatory	3	1	14	28	2	12
13/3	Western Circulatory	34	4	10	59	3	12
Overall Junction		Overall PRC: 165.1% 60s Cycle time			Overall PRC: 26.9% 60s Cycle time		

Table 13-41: 2029 AM and PM – M25 Junction 2 – Do Something

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	25	2	19	26	3	10
1/3	M25 SB Off-Slip	33	3	21	69	11	17
2/1+ 2/2	A2 WB Off-Slip	32	2	6	56	3	6
2/3	A2 WB Off-Slip	3	1	26	10	1	31
3/1+ 3/2	M25 NB Off-Slip	25	2	4	59	4	5
3/3	M25 NB Off-Slip	1	1	11	33	4	18
3/4	M25 NB Off-Slip	32	4	13	62	7	22
4/1+ 4/2	A2 EB Off-Slip	22	3	13	35	4	12
4/3+ 4/4	A2 EB Off-Slip	27	3	13	35	4	11
10/1	Northern Circulatory	1	0	6	37	4	13
10/2+ 10/3	Northern Circulatory	35	4	10	71	9	16
10/4	Northern Circulatory	20	2	3	48	3	19
11/1	Eastern Circulatory	22	2	5	27	1	3
11/2	Eastern Circulatory	22	2	6	27	1	3
11/3	Eastern Circulatory	15	1	2	49	4	6
12/1+ 12/2	Southern Circulatory	24	3	12	70	6	14
12/3	Southern Circulatory	3	1	12	5	1	18
13/1	Western Circulatory	26	3	11	47	4	18
13/2	Western Circulatory	3	1	17	38	2	12
13/3	Western Circulatory	33	1	6	59	3	12
Overall Junction		Overall PRC: 163.9% 60s Cycle time			Overall PRC: 26.9% 60s Cycle time		

Table 13-42: 2029 AM and PM – M25 Junction 2 – Do Minimum with LTC

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	24	3	17	28	3	13
1/3	M25 SB Off-Slip	32	3	19	74	10	22
2/1+ 2/2	A2 WB Off-Slip	30	2	6	63	4	7
2/3	A2 WB Off-Slip	3	1	25	13	1	31
3/1+ 3/2	M25 NB Off-Slip	23	2	4	65	3	5
3/3	M25 NB Off-Slip	1	0	12	1	1	14
3/4	M25 NB Off-Slip	30	4	14	72	10	23
4/1+ 4/2	A2 EB Off-Slip	20	2	12	39	4	17
4/3+ 4/4	A2 EB Off-Slip	25	3	13	39	4	16
10/1	Northern Circulatory	1	0	20	1	0	19
10/2+ 10/3	Northern Circulatory	33	3	7	77	7	16
10/4	Northern Circulatory	20	3	9	33	5	21
11/1	Eastern Circulatory	22	1	3	23	1	3
11/2	Eastern Circulatory	22	1	3	23	1	3
11/3	Eastern Circulatory	16	1	2	44	1	3
12/1+ 12/2	Southern Circulatory	25	2	8	67	4	9
12/3	Southern Circulatory	3	1	9	6	1	9
13/1	Western Circulatory	26	2	10	37	4	12
13/2	Western Circulatory	3	1	12	6	1	13
13/3	Western Circulatory	31	4	12	58	3	5
Overall Junction		Overall PRC: 177.7% 60s Cycle time			Overall PRC: 18.2% 60s Cycle time		

Table 13-43: 2029 AM and PM – M25 Junction 2 – Do Something with LTC

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	24	2	17	25	3	11
1/3	M25 SB Off-Slip	32	3	19	66	9	18
2/1+ 2/2	A2 WB Off-Slip	30	2	6	64	4	6
2/3	A2 WB Off-Slip	3	1	24	13	1	31
3/1+ 3/2	M25 NB Off-Slip	23	1	4	65	3	5
3/3	M25 NB Off-Slip	1	0	10	25	3	15
3/4	M25 NB Off-Slip	28	3	12	57	7	19
4/1+ 4/2	A2 EB Off-Slip	20	2	12	29	3	11
4/3+ 4/4	A2 EB Off-Slip	25	3	13	29	3	10
10/1	Northern Circulatory	1	0	18	29	2	6
10/2+ 10/3	Northern Circulatory	34	3	7	67	5	14
10/4	Northern Circulatory	20	3	9	37	4	24
11/1	Eastern Circulatory	22	1	3	23	3	5
11/2	Eastern Circulatory	22	1	3	23	3	5
11/3	Eastern Circulatory	16	1	2	44	1	3
12/1+ 12/2	Southern Circulatory	28	2	9	67	4	10
12/3	Southern Circulatory	3	1	10	6	1	9
13/1	Western Circulatory	26	2	11	50	5	20
13/2	Western Circulatory	3	1	13	34	2	14
13/3	Western Circulatory	32	4	13	62	3	15
Overall Junction		Overall PRC: 170.8% 60s Cycle time			Overall PRC: 35.4% 60s Cycle time		

13.4.80. Presented in the tables above, the 2029 junction modelling results with and without LTC forecast the signalised junction to operate well within capacity across all scenarios and peak periods. The development traffic flows are forecast to have little impact on the operation of the signalised roundabout in the Do Something scenarios with and without LTC. The longest queue of 11PCUs is forecast on the M25 SB off-slip in the PM peak without LTC in the Do Minimum and Do Something scenarios.

2038 Assessment Year

13.4.81. The subsequent bullet points provide details on the junction modelling results for the M25 Junction 2 and outlines which scenario is presented in the following tables:

- **Table 13-44**– 2038 AM and PM Peak Do Minimum junction modelling results;
- **Table 13-45**– 2038 AM and PM Peak Do Something junction modelling results;
- **Table 13-46**– 2038 AM and PM Peak Do Minimum with LTC junction modelling results; and
- **Table 13-47**– 2038 AM and PM Peak Do Something with LTC junction modelling results.

Table 13-44: 2038 AM and PM – M25 Junction 2 – Do Minimum

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	25	3	18	27	3	10
1/3	M25 SB Off-Slip	34	3	20	72	11	17
2/1+ 2/2	A2 WB Off-Slip	34	2	7	57	3	7
2/3	A2 WB Off-Slip	3	1	26	11	1	31
3/1+ 3/2	M25 NB Off-Slip	27	2	4	74	4	6
3/3	M25 NB Off-Slip	1	1	11	31	3	18
3/4	M25 NB Off-Slip	33	4	13	65	8	24
4/1+ 4/2	A2 EB Off-Slip	24	3	13	36	4	11
4/3+ 4/4	A2 EB Off-Slip	29	3	14	36	4	11
10/1	Northern Circulatory	1	0	18	35	4	13
10/2+ 10/3	Northern Circulatory	37	4	7	74	9	17
10/4	Northern Circulatory	22	4	8	54	4	17
11/1	Eastern Circulatory	23	1	3	29	2	3
11/2	Eastern Circulatory	24	1	3	29	2	3
11/3	Eastern Circulatory	16	1	2	53	4	6
12/1+ 12/2	Southern Circulatory	26	3	8	73	6	14
12/3	Southern Circulatory	3	1	9	5	1	17
13/1	Western Circulatory	28	3	10	53	4	20
13/2	Western Circulatory	4	1	11	36	2	13
13/3	Western Circulatory	35	5	12	62	3	14
Overall Junction		Overall PRC:147.6% 60s Cycle time			Overall PRC:22.6% 60s Cycle time		

Table 13-45: 2038 AM and PM – M25 Junction 2 – Do Something

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	26	3	19	27	3	10
1/3	M25 SB Off-Slip	36	3	21	72	11	17
2/1+ 2/2	A2 WB Off-Slip	34	2	6	65	4	6
2/3	A2 WB Off-Slip	3	1	26	11	1	31
3/1+ 3/2	M25 NB Off-Slip	27	2	4	74	4	6
3/3	M25 NB Off-Slip	1	1	11	63	7	24
3/4	M25 NB Off-Slip	34	4	13	44	5	20
4/1+ 4/2	A2 EB Off-Slip	26	3	15	38	4	12
4/3+ 4/4	A2 EB Off-Slip	31	3	15	37	4	12
10/1	Northern Circulatory	1	0	16	73	9	21
10/2+ 10/3	Northern Circulatory	37	3	6	55	6	15
10/4	Northern Circulatory	21	3	6	54	4	21
11/1	Eastern Circulatory	23	1	3	29	2	3
11/2	Eastern Circulatory	24	1	3	29	2	3
11/3	Eastern Circulatory	16	1	2	53	4	6
12/1+ 12/2	Southern Circulatory	26	3	8	73	6	14
12/3	Southern Circulatory	3	1	10	5	1	17
13/1	Western Circulatory	26	2	9	50	4	19
13/2	Western Circulatory	3	1	10	64	3	14
13/3	Western Circulatory	33	5	11	40	2	9
Overall Junction		Overall PRC:148.9% 60s Cycle time			Overall PRC:22.6% 60s Cycle time		

Table 13-46: 2038 AM and PM – M25 Junction 2 – Do Minimum with LTC

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	23	2	16	29	3	13
1/3	M25 SB Off-Slip	31	3	18	75	11	23
2/1+ 2/2	A2 WB Off-Slip	31	2	6	69	4	7
2/3	A2 WB Off-Slip	3	1	25	14	1	31
3/1+ 3/2	M25 NB Off-Slip	23	2	4	65	3	5
3/3	M25 NB Off-Slip	1	0	12	1	1	15
3/4	M25 NB Off-Slip	30	4	14	75	10	26
4/1+ 4/2	A2 EB Off-Slip	21	2	13	39	4	17
4/3+ 4/4	A2 EB Off-Slip	26	3	13	38	4	16
10/1	Northern Circulatory	1	0	20	1	0	21
10/2+ 10/3	Northern Circulatory	34	3	8	77	7	16
10/4	Northern Circulatory	21	3	10	32	5	21
11/1	Eastern Circulatory	22	1	3	23	1	3
11/2	Eastern Circulatory	23	1	3	23	1	3
11/3	Eastern Circulatory	17	1	2	45	1	3
12/1+ 12/2	Southern Circulatory	25	3	8	67	4	8
12/3	Southern Circulatory	3	1	9	6	1	8
13/1	Western Circulatory	26	2	10	38	4	11
13/2	Western Circulatory	3	1	12	6	1	12
13/3	Western Circulatory	30	4	11	58	3	5
Overall Junction		Overall PRC:170.3% 60s Cycle time			Overall PRC:17.9% 60s Cycle time		

Table 13-47: 2038 AM and PM – M25 Junction 2 – Do Something with LTC

Arm	Approach	AM Peak (0800-0900)			PM Peak (1700-1800)		
		Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)	Saturation Flow (%)	Mean Max Queue (PCUs)	Delay (s)
1/1+ 1/2	M25 SB Off-Slip	24	3	17	27	3	12
1/3	M25 SB Off-Slip	33	3	19	70	10	19
2/1+ 2/2	A2 WB Off-Slip	31	2	6	74	5	7
2/3	A2 WB Off-Slip	3	1	25	14	1	31
3/1+ 3/2	M25 NB Off-Slip	23	2	4	65	3	5
3/3	M25 NB Off-Slip	1	0	12	27	3	16
3/4	M25 NB Off-Slip	31	4	14	57	7	19
4/1+ 4/2	A2 EB Off-Slip	20	2	12	30	3	11
4/3+ 4/4	A2 EB Off-Slip	25	3	13	29	3	11
10/1	Northern Circulatory	1	0	19	29	2	6
10/2+ 10/3	Northern Circulatory	34	3	7	65	5	13
10/4	Northern Circulatory	20	3	10	35	4	21
11/1	Eastern Circulatory	22	1	3	23	3	5
11/2	Eastern Circulatory	23	1	3	23	3	5
11/3	Eastern Circulatory	17	1	2	45	1	3
12/1+ 12/2	Southern Circulatory	25	3	7	69	4	10
12/3	Southern Circulatory	3	1	9	6	1	9
13/1	Western Circulatory	27	2	11	50	5	19
13/2	Western Circulatory	4	1	13	35	2	13
13/3	Western Circulatory	32	4	11	59	3	14
Overall Junction		Overall PRC:171.3% 60s Cycle time			Overall PRC:22.1% 60s Cycle time		

13.4.82. Presented in the tables above, the 2038 junction modelling results with and without LTC forecast the signalised junction to operate well within capacity across all scenarios and peak periods. The development traffic flows are forecast to have no measurable impact on the operation of the signalised roundabout in the Do Something scenarios with and without LTC. The longest queue of 11PCUs is forecast on the M25 SB off-slip in the PM peak without LTC in the Do Minimum and Do Something scenarios.

Summary

13.4.83. As presented in the junction modelling results, the M25 Junction 2 signalised roundabout is forecast operate well its theoretical capacity in all of the assessment scenarios. The addition of the development traffic flows will have no material impact on the operation of the signalised roundabout. It is considered the impact of the London Resort at the junction in 2038 would not have an impact on safety and the operation of the junction.

13.5 MERGE / DIVERGE ASSESSMENT

13.5.1. The assessments have been undertaken in line with guidance set out in the Design Manual for Roads and Bridges (DMRB) CD 122 'Geometric design of Grade Separated Junctions'

13.5.2. Appropriate merge and diverge layouts are calculated on the basis of the predicted merge/ diverge in conjunction with mainline flows. These are set-out in CD122 for all-purpose roads as follows:

- Merge Layouts:
  - A – Taper Merge;
  - B – Parallel Merge;
  - C – Ghost Island Merge;
  - D – Lane Gain;
  - E – Option 1 – Lane Gain with Ghost Island Offside Merge;
  - E – Option 2 – Lane Gain with Ghost Island Nearside Merge;
  - F – 2 Lane Gain with Ghost Island;
  - G – Option 1 – Mainline lane gain and double Ghost Island Merge;
  - G – Option 2 – Mainline lane gain and single Ghost Island Merge; and
  - H – Mainline 2 lane gain and Ghost Island Merge.
- Diverge Layouts:
  - A – Option 1 Taper Diverge;
  - A – Option 2 Single Lane Auxiliary Diverge;
  - B – Option1 Ghost Island Diverge;
  - B – Option 2 Two Lane Auxiliary Diverge;
  - C – Lane Drop;
  - D – Option1 – Ghost Island Lane Drop;
  - D – Option 2 – Auxiliary Lane Drop;
  - E – 2 Lane Drop; and
  - F – Mainline lane Drop, and Ghost Island diverge.

13.5.3. The purpose of the DMRB CD122 guidance is to provide guidance on investment decisions at new junctions. The merge diverge assessments is based on a very robust forecast trip generation associated with the Resort is as it's based on the car parks operating at capacity a weekday. The Transport Assessment outlines in detail a Travel Demand Strategy in chapter 14 which aims to reduce the private car mode share to 40% which would reduce the impact at merge in 2038. Notwithstanding that in 2038 the highway network is likely to operate with significant differences with the introduction of autonomous vehicles and a shift towards sustainable modes.

13.5.4. The following tables present the merge diverge assessments; the columns title have been abbreviated with the following providing a full definition.

- M-L –Main Line traffic flow;
- M/D – Merge or diverge flow;
- Layout – The type of merge or diverge layout required based on the main lane and merge/ diverge flows and the number of lanes required in brackets.

13.5.5. Full outputs from the merge diverge assessments are presented in **Appendix TA - AB**.

A13/ A1089

13.5.6. **Table 13-48** and **Table 13-49** summarise the merge diverge assessments for the A13/ A1089 across all the assessment scenarios in the AM and PM peak respectively.

Table 13-48: A13 A1089 Merge Diverge Assessment AM Peak

Scenario	Movement 1 (A13/ A1090 E-S Diverge)			Movement 2 (A13/ A1089 E-S Merge)			Movement 3 (A13/ A1089 S-E Merge)			Movement 4 (A13/ A1089 S-W Diverge)			Movement 5 (A13/ A1089 S-W Merge)			Movement 6 (A13/ A1089 W-S Diverge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (3 to 3)			A (2 to 2)			A (3 to 3)			C (2to1)			A (3 to3)			A (3 to 3)		
2023 DM	3451	457	A(3to3)	804	260	D(1to2)	2724	457	A(2to2)	457	617	C(2to1)	3451	617	A(3to3)	2724	804	C(3to2)
2023DS	2798	457	A(3to3)	804	260	D(1to2)	2724	457	A(2to2)	457	617	C(2to1)	3451	617	A(3to3)	2724	804	C(3to2)
2025 DM	3451	466	A(3to3)	819	265	D(1to2)	2776	466	D(2to3)	466	629	C(2to1)	3517	629	A(3to3)	2776	819	C(3to2)
2025DS	2798	468	A(3to3)	840	265	D(1to2)	2776	468	D(2to3)	468	629	C(2to1)	3518	629	A(3to3)	2776	840	C(3to2)
2029 DM	3517	493	A(3to3)	867	280	D(1to2)	2937	493	D(2to3)	493	666	C(2to1)	3722	666	A(3to3)	2937	867	C(3to2)
2029DS	2854	497	A(3to3)	898	280	D(1to2)	2937	497	D(2to3)	497	666	C(2to1)	3722	666	A(3to3)	2937	898	C(3to2)
2029 DM+LTC	3518	0	N/A	818	154	D(1to2)	2556	0	N/A	0	394	N/A	4050	394	A(3to3)	2556	818	C(3to2)
2029DS+ LTC	2854	0	N/A	851	154	D(1to2)	2556	0	N/A	0	394	N/A	4050	394	A(3to3)	2556	851	C(3to2)
2038DM	4041	535	A(3to3)	941	304	D(1to2)	3189	535	D(2to3)	535	723	C(2to1)	4040	723	B(3to3)	3189	941	C(3to2)
2038DS	4041	541	A(3to3)	987	304	D(1to2)	3189	541	D(2to3)	541	723	C(2to1)	4041	723	B(3to3)	3189	987	C(3to2)
2038DM +LTC	4122	0	N/A	876	149	D(1to2)	2806	0	N/A	0	405	N/A	4122	405	A(3to3)	2806	876	C(3to2)
2038DS+ LTC	4122	0	N/A	923	149	D(1to2)	2807	0	N/A	0	405	N/A	4122	405	A(3to3)	2807	923	C(3to2)

Table 13-49: A13 A1089 Merge Diverge Assessment PM Peak

Scenario	Movement 1 (A13/ A1090 E-S Diverge)			Movement 2 (A13/ A1089 E-S Merge)			Movement 3 (A13/ A1089 S-E Merge)			Movement 4 (A13/ A1089 S-W Diverge)			Movement 5 (A13/ A1089 S-W Merge)			Movement 6 (A13/ A1089 W-S Diverge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (3 to 3)			A (2 to 2)			A (3 to3)			C (2to1)			A (3 to3)			A (3 to 3)		
2023 DM	2798	363	A(2to2)	1004	187	D(1to2)	4308	363	A(3to3)	363	700	C(2to1)	2798	700	D(2to3)	4308	1004	C(4to3)
2023DS	2798	363	A(2to2)	1004	187	D(1to2)	4308	363	A(3to3)	363	700	C(2to1)	2798	700	D(2to3)	4308	1004	C(4to3)
2025 DM	2854	371	C(3to2)	1024	191	D(1to2)	4393	371	A(3to3)	371	714	C(2to1)	2854	714	D(2to3)	4393	1024	C(4to3)
2025DS	2854	376	C(3to2)	1046	199	D(1to2)	4398	376	A(3to3)	376	779	C(2to1)	2854	779	D(2to3)	4398	1046	C(4to3)
2029 DM	3030	394	C(3to2)	1087	202	D(1to2)	4665	394	D(3to4)	394	759	C(2to1)	3030	759	D(2to3)	4665	1087	C(4to3)
2029DS	3031	401	C(3to2)	1138	215	D(1to2)	4672	401	D(3to4)	401	855	C(2to1)	3031	855	D(2to3)	4672	1138	C(4to3)
2029 DM+LTC	3055	0	N/A	873	364	D(1to2)	3886	0	N/A	0	505	N/A	3055	505	D(2to3)	3886	873	A(3to3)
2029DS+ LTC	3055	0	N/A	924	376	D(1to2)	3892	0	N/A	0	514	N/A	3055	514	D(2to3)	3892	924	A(3to3)
2038DM	3299	428	A(3to3)	1184	220	D(1to2)	5079	428	A(4to4)	428	826	C(2to1)	3299	826	B(3to3)	5079	1184	A(4to4)
2038DS	3300	435	A(3to3)	1243	239	D(1to2)	5088	435	A(4to4)	435	967	C(2to1)	3300	967	B(3to3)	5088	1243	B(4to4)
2038DM +LTC	3353	0	N/A	910	341	D(1to2)	3829	0	N/A	0	553	N/A	3353	553	A(3to3)	3829	910	A(3to3)
2038DS+ LTC	3353	0	N/A	969	359	D(1to2)	3837	0	N/A	0	566	N/A	3353	566	A(3to3)	3837	969	A(3to3)

13.5.7. The results summarised above, forecast that the development traffic flows will have little impact on the required merge diverge provided at the A13/ A1089 across the AM and PM peak. The only movement which could require a change of layout following the addition of development traffic is the A13 to A1089 SB diverge in the PM peak in 2038 with and without LTC. As the total increase in traffic flows is less than 100 vehicles this is unlikely to have a material impact on the diverge from the Do Something to Do Minimum scenarios.

A13/ A1012/ High Street Roundabout

13.5.8. **Table 13-50** and

13.5.10. Table 13-51 summarise the merge diverge assessments for the A13/ A1012/ High Street Roundabout across all the assessment scenarios in the AM and PM peak respectively.

Table 13-50: A13/ A1012/ High Street Roundabout (Rbt) Merge Diverge AM Peak

	Movement 1 (A13 Rbt WB Diverge)			Movement 2 (A13 Rbt WB Merge)			Movement 3 (A13 Rbt EB Diverge)			Movement 4 (A13 Rbt EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (3 to 3)			A (3 to 3)			A (3 to 3)			A (3 to 3)		
2023 DM	2936	1132	C(3to2)	2936	241	A(2to2)	2284	623	A(2to2)	2284	1245	E(2to3)
2023DS	2936	1132	C(3to2)	2936	241	A(2to2)	2284	623	A(2to2)	2284	1245	E(2to3)
2025 DM	2992	1153	C(3to2)	2992	245	D(2to3)	2328	635	A(2to2)	2328	1269	E(2to3)
2025DS	2993	1153	C(3to2)	2993	245	D(2to3)	2348	635	A(2to2)	2348	1269	E(2to3)
2029 DM	3166	1220	D1(3to2)	3166	259	D(2to3)	2463	672	A(2to2)	2463	1343	E(2to3)
2029DS	3167	1220	D1(3to2)	3167	259	D(2to3)	2494	672	A(2to2)	2494	1343	E(2to3)
2029 DM+LTC	3166	1220	D1(3to2)	3166	259	D(2to3)	2463	672	A(2to2)	2463	1343	E(2to3)
2029DS+LTC	3166	1220	D1(3to2)	3166	259	D(2to3)	2495	672	A(2to2)	2495	1343	E(2to3)
2038DM	3437	1325	B1(3to3)	3437	282	A(3to3)	2674	729	C(3to2)	2674	1458	E(2to3)
2038DS	3437	1325	B1(3to3)	3437	282	A(3to3)	2719	729	C(3to2)	2719	1458	E(2to3)
2038DM+LTC	3437	1325	B1(3to3)	3437	282	A(3to3)	2674	729	C(3to2)	2674	1458	E(2to3)
2038DS+LTC	3437	1325	B1(3to3)	3437	282	A(3to3)	2721	729	C(3to2)	2721	1458	E(2to3)

Table 13-51: A13/ A1012/ High Street Roundabout Merge Diverge PM Peak

	Movement 1 (A13 Rbt WB Diverge)			Movement 2 (A13 Rbt WB Merge)			Movement 3 (A13 Rbt EB Diverge)			Movement 4 (A13 Rbt EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (3 to 3)			A (3 to 3)			A (3 to 3)			A (3 to 3)		
2023 DM	2465	1034	C(3to2)	2465	606	A(2to2)	3730	291	A(3to3)	3730	1582	E(3to4)
2023DS	2465	1034	C(3to2)	2465	606	A(2to2)	3730	291	A(3to3)	3730	1582	E(3to4)
2025 DM	2514	1055	C(3to2)	2514	618	B(2to2)	3804	297	A(3to3)	3804	1613	E(3to4)
2025DS	2579	1055	C(3to2)	2579	618	B(2to2)	3831	297	A(3to3)	3831	1613	E(3to4)
2029 DM	2669	1120	C(3to2)	2669	657	D(2to3)	4040	315	A(3to3)	4040	1713	E(3to4)
2029DS	2765	1120	C(3to2)	2765	657	D(2to3)	4096	315	A(3to3)	4096	1713	E(3to4)
2029 DM+LTC	2669	1120	C(3to2)	2669	657	D(2to3)	4040	315	A(3to3)	4040	1713	E(3to4)
2029DS+LTC	2678	1120	C(3to2)	2678	657	D(2to3)	4097	315	A(3to3)	4097	1713	E(3to4)
2038DM	2906	1219	D1(3to2)	2906	715	D(2to3)	4398	343	A(3to3)	4398	1865	E(3to4)
2038DS	3047	1219	D1(3to2)	3047	715	D(2to3)	4465	343	A(3to3)	4465	1865	E(3to4)
2038DM+LTC	2906	1219	D1(3to2)	2906	715	D(2to3)	4398	343	A(3to3)	4398	1865	E(3to4)
2038DS+LTC	2919	1219	D1(3to2)	2919	715	D(2to3)	4466	343	A(3to3)	4466	1865	E(3to4)

13.5.11. The merge diverge assessments for the A13/ A1012/ High Street Roundabout show no change in the layouts for the merge diverge with development flows added onto the background traffic except in the PM peak on the movement 2 in 2025. The increase in mainline flow will require a layout C (2to3) instead of B(2to2), as the existing infrastructure is a (3to3) is a higher standard of provision this should suffice.

A13/ A126 Junction

13.5.12. **Table** 13-52 and

13.5.14. Table 13-53 presents the merge diverge assessments for the A13/ A126 Junction across all the assessment scenarios in the AM and PM peak respectively.

Table 13-52: A13 A126 Junction Merge Diverge AM Peak

	Movement 1 (A13 A126 EB Diverge)			Movement 2 (A13 A126 WB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout
Existing	D2 (4 to 3)			D (3 to 4)		
2023 DM	2907	677	C(3to2)	3177	573	D(2to3)
2023DS	2907	677	C(3to2)	3177	573	D(2to3)
2025 DM	2963	690	C(3to2)	3238	584	A(3to3)
2025DS	2983	690	C(3to2)	3239	584	A(3to3)
2029 DM	3135	730	C(3to2)	3426	618	A(3to3)
2029DS	3166	730	C(3to2)	3427	618	A(3to3)
2029 DM+LTC	3135	730	C(3to2)	3426	618	A(3to3)
2029DS+LTC	3167	730	C(3to2)	3426	618	A(3to3)
2038DM	3403	792	A(3to3)	3720	670	A(3to3)
2038DS	3449	792	A(3to3)	3720	670	A(3to3)
2038DM+LTC	3403	792	A(3to3)	3720	670	A(3to3)
2038DS+LTC	3450	792	A(3to3)	3720	670	A(3to3)

Table 13-53: A13 A126 Merge Diverge PM Peak

	Movement 1 (A13 A126 EB Diverge)			Movement 2 (A13 A126 WB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout
Existing	D2 (4 to 3)			D (3 to 4)		
2023 DM	4020	871	C(4to3)	3070	1267	E(2to3)
2023DS	4020	871	C(4to3)	3070	1267	E(2to3)
2025 DM	4100	889	C(4to3)	3131	1292	E(2to3)
2025DS	4126	889	C(4to3)	3196	1292	E(2to3)
2029 DM	4354	943	C(4to3)	3325	1372	C(3to3)
2029DS	4410	943	C(4to3)	3421	1372	C(3to3)
2029 DM+LTC	4354	943	C(4to3)	3325	1372	C(3to3)
2029DS+LTC	4411	943	C(4to3)	3333	1372	C(3to3)
2038DM	4740	1027	C(4to3)	3620	1494	E(3to4)
2038DS	4807	1027	C(4to3)	3761	1494	E(3to4)
2038DM+LTC	4740	1027	C(4to3)	3620	1494	E(3to4)
2038DS+LTC	4808	1027	A(4to4)	3633	1494	E(3to4)

13.5.15. The merge diverge assessments for the A13/ A126 Junction show no change in the layouts for the merge diverge with development flows added onto the background traffic except in the PM peak on movement 2 in 2029. As the total increase in development traffic is less than 100 vehicles this is unlikely to have a material impact on the merge in the PM peak in 2029.

A282 Princess Road Interchange

Table 13-54 and

13.5.16. Table 13-55 presents the merge diverge assessments for the A282 Princess Road Interchange across all the assessment scenarios in the AM and PM peak respectively.

Table 13-54: **A282 Princess Road Interchange Merge Diverge AM Peak**

	Movement 1 (A282 SB Diverge)			Movement 2 (A282 NB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (4 to 4)			A (4 to 4)		
2023 DM	5016	518	A(4to4)	5727	680	D(4to5)
2023DS	5016	518	A(4to4)	5727	680	D(4to5)
2025 DM	5082	525	A(4to4)	5803	689	D(4to5)
2025DS	5097	525	A(4to4)	5810	689	D(4to5)
2029 DM	5299	547	A(4to4)	6050	718	D(4to5)
2029DS	5314	547	A(4to4)	6058	718	D(4to5)
2029 DM+LTC	4391	595	C(4to3)	4855	777	A(4to4)
2029DS+LTC	4406	595	C(4to3)	4864	777	A(4to4)
2038DM	5667	585	A(4to4)	6470	768	A(5to5)
2038DS	5678	585	A(4to4)	6484	768	A(5to5)
2038DM+LTC	4693	604	C(4to3)	5118	819	B(4to4)
2038DS+LTC	4704	604	C(4to3)	5132	819	B(4to4)

Table 13-55: A282 Princess Road Interchange Merge Diverge PM Peak

	Movement 1 (A282 SB Diverge)			Movement 2 (A282 NB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (4 to 4)			A (4 to 4)		
2023 DM	6115	559	C(5to4)	3903	1115	D(3to4)
2023DS	6115	559	C(5to4)	3903	1115	D(3to4)
2025 DM	6199	567	C(5to4)	3957	1130	D(3to4)
2025DS	6237	567	C(5to4)	4030	1130	D(3to4)
2029 DM	6480	593	A(5to5)	4137	1181	D(3to4)
2029DS	6522	593	A(5to5)	4251	1181	D(3to4)
2029 DM+LTC	5170	579	A(4to4)	3559	1117	B(3to3)
2029DS+LTC	5211	579	A(4to4)	3674	1117	E(3to4)
2038DM	6952	636	A(5to5)	4437	1267	E(3to4)
2038DS	7000	636	A(5to5)	4586	1267	E(3to4)
2038DM+LTC	5485	554	A(4to4)	3930	1175	D(3to4)
2038DS+LTC	5532	554	A(4to4)	4079	1175	D(3to4)

13.5.17. The merge diverge assessments for the A282 Princess Road Interchange forecast no change in the layouts for the merge diverge with development flows added onto the background traffic except in the PM peak on movement 2 in 2029 with LTC in place. As the total increase in development traffic is approximately 100 vehicles this is unlikely to have a material impact on the merge in the PM peak in 2029. The current merge provision of A(4to4) is more than appropriate to accommodate the E(3to4) required layout in the PM peak in 2029 with LTC in place.

A282 A2026 Junction

13.5.18.

13.5.19. Table 13-56 and

13.5.21. Table 13-57 summarises the merge diverge assessments for the A282/ A2026 Junction across all the assessment scenarios in the AM and PM peak respectively.

Table 13-56: A282 A2026 Junction Merge Diverge AM Peak

	Movement 1 (A282 A2026 NB Diverge)			Movement 2 (A282 A2026 NB Merge)			Movement 3 (A282 A2026 SB Diverge)			Movement 4 (A282 A2026 NB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (4 to 4)			A (4 to 4)			B2(4 to 4)			A (4 to 4)		
2023 DM	5313	1094	C(5to4)	5313	659	A(4to4)	4680	1153	C(4to3)	4680	854	D(3to4)
2023DS	5313	1094	C(5to4)	5313	659	A(4to4)	4680	1153	C(4to3)	4680	854	D(3to4)
2025 DM	5383	1109	C(5to4)	5383	667	A(4to4)	4742	1168	C(4to3)	4742	865	D(3to4)
2025DS	5398	1109	C(5to4)	5398	667	A(4to4)	4750	1168	C(4to3)	4750	865	D(3to4)
2029 DM	5613	1156	C(5to4)	5613	696	B(4to4)	4944	1218	B1(4to4)	4944	902	B(4to4)
2029DS	5628	1156	C(5to4)	5628	696	B(4to4)	4952	1218	B1(4to4)	4952	902	B(4to4)
2029 DM+LTC	4043	1589	D1(4to3)	4043	621	B(3to3)	3772	1240	D1(4to3)	3772	1214	E(3to4)
2029DS+LTC	4058	1589	D1(4to3)	4058	621	B(3to3)	3781	1240	D1(4to3)	3781	1214	E(3to4)
2038DM	6003	1236	D1(5to4)	6003	744	D(4to5)	5288	1303	D1(5to4)	5288	964	B(4to4)
2038DS	6014	1236	D1(5to4)	6014	744	D(4to5)	5301	1303	D1(5to4)	5301	964	B(4to4)
2038DM+LTC	4336	1601	D1(4to3)	4336	680	D(3to4)	3980	1341	D1(4to3)	3980	1318	E(3to4)
2038DS+LTC	4347	1601	D1(4to3)	4347	680	D(3to4)	3993	1341	D1(4to3)	3993	1318	E(3to4)

Table 13-57: A282 A2026 Junction Merge Diverge PM Peak

	Movement 1 (A282 A2026 NB Diverge)			Movement 2 (A282 A2026 NB Merge)			Movement 3 (A282 A2026 SB Diverge)			Movement 4 (A282 A2026 NB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing												
2023 DM	4194	836	C(4to3)	4194	1298	E(3to4)	5167	868	A(4to4)	5167	1506	E(4to5)
2023DS	4194	836	C(4to3)	4194	1298	E(3to4)	5167	868	A (4 to 4)	A (4 to 4)	B2(4 to 4)	A (4 to 4)
2025 DM	4251	847	C(4to3)	4251	1316	E(3to4)	5237	880	A(4to4)	5237	1527	E(4to5)
2025DS	4289	847	C(4to3)	4289	1316	E(3to4)	5310	880	A(4to4)	5310	1527	E(4to5)
2029 DM	4444	886	C(4to3)	4444	1376	E(3to4)	5475	920	C(5to4)	5475	1596	E(4to5)
2029DS	4485	886	C(4to3)	4485	1376	E(3to4)	5590	920	C(5to4)	5590	1596	E(4to5)
2029 DM+LTC	3495	1187	A(3to3)	3495	1381	E(3to4)	3742	853	A(3to3)	3742	2007	E(3to4)
2029DS+LTC	3536	1187	A(3to3)	3536	1381	E(3to4)	3856	853	A(3to3)	3856	2007	E(3to4)
2038DM	4767	950	C(4to3)	4767	1476	E(3to4)	5874	987	C(5to4)	5874	1713	E(4to5)
2038DS	4815	950	A(4to4)	4815	1476	C(4to4)	6023	987	C(5to4)	6023	1713	E(4to5)
2038DM+LTC	3747	1365	D1(4to3)	3747	1397	E(3to4)	4036	954	C(4to3)	4036	2022	E(3to4)
2038DS+LTC	3795	1365	D1(4to3)	3795	1397	E(3to4)	4185	954	C(4to3)	4185	2022	E(3to4)

13.5.22. The merge diverge assessments for the A282/ A2026 Junction forecast no change in the layouts for the merge diverge with development flows added onto the background traffic except in the PM peak on movement 1 and 2 in 2038 without LTC in place. As the total increase in development traffic is approximately 50 vehicles this is unlikely to have a material impact on the merge in the PM peak in 2038 DS scenario without LTC.

A2 Bean Lane

Table 13-58 and

13.5.23. Table 13-59 presents the merge diverge assessments for the A2/ Bean Lane Junction across all the assessment scenarios in the AM and PM peak respectively.

Table 13-58: A2 Bean Junction Merge Diverge AM Peak

	Movement 1 (A2/ Bean WB Diverge)			Movement 2 (A282 A2026 WB Merge)			Movement 3 (A2/ Bean EB Diverge)			Movement 4 (A2/ Bean EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	C (4 to 3)			E (3 to 4)			C (4 to 3)			D (3 to 4)		
2023 DM	5929	1023	C(5to4)	5929	666	D(4to5)	4339	706	C(4to3)	4339	474	D(3to4)
2023DS	5929	1023	C(5to4)	5929	666	D(4to5)	4339	706	C(4to3)	4339	474	D(3to4)
2025 DM	6007	1037	C(5to4)	6007	675	D(4to5)	4396	715	C(4to3)	4396	480	D(3to4)
2025DS	6023	1037	C(5to4)	6023	675	D(4to5)	4438	715	C(4to3)	4438	501	D(3to4)
2029 DM	6263	1081	C(5to4)	6263	704	D(4to5)	4584	745	C(4to3)	4584	501	D(3to4)
2029DS	6280	1082	C(5to4)	6280	704	D(4to5)	4628	745	C(4to3)	4628	522	D(3to4)
2029 DM+LTC	5336	1004	A(4to4)	5336	765	B(4to4)	4007	823	C(4to3)	4007	530	A(3to3)
2029DS+LTC	5353	1005	A(4to4)	5353	765	B(4to4)	4050	823	C(4to3)	4050	551	A(3to3)
2038DM	6699	1156	A(5to5)	6699	753	A(5to5)	4902	797	A(4to4)	4902	536	A(4to4)
2038DS	6729	1162	A(5to5)	6729	753	A(5to5)	4934	797	A(4to4)	4934	552	A(4to4)
2038DM+LTC	5360	976	A(4to4)	5360	844	B(4to4)	4447	921	C(4to3)	4447	565	D(3to4)
2038DS+LTC	5391	982	A(4to4)	5391	844	B(4to4)	4478	921	C(4to3)	4478	582	D(3to4)

Table 13-59: A2 Bean Junction Merge Diverge PM Peak

	Movement 1 (A2/ Bean WB Diverge)			Movement 2 (A2/ Bean WB Merge)			Movement 3 (A282 A2026 EB Diverge)			Movement 4 (A2/ Bean EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	C (4 to 3)			E (3 to 4)			D1 (4 to 3)			D (3 to 4)		
2023 DM	3868	1527	D1(4to3)	3868	1160	D(3to4)	6485	1184	A(5to5)	6485	1216	C(5to5)
2023DS	3868	1527	D1(4to3)	3868	1160	D(3to4)	6485	1184	A(5to5)	6485	1216	C(5to5)
2025 DM	3921	1548	D1(4to3)	3921	1175	D(3to4)	6573	1200	A1(5to5)	6573	1233	C(5to5)
2025DS	4162	1560	D1(4to3)	4162	1175	D(3to4)	6689	1200	A1(5to5)	6689	1250	C(5to5)
2029 DM	4099	1618	D1(4to3)	4099	1229	E(3to4)	6872	1255	D1(6to5)	6872	1289	E(5to6)
2029DS	4437	1632	D1(4to3)	4437	1229	E(3to4)	7006	1255	D1(6to5)	7006	1321	E(5to6)
2029 DM+LTC	4002	1653	D1(4to3)	4002	1258	E(3to4)	5923	1292	D1(5to4)	5923	1607	E(4to5)
2029DS+LTC	4339	1666	D1(4to3)	4339	1258	E(3to4)	6056	1292	D1(5to4)	6056	1639	E(4to5)
2038DM	4397	1736	D1(4to3)	4397	1318	E(3to4)	7372	1346	D1(6to5)	7372	1383	E(4to5)
2038DS	4880	1756	D1(5to4)	4880	1318	C(4to4)	7519	1346	D1(6to5)	7519	1424	E(4to5)
2038DM+LTC	4279	1551	D1(4to3)	4279	1328	E(3to4)	6063	1433	D1(5to4)	6063	1737	E(4to5)
2038DS+LTC	4762	1572	D1(4to3)	4762	1328	E(3to4)	6210	1433	D1(5to4)	6210	1779	E(4to5)

13.5.24. Presented in the tables above is the merge diverge assessments for the A2 Bean junction. Following the completion of LTC in 2029 and 2038 the merge diverge assessments forecast that the development flows associated with The Resort do not require the level of provision to be improved or enhanced against the baseline flows. It is understood that it was on this basis the Highways England A2 Bean & Ebbsfleet scheme was approved.

A2 Ebbsfleet junction

13.5.25.

13.5.26. Table 13-60 and

13.5.28. Table 13-61 summarises the merge diverge assessments for the A2 Ebbsfleet junction across all the assessment scenarios in the AM and PM peak respectively.

Table 13-60: A2 Ebbsfleet junction Merge Diverge AM Peak

	Movement 1 (Ebbsfleet Access WB Diverge)			Movement 2 (Ebbsfleet Access WB Merge)			Movement 3 (Ebbsfleet Access EB Diverge)			Movement 4 (A2/ Bean EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (4 to 4)			B (4 to 4)			A (4 to 4)			A (4 to 4)		
2023 DM	6198	667	C(5to4)	6198	796	D(4to5)	3465	1314	B1(3to3)	3465	278	A(3to3)
2023DS	6198	667	C(5to4)	6198	796	D(4to5)	3465	1314	B1(3to3)	3465	278	A(3to3)
2025 DM	6280	676	C(5to4)	6280	807	D(4to5)	3511	1331	D1(4to3)	3511	282	A(3to3)
2025DS	6280	691	C(5to4)	6280	823	D(4to5)	3511	1393	D1(4to3)	3511	285	A(3to3)
2029 DM	6548	705	A(5to5)	6548	841	B(5to5)	3661	1388	D1(4to3)	3661	294	A(3to3)
2029DS	6548	719	A(5to5)	6548	859	B(5to5)	3661	1453	D1(4to3)	3661	297	A(3to3)
2029 DM+LTC	5365	883	A(4to4)	5365	1071	D(4to5)	2881	1805	D1(3to2)	2881	441	D(2to3)
2029DS+LTC	5365	898	A(4to4)	5365	1089	D(4to5)	2881	1869	D1(3to2)	2881	444	D(2to3)
2038DM	7003	754	A(5to5)	7003	900	B(5to5)	3915	1484	D1(4to3)	3915	314	A(3to3)
2038DS	7003	764	A(5to5)	7003	937	B(5to5)	3915	1532	D1(4to3)	3915	321	A(3to3)
2038DM+LTC	5327	945	A(4to4)	5327	1149	D(4to5)	3248	1929	D1(4to3)	3248	496	A(3to3)
2038DS+LTC	5327	956	A(4to4)	5327	1186	D(4to5)	3248	1976	D1(4to3)	3248	503	A(3to3)

Table 13-61: A2 Ebbsfleet junction Merge Diverge PM Peak

	Movement 1 (Ebbsfleet Access WB Diverge)			Movement 2 (Ebbsfleet Access WB Merge)			Movement 3 (Ebbsfleet Access EB Diverge)			Movement 4 (A2/ Bean EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (4 to 4)			B (4 to 4)			A (4 to 4)			A (4 to 4)		
2023 DM	4786	436	C(4to3)	4786	700	D(3to4)	6057	1571	D1(5to4)	6057	702	D(4to5)
2023DS	4786	436	C(4to3)	4786	700	D(3to4)	6057	1571	D1(5to4)	6057	702	D(4to5)
2025 DM	4851	442	A(4to4)	4851	710	A(4to4)	6139	1592	D1(5to4)	6139	711	D(4to5)
2025DS	4851	465	A(4to4)	4851	963	B(4to4)	6139	1725	D1(5to4)	6139	754	D(4to5)
2029 DM	5072	462	A(4to4)	5072	742	A(4to4)	6419	1665	D1(6to5)	6419	744	A(5to5)
2029DS	5073	489	A(4to4)	5073	1092	B(4to4)	6419	1831	D1(6to5)	6419	803	A(5to5)
2029 DM+LTC	4588	877	C(4to3)	4588	1221	E(3to4)	5048	2046	D1(5to4)	5048	1042	B(4to4)
2029DS+LTC	4589	905	C(4to3)	4589	1571	E(3to4)	5048	2212	D1(5to4)	5048	1101	B(4to4)
2038DM	5441	495	A(4to4)	5441	796	B(4to4)	6886	1786	D1(6to5)	6886	798	B(5to5)
2038DS	5443	526	A(4to4)	5443	1297	E(4to5)	6886	1975	D1(6to5)	6886	886	B(5to5)
2038DM+LTC	4584	1171	C(4to3)	4584	1432	E(3to4)	5197	2068	D1(5to4)	5197	1061	B(4to4)
2038DS+LTC	4586	1202	D1(4to3)	4586	1933	F(3to5)	5197	2256	D1(5to4)	5197	1149	B(4to4)

13.5.29. The tables above present the merge diverge assessments at the A2 Ebbsfleet junction. In the majority of scenarios there is no requirement for a layout change between the Do Minimum and Do Something with and without LTC. However, the evening peak hour in 2038 with LTC has indicated a change.

13.5.30. However, on reflection, this change in requirements is marginal and on review would not be considered sufficient to require the significant infrastructure to improve. Furthermore, it us understood that the primary purpose of the DMRB CD122 merge / diverge calculations is to provide guidance on investment decisions for HE at new junctions rather than necessarily capacity at existing slips. In addition, and to support the reason for not providing any further mitigation at this location, the merge diverge assessments is based on a very robust forecast trip generation associated with the Resort is as it's based on the car parks operating at capacity during the weekday on an 85% day (generally occurring in the summer, over weekends during the summer holidays). The Transport Assessment outlines in detail a Travel Demand Strategy in chapter 14 which aims to reduce the private car mode share to 40% which would reduce the impact at this merge in 2038. Notwithstanding that in 2038 the highway network is likely to operate with significant differences with the introduction of autonomous vehicles and a shift towards sustainable modes.

13.5.31. It is concluded therefore that given all other forecast years do not require any change, and the only change is marginal in a 2038 forecast year based upon worst case assessments, no further mitigation at this location is required.

M25 Junction 2

13.5.32. Table 13-62 and Table 13-64 presents the merge diverge assessments for the M25 Junction 2 across all the assessment scenarios in the AM peak. Table 13-63 and Table 13-65 summarises the merge diverge assessments in the PM Peak.

Table 13-62: M25 J2 Merge Diverge Assessment AM Peak (Part 1)

Scenario	Movement 1 (M25 J2 N-Rbt (SB) Diverge)			Movement 2 (M25 J2 N-A2 (N-E) Diverge)			Movement 3 (M25/ J2 A2-N Merge)			Movement 4 (M25/ J2 A2-N Diverge)			Movement 5 (M25/ J2 N-A2 Merge)			Movement 6 (M25/ J2 A2-Rbt Diverge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	C (4 to 3)			B2 (3 to 3)			D (3 to 4)			C (4to3)			F (3 to 4)			A (3 to 3)		
2023 DM	4467	549	C(4to3)	3070	1397	D1(3to2)	4024	1704	E(3to4)	4891	1704	D1(5to4)	3266	1397	C(3to3)	3564	1327	D1(4to3)
2023DS	4467	549	C(4to3)	3070	1397	D1(3to2)	4024	1704	E(3to4)	4891	1704	D1(5to4)	3266	1397	C(3to3)	3564	1327	D1(4to3)
2025 DM	4526	556	C(4to3)	3110	1416	D1(3to2)	4077	1726	E(3to4)	4956	1726	D1(5to4)	3309	1416	C(3to3)	3611	1344	D1(4to3)
2025DS	4541	556	C(4to3)	3110	1430	D1(3to2)	4077	1733	E(3to4)	4964	1733	D1(5to4)	3336	1430	C(3to3)	3612	1352	D1(4to3)
2029 DM	4719	580	C(4to3)	3243	1476	B1(3to3)	4250	1800	E(3to4)	5167	1800	D1(5to4)	3450	1476	E(3to4)	3765	1402	D1(4to3)
2029DS	4735	580	C(4to3)	3243	1492	B1(3to3)	4252	1807	E(3to4)	5177	1807	D1(5to4)	3478	1492	E(3to4)	3766	1410	D1(4to3)
2029 DM+LTC	3712	679	A(3to3)	3192	520	C(3to2)	4056	800	D(3to4)	5301	800	A(4to4)	3798	520	A(3to3)	3863	1438	D1(4to3)
2029DS+LTC	3727	679	A(3to3)	3192	535	C(3to2)	4057	807	D(3to4)	5310	807	A(4to4)	3826	535	A(3to3)	3864	1446	D1(4to3)
2038DM	5047	620	A(4to4)	3468	1578	D1(4to3)	4546	1925	F(3to5)	5526	1925	D1(5to4)	3690	1578	E(3to4)	4027	1499	D1(4to3)
2038DS	5058	620	A(4to4)	3468	1590	D1(4to3)	4547	1937	F(3to5)	5545	1937	D1(5to4)	3710	1590	E(3to4)	4033	1512	D1(4to3)

2038DM+LTC	3987	706	A(3to3)	3409	578	A(3to3)	4302	817	D(3to4)	5387	817	A(4to4)	4082	578	A(3to3)	3900	1488	D1(4to3)
2038DS+LTC	3998	706	A(3to3)	3409	588	A(3to3)	4303	829	D(3to4)	5406	829	A(4to4)	4102	588	A(3to3)	3906	1500	D1(4to3)

Table 13-63: M25 J2 Merge Diverge Assessment PM Peak (Part 1)

Scenario	Movement 1 (M25 J2 N-Rbt (SB) Diverge)			Movement 2 (M25 J2 N-A2 (N-E) Diverge)			Movement 3 (M25/ J2 A2-N Merge)			Movement 4 (M25/ J2 A2-N Diverge)			Movement 5 (M25/ J2 N-A2 Merge)			Movement 6 (M25/ J2 A2-Rbt Diverge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	C (4 to 3)			B2 (3 to 3)			E (3 to 4)			C (4 to 3)			F (3 to 4)			A (3 to 3)		
2023 DM	5238	877	A(4to4)	3400	1838	D1(4to3)	D	1030	D(2to3)	3999	1030	C(4to3)	4919	1838	E(4to5)	2727	1271	D1(3to2)
2023DS	5238	877	A(4to4)	3400	1838	D1(4to3)	2873	1030	D(2to3)	3999	1030	C(4to3)	4919	1838	E(4to5)	2727	1271	D1(3to2)
2025 DM	5309	889	A(4to4)	3446	1863	D1(4to3)	2912	1044	D(2to3)	4053	1044	C(4to3)	4986	1863	E(4to5)	2764	1289	D1(3to2)
2025DS	5348	889	A(4to4)	3448	1900	D1(4to3)	2913	1117	D(2to3)	4221	1117	C(4to3)	5065	1900	E(4to5)	2796	1425	D1(3to2)
2029 DM	5551	930	C(5to4)	3603	1948	D1(4to3)	3045	1092	D(2to3)	4237	1092	C(4to3)	5212	1948	E(4to5)	2890	1347	D1(3to2)
2029DS	5592	930	C(5to4)	3606	1986	D1(4to3)	3059	1192	D(2to3)	4474	1192	B1(4to4)	5308	1986	E(4to5)	2927	1547	D1(3to2)
2029 DM+LTC	4213	956	C(4to3)	3338	875	A(3to3)	3092	467	D(2to3)	4793	467	C(4to4)	5421	875	B(4to4)	3189	1603	D1(3to2)
2029DS+ LTC	4254	956	C(4to3)	3341	913	A(3to3)	3106	567	D(2to3)	5030	567	A(4to4)	5517	913	D(4to5)	3227	1803	D1(4to3)
2038DM	5955	997	C(5to4)	3865	2090	D1(4to3)	3266	1171	B(3to3)	4546	1171	C(4to3)	5592	2090	E(4to5)	3100	1445	D1(3to2)
2038DS	6003	997	C(5to4)	3869	2133	D1(4to3)	3289	1298	C(3to3)	4902	1298	B1(4to4)	5695	2133	E(4to5)	3173	1729	E(4to2)

2038DM +LTC	4494	991	C(4to3)	3542	952	A(3to3)	3384	546	A(3to3)	5061	546	A(4to4)	5433	952	B(4to4)	3317	1744	D1(4to3)
2038DS+ LTC	4542	991	C(4to3)	3546	996	A(3to3)	3406	673	A(3to3)	5418	673	A(4to4)	5536	996	E(4to5)	3389	2028	D1(4to3)

Table 13-64: M25 J2 Merge Diverge Assessment AM Peak (Part 2)

Scenario	Movement 7 (M25 J2 -Rbt-A2 (WB) Merge)			Movement 8 (M25 J2 Rbt-M25 (SB) Merge)			Movement 9 (M25/ J2 M25-Rbt (NB) Diverge)			Movement 10 (M25/ J2 Rbt-M25 (NB) Merge)			Movement 11 (M25/ J2 A2-Rbt-EB Diverge)			Movement 12 (M25/ J2-Rbt-A2 EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (3 to 3)			E (3 to 4)			C (4 to 3)			A (3 to 3)			A (3 to 3)			A (3 to 3)		
2023 DM	3564	1195	B(3to3)	3070	2751	F(2to4)	3524	2329	E(4to2)	3524	498	A(3to3)	2220	1944	D1(3to2)	2220	1046	D(2to3)
2023DS	3564	1195	B(3to3)	3070	2751	F(2to4)	3524	2329	E(4to2)	3524	498	A(3to3)	2220	1944	D1(3to2)	2220	1046	D(2to3)
2025 DM	3611	1211	E(3to4)	3110	2787	F(2to4)	3570	2359	E(4to2)	3570	504	A(3to3)	2250	1970	D1(3to2)	2250	1060	D(2to3)
2025DS	3612	1211	E(3to4)	3110	2795	F(2to4)	3571	2368	E(4to2)	3571	504	A(3to3)	2267	1970	D1(3to2)	2267	1068	D(2to3)
2029 DM	3765	1262	E(3to4)	3243	2906	F(2to4)	3722	2460	D1(4to3)	3722	526	A(3to3)	2345	2054	D1(3to2)	2345	1105	D(2to3)
2029DS	3766	1262	E(3to4)	3243	2914	F(2to4)	3723	2468	D1(4to3)	3723	526	A(3to3)	2365	2054	D1(3to2)	2365	1113	D(2to3)
2029 DM+LTC	3863	1305	E(3to4)	3192	2717	F(2to4)	3314	2286	E(4to2)	3314	742	A(3to3)	2517	1939	D1(3to2)	2517	1282	E(2to3)
2029DS+ LTC	3864	1305	E(3to4)	3192	2725	F(2to4)	3315	2294	E(4to2)	3315	742	A(3to3)	2537	1939	D1(3to2)	2537	1290	E(2to3)

2038DM	4027	1350	E(3to4)	3468	3108	F(2to4)	3981	2631	D1(4to3)	3981	562	A(3to3)	2508	2196	D1(3to2)	2508	1182	D(2to3)
2038DS	4033	1350	E(3to4)	3468	3120	F(2to4)	3983	2637	D1(4to3)	3983	562	A(3to3)	2523	2196	D1(3to2)	2523	1188	D(2to3)
2038DM +LTC	3900	1363	E(3to4)	3409	2515	F(2to4)	3503	2293	E(4to2)	3503	798	B(3to3)	2728	1960	D1(3to2)	2728	1354	E(2to3)
2038DS+ LTC	3906	1363	E(3to4)	3409	2528	F(2to4)	3505	2299	E(4to2)	3505	798	B(3to3)	2743	1960	D1(3to2)	2743	1360	E(2to3)

Table 13-65: M25 J2 Merge Diverge Assessment PM Peak (Part 2)

Scenario	Movement 7 (M25 J2 -Rbt-A2 (WB) Merge)			Movement 8 (M25 J2 Rbt-A2 (SB) Merge)			Movement 9 (M25/ J2 M25-Rbt (NB) Diverge)			Movement 10 (M25/ J2 Rbt-M25 (NB) Merge)			Movement 11 (M25/ J2 A2-Rbt-EB Diverge)			Movement 12 (M25/ J2-Rbt-A2 EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	A (3 to 3)			E (3 to 4)			C (4 to 3)			A (3 to 3)			A (3 to 3)			A (3 to 3)		
2023 DM	2727	1698	E(2to3)	3400	2733	F(2to4)	2551	2366	D1(3to2)	2551	322	A(2to2)	3312	2007	D1(4to3)	3312	1607	E(3to4)
2023DS	2727	1698	E(2to3)	3400	2733	F(2to4)	2551	2366	D1(3to2)	2551	322	A(2to2)	3312	2007	D1(4to3)	3312	1607	E(3to4)
2025 DM	2764	1721	E(2to3)	3446	2771	F(2to4)	2586	2398	D1(3to2)	2586	326	A(2to2)	3357	2034	D1(4to3)	3357	1629	E(3to4)
2025DS	2796	1721	E(2to3)	3448	2907	F(2to4)	2586	2451	D1(3to2)	2586	326	A(2to2)	3383	2034	D1(4to3)	3383	1682	E(3to4)
2029 DM	2890	1799	E(2to3)	3603	2897	E(3to4)	2704	2507	D1(3to2)	2704	341	A(2to2)	3510	2127	D1(4to3)	3510	1703	E(3to4)
2029DS	2927	1799	E(2to3)	3606	3096	E(3to4)	2718	2563	D1(3to2)	2718	341	A(2to2)	3549	2127	D1(4to3)	3549	1759	E(3to4)
2029 DM+LTC	3189	1628	E(2to3)	3338	2889	F(2to4)	2746	2348	D1(3to2)	2746	346	A(2to2)	3806	1810	D1(4to3)	3806	1674	E(3to4)
2029DS+ LTC	3227	1628	E(2to3)	3341	3089	F(2to4)	2760	2404	D1(3to2)	2760	346	A(2to2)	3845	1810	D1(4to3)	3845	1730	E(3to4)
2038DM	3100	1930	F(2to4)	3865	3107	E(3to4)	2900	2690	E(4to2)	2900	366	D(2to3)	3765	2281	D1(4to3)	3765	1827	E(3to4)
2038DS	3173	1930	F(2to4)	3869	3391	F(3to5)	2923	2749	E(4to2)	2923	366	D(2to3)	3808	2281	D1(4to3)	3808	1887	E(3to4)

2038DM +LTC	3317	164 6	E(3to4)	3542	299 1	F(2to4)	3044	235 6	D1(3to2)	304 4	340	D(2to3)	3817	1786	D1(4to3)	3817	1700	E(3to4)
2038DS+ LTC	3389	164 6	E(3to4)	3546	327 5	F(2to4)	3066	241 6	E(4to2)	306 6	340	D(2to3)	3861	1786	D1(4to3)	3861	1760	E(3to4)

13.5.33. The merge diverge assessments for the M25 Junction 2 forecasts no change in the layouts for the merge diverge with development flows added onto the background traffic except in the PM peak on movement 9 in 2038 with LTC in place. As the total increase in development traffic is approximately 100 vehicles this is unlikely to have a material impact on the merge in the PM peak in 2038 DS scenario without LTC.

13.5.34. As with the Ebbsfleet merge, this change in requirements is marginal and on review would not be considered sufficient to require the significant infrastructure to improve. Furthermore, it us understood that the primary purpose of the DMRB CD122 merge / diverge calculations is to provide guidance on investment decisions for HE at new junctions rather than necessarily capacity at existing slips. In addition, and to support the reason for not providing any further mitigation at this location, the merge diverge assessments is based on a very robust forecast trip generation associated with the Resort is as it's based on the car parks operating at capacity during the weekday on an 85% day (generally occurring in the summer, over weekends during the summer holidays). The Transport Assessment outlines in detail a Travel Demand Strategy in chapter 14 which aims to reduce the private car mode share to 40% which would reduce the impact at this merge in 2038. Notwithstanding that in 2038 the highway network is likely to operate with significant differences with the introduction of autonomous vehicles and a shift towards sustainable modes.

13.5.35. It is concluded therefore that given all other forecast years do not require any change, and the only change is marginal in a 2038 forecast year based upon worst case assessments, no further mitigation at this location is required.

M25 Junction 30

13.5.36. Table 13-66 and

13.5.37.

13.5.38.

13.5.39. Table 13-68 presents the merge diverge assessments for the M25 Junction 30 across all the assessment scenarios in the AM peak. **Table 13-67** and **Table 13-69** summarises the merge diverge assessments in the PM Peak.

Table 13-66: M25 Junction 30 Merge Diverge AM Peak (Part 1)

	Movement 1 (A2 Ebbsfleet junction WB Diverge)			Movement 2 (A2 Ebbsfleet junction WB Merge)			Movement 3 (A2 Ebbsfleet junction EB Diverge)			Movement 4 (A2/ A2 Bean junction EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	E (4 to 2)			D (2 to3)			D1 (4 to 3)			C (3 to 3)		
2023 DM	2200	1549	D1(3to2)	2200	1421	E(2to3)	3553	1293	C(3to2)	3553	1581	E(2to3)

2023DS	2200	1549	D1(3to2)	2200	1421	E(2to3)	3553	1293	C(3to2)	3553	1581	E(2to3)
2025 DM	2242	1578	D1(3to2)	2242	1449	E(2to3)	3621	1318	A(3to3)	3621	1611	C(3to3)
2025DS	2242	1579	D1(3to2)	2242	1449	E(2to3)	3625	1336	A(3to3)	3625	1612	C(3to3)
2029 DM	2373	1670	D1(3to2)	2373	1533	E(2to3)	3832	1395	B1(3to3)	3832	1705	E(3to4)
2029DS	2373	1671	D1(3to2)	2373	1533	E(2to3)	3835	1423	B1(3to3)	3835	1706	E(3to4)
2029 DM+LTC	2373	1670	D1(3to2)	2373	1533	E(2to3)	3227	1174	C(3to2)	3227	1436	E(2to3)
2029DS+LTC	2373	1670	D1(3to2)	2373	1533	E(2to3)	3230	1204	C(3to2)	3230	1436	E(2to3)
2038DM	2576	1813	D1(3to2)	2576	1664	E(2to3)	4160	1514	D1(4to3)	4160	1850	E(3to4)
2038DS	2576	1813	D1(3to2)	2576	1665	E(2to3)	4162	1555	D1(4to3)	4162	1851	E(3to4)
2038DM+LTC	2576	1813	D1(3to2)	2576	1664	E(2to3)	3394	1235	C(3to2)	3394	1510	E(2to3)
2038DS+LTC	2576	1813	D1(3to2)	2576	1665	E(2to3)	3397	1278	C(3to2)	3397	1510	E(2to3)

Table 13-67: M25 Junction 30 Merge Diverge PM Peak (Part 1)

	Movement 1 (A2 Ebbsfleet junction WB Diverge)			Movement 2 (A2 Ebbsfleet junction WB Merge)			Movement 3 (A2 Ebbsfleet junction EB Diverge)			Movement 4 (A2 Bean junction EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	E (4 to 2)			D (2 to3)			D1 (4 to 3)			C (3 to 3)		
2023 DM	2080	2257	D1(3to2)	2080	1161	D(2to3)	3714	1215	A(3to3)	3714	2363	E(3to4)
2023DS	2080	2257	D1(3to2)	2080	1161	D(2to3)	3714	1215	A(3to3)	3714	2363	E(3to4)
2025 DM	2121	2302	D1(3to2)	2121	1184	D(2to3)	3788	1239	A(3to3)	3788	2410	E(3to4)
2025DS	2125	2360	D1(3to2)	2125	1188	D(2to3)	3821	1258	A(3to3)	3821	2413	E(3to4)
2029 DM	2252	2444	D1(3to2)	2252	1258	E(2to3)	4022	1316	A(3to3)	4022	2559	E(3to4)
2029DS	2258	2532	D1(3to2)	2258	1262	E(2to3)	4056	1347	A(3to3)	4056	2563	E(3to4)
2029 DM+LTC	2252	2444	D1(3to2)	2252	1258	E(2to3)	3150	1031	C(3to2)	3150	2004	E(3to4)
2029DS+LTC	2258	2444	D1(3to2)	2258	1262	E(2to3)	3184	1063	C(3to2)	3184	2008	E(3to4)
2038DM	2452	2661	E(4to2)	2452	1369	E(2to3)	4379	1433	D1(4to3)	4379	2786	E(3to4)
2038DS	2460	2790	E(4to2)	2460	1375	E(2to3)	4418	1464	D1(4to3)	4418	2792	E(3to4)
2038DM+LTC	2452	2661	E(4to2)	2452	1369	E(2to3)	3366	1101	C(3to2)	3366	2141	F(2to4)
2038DS+LTC	2460	2661	E(4to2)	2460	1375	E(2to3)	3404	1133	C(3to2)	3404	2147	F(2to4)

Table 13-68: M25 Junction 30 Merge Diverge AM Peak (Part 2)

	Movement 5 (A2 Ebbsfleet junction WB Diverge)			Movement 6 (A2 Ebbsfleet junction WB Merge)			Movement 7 (A2 Ebbsfleet junction EB Diverge)			Movement 8 (A2 Bean junction EB Merge)		
	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	D2 (3 to 2)			D (2 to3)			B2 (3 to 3)			E (3 to 4)		
2023 DM	1558	1293	D1(2to1)	1558	2027	F(1to3)	3721	1817	D1(4to3)	3721	647	A(3to3)
2023DS	1558	1293	D1(2to1)	1558	2027	F(1to3)	3721	1817	D1(4to3)	3721	647	A(3to3)
2025 DM	1587	1318	D1(2to1)	1587	2066	F(1to3)	3792	1851	D1(4to3)	3792	660	A(3to3)
2025DS	1589	1318	D1(2to1)	1589	2085	F(1to3)	3799	1852	D1(4to3)	3799	660	A(3to3)
2029 DM	1680	1395	B1(2to2)	1680	2186	F(1to3)	4013	1959	D1(4to3)	4013	698	A(3to3)
2029DS	1682	1395	B1(2to2)	1682	2216	F(1to3)	4020	1960	D1(4to3)	4020	698	A(3to3)
2029 DM+LTC	1680	1395	B1(2to2)	1680	2186	E(2to3)	3380	1650	D1(3to2)	3380	588	D(2to3)
2029DS+LTC	1682	1395	B1(2to2)	1682	2217	E(2to3)	3386	1651	D1(3to2)	3386	588	D(2to3)
2038DM	1824	1514	D1(3to2)	1824	2373	E(2to3)	4357	2127	D1(4to3)	4357	758	B(3to3)
2038DS	1826	1514	D1(3to2)	1826	2417	E(2to3)	4365	2129	D1(4to3)	4365	758	B(3to3)
2038DM+LTC	1824	1514	D1(3to2)	1824	2373	E(2to3)	3555	1735	D1(3to2)	3555	618	D(2to3)
2038DS+LTC	1826	1514	D1(3to2)	1826	2418	E(2to3)	3564	1738	D1(3to2)	3564	618	D(2to3)

Table 13-69: M25 Junction 30 Merge Diverge PM Peak (Part 2)

	Movement 5 (A2 Ebbsfleet junction WB Diverge)	Movement 6 (A2 Ebbsfleet junction WB Merge)	Movement 7 (A2 Ebbsfleet junction EB Diverge)	Movement 8 (A2 Bean junction EB Merge)

	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout	M-L	M/D	Layout
Existing	D2 (3 to 2)			D (2 to3)			B2 (3 to 3)			E (3 to 4)		
2023 DM	2365	1833	D1(3to2)	2365	2527	F(2to4)	4171	1947	D1(4to3)	4171	1483	E(3to4)
2023DS	2365	1833	D1(3to2)	2365	2527	F(2to4)	4171	1947	D1(4to3)	4171	1483	E(3to4)
2025 DM	2412	1869	D1(3to2)	2412	2577	F(2to4)	4253	1985	D1(4to3)	4253	1513	E(3to4)
2025DS	2415	1870	D1(3to2)	2415	2600	F(2to4)	4313	1993	D1(4to3)	4313	1571	E(3to4)
2029 DM	2561	1985	D1(3to2)	2561	2736	F(2to4)	4516	2108	D1(4to3)	4516	1606	E(3to4)
2029DS	2565	1986	D1(3to2)	2565	2789	F(2to4)	4599	2134	D1(4to3)	4599	1694	E(3to4)
2029 DM+LTC	2561	1985	D1(3to2)	2561	2736	F(2to4)	3537	1651	D1(3to2)	3537	1258	D(2to3)
2029DS+LTC	2565	1986	D1(3to2)	2565	2790	F(2to4)	3620	1677	B(3to3)	3620	1258	D(2to3)
2038DM	2788	2161	E(4to2)	2788	2979	F(2to4)	4917	2295	D1(4to3)	4917	1749	E(3to4)
2038DS	2792	2163	E(4to2)	2792	3043	F(2to4)	5021	2333	E(5to3)	5021	1877	E(3to4)
2038DM+LTC	2788	2161	E(4to2)	2788	2979	F(2to4)	3779	1764	D1(4to3)	3779	1344	B(3to3)
2038DS+LTC	2792	2163	E(4to2)	2792	3044	F(2to4)	3883	1802	D1(4to3)	3883	1344	B(3to3)

13.5.40. Presented in the tables above is the merge diverge assessments for the M25 Junction 30. Following the completion of LTC in 2029 and 2038 the merge diverge assessments forecast that the development flows associated with The Resort do not require the level of provision to be improved or enhanced against the baseline flows across all movements and in the AM and PM peak.

13.6 SUMMARY

13.6.1. This section presents the highway impact of the London Resort on the surrounding local and strategic highway network. WSP do understand that the London Resort will generate a significant amount of trips throughout the day and this Chapter focuses on the impact in the commuter AM and PM peaks.

13.6.2. The approximate increases in two-way AADT on the strategic road network within the vicinity of the Kent and Essex Project Sites has been presented and is determined that the percentage increases are unlikely to results in significant congestion.

13.6.3. Comparing the scenarios with and without LTC in 2038, the delivery of the LTC will provide further resilience along the SRC in proximity to the London Resort and is therefore unlikely to result in significant congestion across the wider strategic road network.

13.6.4. A VISSIM microsimulation model has been developed to assess the impacts of The London Resort trip generation of the highway network within the vicinity of the Kent Project Site. It is noted that the Do Something models include the proposed improvement at the A2 Ebbsfleet access junction to increase capacity to accommodate arrivals and departures to the Resort. The relocation in the Do Something of Station Quarter South to A2260 Spur Road between the two A2 Ebbsfleet roundabouts, from the dedicated Resort road in the Do Minimum scenario, which was assumed to be the Station Quarter South access has ensured that the London Resort does not negatively impact vehicles accessing and egressing Station Quarter South. In summary, demand for the priority junction in the Do Minimum scenario for the Station Quarter South access exceeded capacity for the departing traffic especially in the PM period, with vehicles finding it difficult to exit the development. By changing the Station Quarter South access to a signal controlled junction in the Do Something scenario, it is possible to mitigate this issue such that it does not deteriorate between the Do Minimum and Do Something. The A2 access junction design is discussed in detail within Chapter 5 and within the Access Note, included in **Appendix TA – J**.

13.6.5. The junction improvement scheme at the A2 Ebbsfleet junction east roundabout to accommodate the London Resort, forecasts an improvement in journey times for visitors arriving at the Resort from the A2 EB and departing the Resort heading EB on the A2, across all assessment years in the AM and PM peaks. The decreases in journey time corresponds to a reduction in queue on the A2 EB off-slip and an increase in capacity for the circulatory movements around the roundabout.

13.6.6. The individual junction assessments of the four main junctions provides a negligible impact at three of the junctions including the M25 Junction 30, M25 Junction 2 and the new access to Tilbury2. The Resort is forecast to have an impact on the Asda Roundabout and a mitigation scheme has been proposed to reduce the impact and forecasts significant improvement in the junction operation compared to the Tilbury2 mitigation scheme.

13.6.7. The merge diverge assessments along the key corridors of concern forecast that the development flows from the Resort have little or no material impact on the provision provided for the majority of assessments. The merge diverge locations where the development traffic forecasts a change in provision is minimal and should be taken in the context that DMRB CD122 guidance is considered to provide investment guidance at new junctions and is not solely about capacity, particularly at existing junctions. It should be noted that this impact only occurs in 2038. The Transport Assessment outlines in detail a Travel Demand Strategy in chapter 14 which aims to reduce the private car mode share to 40% which would reduce the impact at the merges in 2038.

CHAPTER 14

TRAVEL DEMAND STRATEGY

PUBLIC

14 TRAVEL DEMAND STRATEGY

14.1 INTRODUCTION

14.1.1. The Travel Demand Management (TDM) Plan for the London Resort outlines a comprehensive and flexible approach to managing the travel demands of key audiences that will travel to and from the Resort. Specifically, this will focus on travel demands associated with:

- resort ticket holding visitors and those visiting the Retail, Dining and Entertainment facilities[visitors]; and
- those employed at the Resort.

14.1.2. Collectively visitor and employee trips will represent much of the total travel demand associated with the Resort. Managing this demand and positively influencing travel behaviour in favour of sustainable transport options will be important to manage impacts on transport networks and support wider low carbon objectives at the Resort.

14.1.3. TDM Plans are now increasingly commonplace where mass participation activities are focused where there is some unpredictability regarding the nature of travel demands and the transport choices amongst those visiting or working at the location, so that travel can be managed more proactively.

14.1.4. The purpose of TDM is to 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 has 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. TDM also has the benefit of proactively promoting sustainable, low carbon forms of transport to reduce emissions from transport and support wider local and national net zero carbon objectives.

14.1.5. The TDM plan, included in full within **Appendix TA - AC** and summarised within this chapter, includes demand-side measures drawn from a review of international best practice as well as considering the context, and wider transport evidence base for The London Resort. The TDM Plan details the transport challenges and opportunities that these present and concludes with a summary of target outcomes that will be monitored throughout the lifetime of the TDM plan.

14.2 TRANSPORT CHALLENGES AND OPPORTUNITIES

CHALLENGES

14.2.1. The forecast annual visits are presented in **Table 14-1** below.

Table 14-1: Forecast Annual Visits

Area of Resort	Year 2025	Year 2029	Year 2038
Gate One	5,288,899	5,747,375	8,392,975
Gate Two	-	2,873,687	4,196,488
Retail, Dining and Entertainment (RDE)	2,053,479	3,604,440	4,812,735
Waterpark	621,604	765,578	804,039
Events	284,021	410,000	581,131
Total	**8,248,003**	**13,401,080**	**18,787,368**

14.2.2. The location of the Resort to the immediate east of Greater London just outside the M25, ultimately means it shares some of the same road and rail network capacity issues as the Greater London area. The Resort is also 2.5 miles from the Bluewater Shopping Centre, where visitor numbers range from between 62,500 and 108,000 per day putting additional travel demand pressure on this part of the network.

14.2.3. The key areas of focus in terms of managing the visitor travel demand challenges include the highway network and rail, as the primary option for public transport. Based on the principle that road or rail represent the two key modes, two scenarios have been identified to quantify the scale and nature of travel demand, and thereby inform appropriate measures to deploy to effectively manage anticipated demand to manageable levels. Both scenarios are based on 2029, when Gate Two is forecast to open.

Scenario 1:

- weekday peak hour demand issue identified on both Rail and Road; and
- highway challenge focused on the M25 and A2 corridors.

Scenario 2:

- weekend peak event day;
- capacity constraints on Road at peak times;
- capacity on Rail throughout the day; and
- some capacity outside of peak times on road.

14.2.4. The volume of staff will vary according to demand and operational day type; their consideration is important as a sizeable component of the overall travel demand. The expected staff numbers are presented in chapter 6. It is assumed that on-site residential units will accommodate 1,800 people and the Resort will have a 500 space dedicated staff car park but only allows parking for those car-sharing with a minimum occupancy of two people.

OPPORTUNITIES

14.2.5. Transport opportunities associated with visitors have been determined by segmenting the visitor audience by a range of different characteristics. The TDM Plan, included in **Appendix TA - AC**, provides a detailed breakdown of segmentation by a number of characteristics which are summarised within this Chapter.

Audience segmentation by length of stay

- **Day Tripper**: this visitor segment is likely to be more car dependant overall as they place a higher value on 'time' compared to those staying overnight. Opportunities may exist to influence their travel demands in terms of modal shift or re-routing their travel choice, but less opportunities exist to re-time (such as a later arrival at the Resort); and
- **Overnight Visitor**: this visitor segment will comprise a split of mostly car dependant trips, with proportionately less travelling by Rail however this segment is likely to be more flexible in terms of travel time, as they will be visiting the Resort for a longer period creating more opportunity to consider alternative travel options, including those that involve different modes and travelling at different times.

Audience segmentation by proximity to rail network

14.2.6. Rail services will be the primary mode of public transport serving the Resort. The visitor audience has been segmented into three criteria from home origin to help inform the strength of any potential modal shift opportunity by grouping:

- proportion of audience for whom rail is a good option (800m of direct service);
- proportion of audience for whom rail is a moderate option (800m of indirect service); and
- proportion of audience for whom rail is not an option.

Audience segmentation by distance from resort

14.2.7. A distinction in characteristics between international and domestic visitors has also been determined. Criteria have been included in the analysis in terms of domestic visitors; with UK based trips expected to account for 77% of total visitor trips. International visitors have been considered as a separate distinct segment, with non-UK based visitor trips expected to account for approximately 23% of total trips to the London Resort.

Segmentation of audience based on propensity to change behaviour

14.2.8. Data captured through household surveys, the UK census and consumer data has been collected by Experian MOSAIC to develop a series of typologies for households. One of these characteristics developed has been people's likelihood to change their travel behaviour or their propensity to change. This has been taken as a proxy for the degree to which the audience might engage with the demand management measures intended to influence their travel behaviour which will be delivered through this Plan.

14.2.9. Experian MOSAIC data for the 0-60 minutes and 60-120 minutes journey time catchments has been examined. For these catchments the data has been profiled to determine the respective propensity to change in these communities, as detailed within the TDM Plan in **Appendix TA - AC** .

Segmentation of audience based on group size

14.2.10. Group size has been considered with an intent to compare visitor groups of up to 4 people and groups of 5 or more, in terms of potential impact. It is worth noting that data to substantiate the likely proportions that sit within each group is not available. We have therefore used group travel as a broad consideration in evaluation of demand management measures at this stage.

14.3 VISION AND OBJECTIVES

14.3.1. The London Resort has the potential to achieve exemplar status as a global visitor attraction that connects people with the resort using a variety of high quality, sustainable and zero carbon transport options. Achieving this outcome will require investment in both managing overall travel demands and providing both visitors and employees with a choice of affordable, attractive and accessible mobility services.

14.3.2. Therefore, the overarching vision for this TDM Plan is:

That the London Resort operates as a sustainable visitor attraction, working in partnership to connect people with places using the highest quality transport services. Active travel, public transport and shared journeys will be commonplace, with visitors and employees empowered to make informed travel choices.

14.3.3. In pursuit of this vision, the TDM Plan will be guided by the following specific objectives:

1. Support ridesharing for car-based trips made to the resort;
2. Encourage connections by public transport services and support efficient modal interchange;
3. Deliver shared mobility services for visitors and employees;
4. Promote zero carbon, active travel options;
5. Enhance the quality and availability of travel information and advice; and
6. Manage the demand for vehicle parking at the resort and within the surrounding area.

14.3.4. Achieving these objectives will help manage overall travel demands at the Resort, create efficient and attractive mobility networks for all resort visitors and employees, and will directly contribute towards achieving UK and local net zero carbon targets.

14.4 TRAVEL DEMAND MANAGEMENT MEASURES

14.4.1. To achieve the vision and objectives, a comprehensive and integrated package of TDM measures has been developed. An initial long list of interventions was developed which was subsequently refined through a multi-criteria appraisal that examined TDM measures based on, inter alia, their suitability, deliverability, scalability, potential for wider application outside the resort, cost-effectiveness and impact. This resulted in a shortlist of TDM measures specific to both Resort visitors and employee and reflective of forecast travel demands. The shortlisted measures are illustrated in **Plate 14-1**.

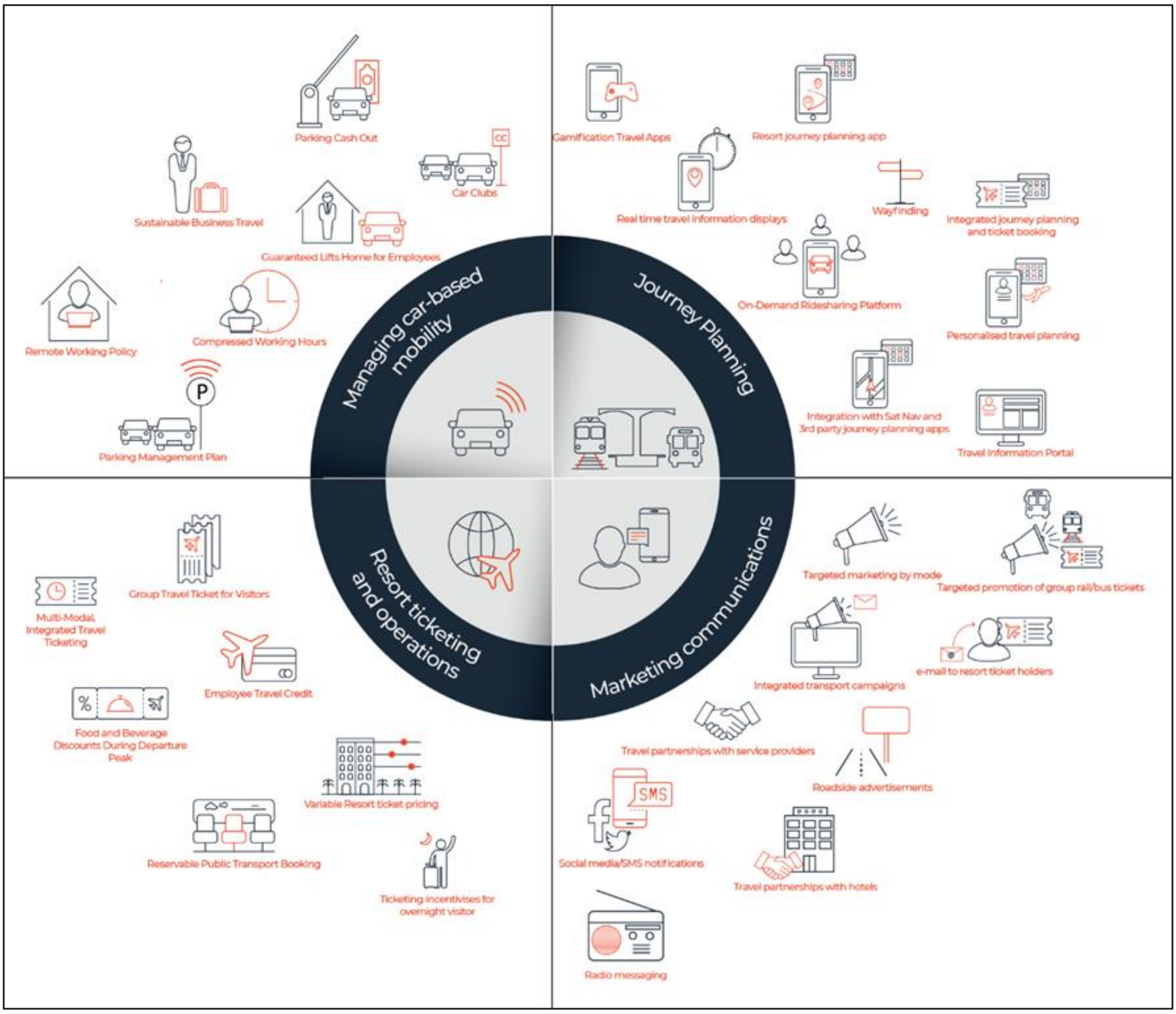


Plate 14-1: TDM Measures

14.4.2. Measures have been grouped under TDM Themes that have been identified in response to the TDM Plan objectives. Resort ticketing and operations, travel marketing and communications, supporting effective journey planning and managing the demand for car-based trips will be central to achieving the vision for a sustainable, low carbon resort.

14.4.3. Each of the measures presented in **Plate 14-1** has been separated into visitors and staff and discussed in detail within the TDM plan. Within the TDM, tables provide a reference, name and summary description of the proposed TDM measure. In addition, a summary rationale for each measure is provided to explain why it has been chosen and/or provide a link to how the measure can help achieve the plan objective.

SCALABILITY OF TDM INTERVENTIONS

14.4.4. The TDM measures are, for the most part, scalable in response to changing travel patterns and demands over time. This means as the TDM Plan is delivered there will be opportunities to shape the exact detail and scale of each measure as required, informed by monitoring data and feedback from site users. Specific measures that are providing particularly effective outcomes could then see further investment to scale up their application or embrace new and enhanced technologies or services that emerge over time. Similarly measures which prove less effective or popular with resort visitors and employees can be scaled back or revised having been informed by the evidence.

14.4.5. This represents an approach to TDM Planning that is *Future Ready* – whereby measures are identified at this stage ahead of resort opening but are adaptable in recognition of rapidly changing social and transport trends that may influence travel demands and behaviours in the future. The TDM Plan should retain flexibility to adapt and introduce new, presently unknown, measures that may provide highly effective in managing travel demands at a future point.

OPPORTUNITIES FOR STRATEGIC AREA WIDE TDM APPLICATION

14.4.6. Certain measures may also have the potential to extend beyond the Resort and be introduced on an area-wide basis. This would mean LRCH working collaboratively with stakeholders such as KCC, Highways England and large trip attractors in the area to explore opportunities to develop and deliver initiatives in partnership. This process may generate economies of scale for TDM through the sharing of investment over time that can be scaled up and applied more widely.

14.4.7. This would mean the TDM Plan for the London Resort can help play a role in mainstreaming the delivery of TDM interventions that help reduce non resort-based trips and background traffic growth. This may in turn play a valuable role in helping local authorities deliver on strategic transport and mobility objectives, including those outlined in Transport for the South East's Transport Strategy and Vision for the South East in 2050.

14.5 IMPLEMENTATION PLAN

14.5.1. The measures will be introduced at the Resort on a phased basis, being in response to when they will be needed and most effective in managing travel demands. In some instances, measures will require detailed development prior to the London Resort opening in 2024 to ensure their immediate and smooth introduction when the Resort becomes operational. Other measures may be phased to coincide with planned transport infrastructure or mobility services at the resort to maximise the impact of this investment and ensure visitors and employees are aware and able to access them. Chapter 6 within the TDM Plan outlines a high-level implementation plan for both the visitor and employee TDM measures with an indicative trigger point for their introduction.

14.6 MANAGEMENT AND DELIVERY FRAMEWORK

14.6.1. The TDM Plan for The London Resort will require a robust and effective management structure to successfully deliver the measures together with achieving the plan's vision and desired outcomes. The TDM plan explains the overall proposed management structure, detailing the different layers of management, role and responsibilities, together with how each party will come together to shape, oversee and monitor delivery. The wider delivery framework is outlined, presenting a unique opportunity for a collaborative, partnership-based approach to TDM at London Resort.

STEERING GROUP

14.6.2. A TDM Steering Group (TDMSG) will be convened six months prior to the commencement of development at London Resort. The TDMSG will act as both a funding and advisory body to review and guide the delivery of TDM measures at the resort. The group will be Chaired by a senior representative of LRCH and is anticipated to include representation from local authorities, national governing bodies, transport service operators and local residents, among others.

RESORT TRAVEL COORDINATOR

14.6.3. A Resort Travel Coordinator (RTC) will be appointed and funded by LRCH. The RTC will be responsible for overseeing implementation of the TDM Plan, including the measures, monitoring and review processes, and liaising with site users and interested parties to ensure the plan objectives are achieved over time. The roles and responsibilities of the RTC are presented in detail within the TDM plan.

14.7 TARGETS, MONITORING AND REVIEW

14.7.1. Travel patterns and transport impacts associated with the Resort will naturally change over time and gathering a comprehensive and robust evidence base will be important for on-going decision-making and investment in supporting measures. It is also beneficial to establish some indicators of success drawing from this evidence base.

TARGETS

14.7.2. This information provides an initial target as a measure of an acceptable proportion of journeys to and from the Resort by private vehicles, based on an average day scenario.

14.7.3. This information is presented in **Tables 14-1** and **Table 14-2** below.

Table 14-1: Baseline Visitor Modal Share for Private vehicle (Average Day)

Year	Private Vehicle (Car Driver)
2025	67.5%
2029	67.2%
2038	62.9%

Table 14-2: Baseline Employee Modal Share for Private vehicle

Year	Private Vehicle (Car Driver)
2025	25.8%
2029	18.2%
2038	18.2%

14.7.4. In terms of future targets, given that the Baseline mode share for private vehicles associated with staff is low, it is proposed to maintain these values.

14.7.5. In terms of targets relating to visitors, an ambitious interim target of **40%** by private vehicle has been set to account for journeys at the 85th percentile day. This considers the period 2029 onwards.

14.7.6. It is not proposed to include mode share target for all other modes. This is to maximise flexibility going forward over which sustainable transport options should receive higher or lower levels of investment, based on observing the travel patterns and responses from Resort visitors and employees.

MONITORING

14.7.7. A monitoring process will be introduced to understand travel patterns and secure feedback from site users and local residents, ensuring the TDM Plan can remain responsive to any issues emerging. This will comprise the following, which are discussed in detail within the TDM:

- Resort Travel Survey:
  - Visitor Travel Questionnaire;
  - Resort Ticket Data Analysis;
  - Employee Travel Questionnaire; and
  - Operator Data;
- Resort Parking Survey;
  - Resort Parking; and
  - Off-Site Parking.

14.7.8. Information from these sources will be collated and analysed by the RTC and an annual TDM Plan Monitoring Report will be prepared for the Steering Group. Following resort opening the initial survey will serve for travel pattern baselining purposes and benchmarking satisfaction levels. This can then form the basis for comparison in subsequent years to understanding how travel patterns and requirements change over time in order to determine progress towards the provisional target outcomes

TDM PLAN REVIEW

14.7.9. A formal annual review of the TDM Plan will be undertaken, led by the TDM Steering Group and informed by the monitoring data. This process will ensure the TDM Plan remains subject to a regular on-going review against the modal split and travel satisfaction indicators.

14.7.10. The TDM Steering Group will convene to review travel and user satisfaction monitoring information presented within the annual progress report prepared by the RTC. This formal review process will be supplemented by quarterly informal reviews of the TDM Plan consistent with scheduled meetings of the Steering Group.

14.7.11. This annual process will mean this TDM Plan remains dynamic and responsive over time to changing social and mobility trends and the observed travel needs and wishes of all who visit the Resort.

14.8 SUMMARY

14.8.1. The Travel Demand Management (TDM) Plan outlines a comprehensive and flexible approach to managing the travel demands of key audiences that will travel to and from the London Resort.

14.8.2. The TDM focuses on demand-side measures, designed to help optimise transport and mobility networks by influencing how and when people travel to and from the Resort. The measures set out in the TDM Plan are drawn from a review of international best practice and considering the context and wider transport evidence base for the London Resort. This includes use of marketing communications, ticketing options, Resort operations, journey planning advice and measures to proactively manage car-based travel.

14.8.3. The TDM measures outlined in the document, are for the most part, scalable in response to changing travel patterns and demands over time. This means as the TDM is delivered there will be opportunities to shape the exact detail and scale of each measure as required, informed by monitoring data and feedback from site users. Specific measures that are proving particularly effective could then see further investment to scale up their application or embrace new and enhanced technologies or services that emerge over time. Similarly, measures which prove less effective or popular with Resort visitors and employees can be scaled back or revised, informed by the evidence.

14.8.4. This represents an approach to TDM planning that is Future Ready – whereby measures are identified at this stage ahead of Resort opening but in recognition of rapidly changing social and transport trends that may influence travel demands and behaviours in the future. The TDM will retain flexibility to adapt and introduce new, presently unknown, measures that may provide highly effective in managing travel demands at a future point.

14.8.5. Travel patterns and transport impacts associated with the Resort will naturally change over time and gathering a comprehensive and robust evidence base will be important for on-going decision-making and investment in supporting measures. The TDM Plan has set out indicative interim targets for visitors that will be reviewed over the implementation of the resort. The use of those targets in the analysis of parking demand has shown that measures and initiatives in place would have a positive benefit for retiming trips and encouraging modal shift away from private vehicle use.

CHAPTER 15

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

PUBLIC

15 CONSTRUCTION TRAFFIC MANAGEMENT PLAN

15.1 INTRODUCTION

15.1.1. This section provides a summary of the Construction Traffic Management Plan (CTMP) which is included in **Appendix TA - AD** of this document. The CTMP presents the amount of construction traffic, construction working hours, vehicle routing plans, outlines the mitigation and the on-site facilities for construction workers.

15.1.2. The location of the London Resort presents a unique opportunity for the construction phase of the Proposed Development. Based on calculations by Buro Happold the total amount of volume of material required for The London Resort is circa three million tonnes. As the London Resort is located on the River Thames a large proportion of the total volume of material will be taken to and from site via barge boats. During the construction process LRCH will be aiming for 80% of material will arrive or depart the site via a barge, however for a robust assessment in highway terms it has been assumed that only 75% of the material will arrive or depart by barge and the remaining 25% will be by HGVs. This is a committed minimum level to be accommodated by river. The split between river and road for construction materials being delivered to Tilbury will vary, until a principal contractor is appointed it will be difficult to quantify. As such it has been assumed a maximum of 150 HGVs per day to Tilbury during construction.

15.2 CONSTRUCTION HGV ROUTING

15.2.1. The construction routing for vehicles accessing the main resort site has been proposed to minimise the impact on the local highway network. The construction routing will require all vehicles to utilise the A2 Ebbsfleet International exit to access the Kent Project Site from the Strategic Road Network, while for the Essex Project Site construction traffic will be required to use the A1089 to access the Port of Tilbury. The construction routes from the A2 Ebbsfleet International exit will differ depending on the stage of the construction process, as presented in **Figure 15-1**, this is as follows:

- Prior to completion of temporary haul road– A2 Ebbsfleet International exit, A2260, A2260 Ebbsfleet Gateway, A226 Thames Way/ A226, A226 Stonebridge Road, A226 Gallery Hill Road, A226 London Road and Manor Way;
- Following completion of temporary haul road – A2 Ebbsfleet International exit, A2260, International Way before transferring onto the temporary haul road on the alignment of the People Mover; and
- Following completion of the access road – A2 Ebbsfleet International exit to use the new access road on the northern arm of the EB on and off slip roundabout.

15.2.2. The construction routing to the Essex Project Site will be via the Strategic Road Network via the A13 and A1089 Figure 15-2 presents the construction route to the Essex Project Site

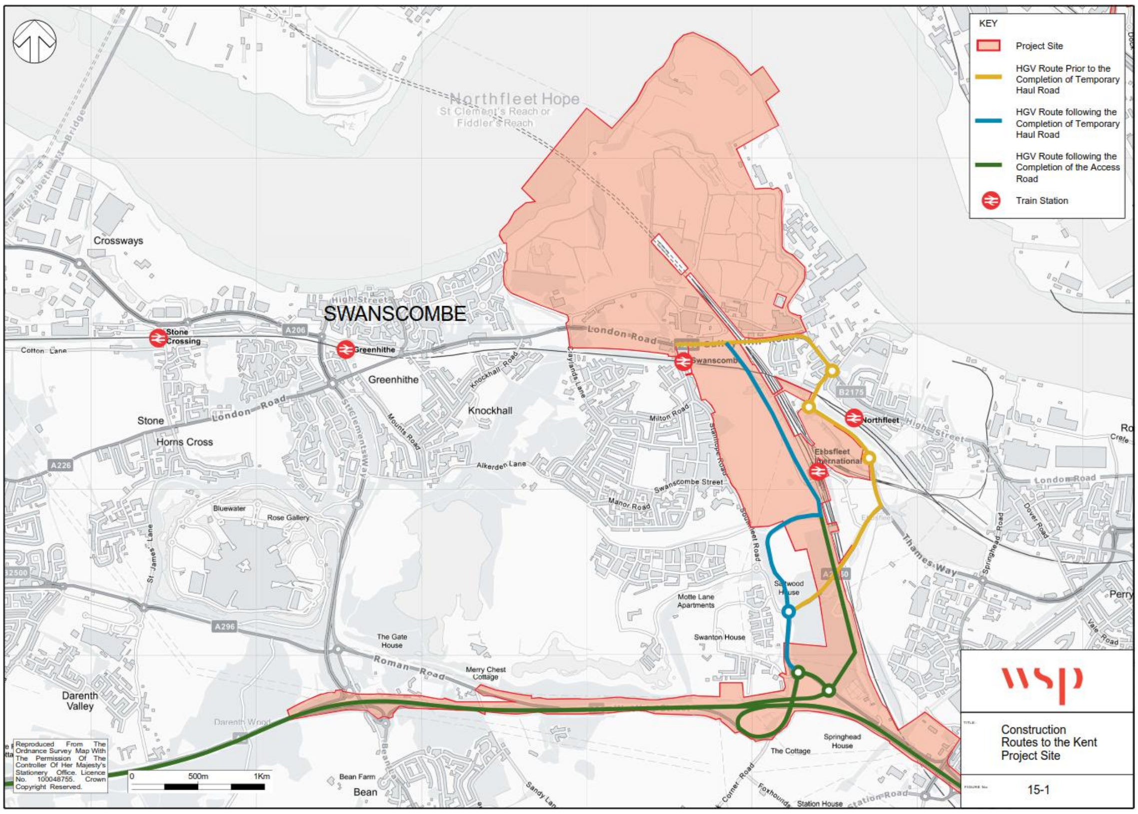


Figure 15-1: **Construction Routes to the Kent Project Site**

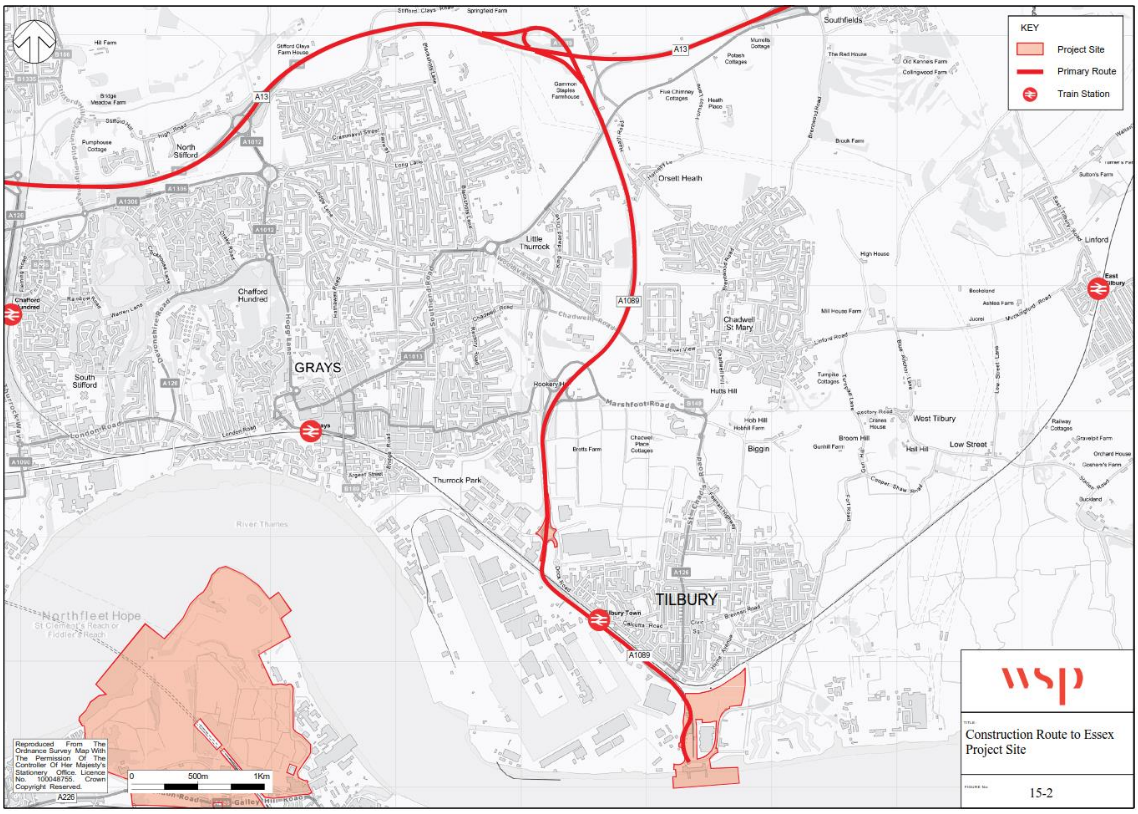


Figure 15-2 - Construction Route to the Essex Project Site

15.2.3. There may still be a requirement for some construction traffic to utilise the site access via London Road, following the completion of the access road. This is likely to be limited to HGVs only and would depend on which site compound is their necessary destination. This will not change the number of HGVs forecast within the peak construction period in Gate 1, the HGVs would be required to follow the same timing constraints.

15.3 CONSTRUCTION WORKER CAR PARK

15.3.1. The on-site car parking during construction of Gate 1 and Gate 2 for Daily Commuter construction workers will be split across sites north and south of the River Thames. This will accommodate both workers who reside on site and workers who travel daily.

- At the Kent Project site there will be circa 815 temporary car parking spaces available located on the Peninsular.
- The Essex Project Site will accommodate a 350-space car park, of which 200 car parking spaces will be for Daily Commuters with the remaining 150 spaces assigned to resident workers. LRCH will operate a ferry service that will depart from Tilbury to take construction workers from the north side of the river directly to The London Resort site.
- Whilst during construction of Gate 2 of the construction process the car parking at the Kent Project site will be reduced to circa 400 spaces (contained within car parking structures on site) and at the Essex Project Site it will reduce to circa 150, with 75 spaces each for resident workers and daily commuter workers.

15.3.2. Given the above, the peak car park capacity for construction workers is presented in Table 15-1. The Construction Worker car park capacity for Gate 2 will be significantly lower to take account of the reduction of Construction Workers required on-site which is likely to half.

Table 15-1: Total Car Park Capacity across the Kent and Essex Project Sites for Construction Workers

	Car Park Capacity for Construction of Gate 1	Car Park Capacity for Construction of Gate 2
Kent Project Site	815	Circa 400
Essex Project Site	350	150
Total	1,165	Circa 550

15.4 CONSTRUCTION WORKERS AND MOVEMENTS FOR GATE 1

15.4.1. As a worst case assessment in travel generation terms, the peak construction period allows for 6,000 construction workers to be present each day at the London Resort. It is proposed that 25% of the construction workers will live on-site during the week, the remaining 75% will be Daily Commuter construction workers.

15.4.2. The 1,500 On-site Accommodation construction workers are likely to be split between a vessel ship docked in the Port of Tilbury and at the Resort itself in temporary modular accommodation or similar. The construction workers living on-site will operate on a different working schedule to those construction workers travelling to and from site each day. The On-site Accommodation construction workers will leave the Kent Project Site on Friday lunchtime to early afternoon to return on Sunday evening for work the following week. The construction workers residing on-site will have up to 150 car parking spaces provided for them at the port of Tilbury, as part of the 350 space car park, workers will only be allowed to utilise the car park if the vehicle has an occupancy of a minimum of three people. This will be controlled through the Travel Demand Management Plan.

15.4.3. On-site accommodation construction workers travelling to the resort individually, will be encouraged to travel by public transport with rail fares subsidised

15.4.4. Up to 4,500 Daily Commuter construction workers will arrive and depart The London Resort each day for duration of the peak construction period. The Volterra Construction Worker Distribution Note splits mode share for the commute to the London Resort by either a private car or a public transport, as presented in **Table 15-2**.

Table 15-2: Daily Commuter Construction Worker mode share Phase 1

	Low	Peak
Staff	1,650	4,500
Travel by Car	1,300	3,568
Travel by Public Transport	350	932

15.4.5. A breakdown on the likely Daily Commuter construction worker routing to the Kent and Essex Project Site is presented in **Table 15-3** and **Table 15-4** below. **Table 15-4** scales up the number of vehicles travelling to Tilbury from 151 vehicles forecast in the Volterra Technical Note to 200 vehicles based on the maximum capacity of the car park

Table 15-3: Construction Worker Distribution at the Main London Resort Site

	Construction Workers	Construction Workers Parking On-Site (Vehicles)
A282/ A2 EB	906	302
M25 (ACW) / A2 EB	1,249	416
A296 EB	0	0
A2 WB	288	96
Total	2,443	814

Table 15-4: Construction Vehicle Distribution at Tilbury Car Park

	Construction Workers	Construction Workers Parking On-Site (Vehicles)	Construction Workers Parking On-Site (Vehicles)*
A1013 SB/ A1089	308	103	136
A13 WB/ A1089	107	36	47
A13 EB/ A1089	40	13	17
Total	454	151	200

**Scaled up to 200 vehicles parking at Tilbury Car Park*

15.4.6. The forecast Daily Commuter construction workers travelling via public transport will be provided with a coach service from the local public transport hubs at Ebbsfleet International, Gravesend and Tilbury railway stations. This will be provided for Daily Commuter construction workers who do not live within the local authorities of Dartford or Gravesham to ensure that these staff members will be able to travel directly to site via the bus network or local train network.

15.4.7. The Daily Commuter construction workers car park will be split across sites north and south of the River Thames. At the Kent Project Site there will be 815 car parking spaces available. If Daily Commuter construction workers are found to be parking on the nearby residential streets, the measures outlined in the Off-Site Parking strategy (chapter 12) will be implemented to control the problem. At the Essex Project Site there will be a 350 space car park of which 200-spaces will be associated with Daily Commuter construction workers. There is a ferry service planned to depart from the Essex Project Site to take construction workers from the north side of the river directly to Kent Project Site.

15.4.8. It is estimated that construction of the site will generate an average of 80 HGV deliveries per day (average of 160 HGV movements per day) throughout the construction period at the Kent Project Site. The maximum HGV flows will be 180 deliveries per day (360 HGV movements per day). This includes all associated construction activities, deliveries, highway access construction and the removal of material/ waste etc. This when broken down across an eight-hour day (0900-1700) equates to 22/23 HGVs arriving and departing per hour, or an additional movement every two to three minutes. On the strategic road network, the construction HGV movements associated with the Kent Project Site have been assumed to be split 50:50 in either direction on the A2 eastbound and westbound.

15.4.9. The maximum forecast HGVs generated at the Essex Project Site during the construction of Gate 1 is 150 HGVs per day (therefore 150 arrivals and 150 departures per day giving a total of 300 HGV movements per day) throughout the construction of Gate 1. When broken down across an eight-hour day (09:00-17:00) this equates to 18-19 HGVs arriving and 18-19 HGVs departing per hour. In terms of a two way flow per minute, this equates to one HGV approximately every minute and a half. On the strategic road network, the construction HGV accessing the Essex Project Site movements have been assumed to be split 50:50 in either direction on the A13 eastbound and westbound.

15.4.10. **Table 15-5** and **Table 15-6** summarises a typical peak weekday vehicular arrival and departure profile at the Resort and at Tilbury respectively. For the assessment it has been assumed that the coach arrivals will be split evenly between 06:00-0700 and 07:00-0800 and departures will be between 1800-1900. The typical working hours are presented in Table 3-1 of the CTMP, which states that construction activity will start at 0800 and finish at 1800.

Table 15-5: Typical peak period Weekday Vehicular Arrival and Departures profile on the Kent Project Site

	0600-0700	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900
Arr	414	414	0	23	22	23	22	23	22	23	22	0	0
Dep	0	0	0	22	23	22	23	22	23	22	23	0	828
Total	414	414	0	45	45	45	45	45	45	45	45	0	828

Table 15-6: Typical peak period Weekday Vehicular Arrival and Departures profile at Essex Project Site

	0600-0700	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900
Arr	103	103	0	19	19	18	19	19	19	18	19	0	0
Dep	0	0	0	18	19	19	19	18	19	19	19	0	206
Total	103	103	0	37	38	37	38	37	38	37	38	0	206

15.4.11. The arrival and departure profiles presented in **Table 15-5** and **Table 15-6** forecast no trips within the traditional AM peak 0800-0900 and PM peak 1700-1800. This is reflective of worker start times on site. A highway link flow assessment will be undertaken for the peak arrivals and departures between 0700-0800 and 1800-1900.

15.5 CONSTRUCTION WORKERS AND MOVEMENTS FOR GATE 2

15.5.1. During Gate 2 of the construction process the amount of construction workers required is forecast to drop by 50% to approximately 3,000 per day throughout peak construction period. Similar to Phase 1, 25% of the total construction staff will be residing on-site associated are forecast to drop

15.5.2. During Gate 2 of the construction process, there will likely be 750 on-site accommodation construction workers residing on a vessel in the Port of Tilbury. The car park at the Port of Tilbury will be reduced in capacity to 75 car parking spaces for these worker types and will follow the rules from Gate 1 where workers will only be allowed to utilise the car park if the vehicle has an occupancy of a minimum of three people.

15.5.3. The Gate 2 peak for Daily Commuter construction workers is 2,250 arriving and departing at the London Resort each day for duration of the peak construction period. The Volterra Construction Worker Distribution Note splits mode share for the commute to the London Resort by either a private car or a public transport, as presented in **Table 15-7**.

Table 15-7: Daily Commuter Construction Worker mode share Phase 2

	Low	Peak
Staff	825	2,250
Travel by Car	650	1,784
Travel by Public Transport	175	466

15.5.4. A breakdown of the likely Daily Commuter construction worker routing to the Main London Resort Site and Tilbury is presented in **Table 3-11** and **Table 3-12** which are enclosed within **Appendix TA - AD**. In a similar way to during Phase 1, Daily Commuter construction workers will be collected via a coach service from the local public transport hubs and taken to the London Resort.

15.5.5. The Kent Project Site car park for Daily Commuter construction workers will reduce by half to circa 400 spaces with the car park at the Essex Project Site reducing to a 75-space car park.

15.5.6. The HGV movements for Gate 2 are forecast to be a third of the movements for Gate One, so the Kent Project Site will generate an average of 27 HGVs per day (average of 54 HGV movements per day) throughout the construction period. The construction HGVs accessing the site during this phase will access the site via the new access junction from the A2. This broken down across an eight-hour day (0900-1700) will be 6-7 HGVs arriving and departing per hour, this equates to an additional movement every five minutes.

15.5.7. The forecast construction HGVs generated at the Essex Project Site during the construction of Gate 2 is 50 HGVs per day (therefore 50 arrivals and 50 departures per day giving a total of 100 HGV movements per day) throughout the construction period to the Essex Project Site. When broken down across an eight-hour day (09:00-17:00) this equates to six-seven HGVs arriving and six-seven HGVs departing per hour. In terms of a two way per minute, this equates to one HGV approximately every four minutes.

15.5.8. **Table 15-8** and **Table 15-9** outline a typical peak weekday vehicular arrival and departure profile at the Resort and at Tilbury respectively. For the assessment it has been assumed that the coach arrivals will be split evenly between 0600-0700 and 0700-0800 and depart between 1800-1900.

Table 15-8: Typical peak period Weekday Vehicular Arrival and Departures profile on the Main Site Gate 2

	0600-0700	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900
Arr	206	206	0	4	3	3	4	3	4	3	3	0	0
Dep	0	0	0	3	4	3	3	4	3	3	4	0	411
Total	206	206	0	7	7	6	7	7	7	6	7	0	411

Table 15-9: Typical peak period Weekday Vehicular Arrival and Departures profile at Essex Project Site Gate 2

	0600-0700	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900
Arr	40	41	0	7	6	6	6	7	6	6	6	0	0
Dep	0	0	0	6	6	6	7	6	6	6	7	0	80
Total	40	41	0	13	12	12	13	13	12	12	13	0	80

15.5.9. The arrival and departure profiles presented in **Table 15-8** and **Table 15-9** forecast no trips within the traditional AM peak 0800-0900 and PM peak 1700-1800 during Gate 2 of the Construction period. A highway link flow assessment will be undertaken for the peak arrivals and departures between 0700-0800 and 1800-1900 for Gate 2. The assessment will include the forecast vehicle flows from the 85th Percentile Day in 2025 with the construction vehicle movements included.

15.6 CONSTRUCTION IMPACT ASSESSMENT

NET TRAFFIC CHANGE BETWEEN EXISTING INDUSTRIES AND FORECAST CONSTRUCTION MOVEMENTS

15.6.1. The Kent Project site comprises land part of which is currently occupied by circa 85,000 sq m of industrial property which is accessed via Manor Way and Lower Road. The industrial occupiers will either be displaced or relocated as part of the development and the loss of associated trips will be offset by the first phase of the construction process when HGVs will be required to use the A226 London Road to access the Resort. A TRICs assessment for the existing industrial use on-site has been undertaken and is presented in the Construction Traffic Impact Assessment which is included in **Appendix TA - AD** . **Table 15-10** and **Table 15-11** presents the net change between the cars and HGVs associated with the existing industries and the forecast peak construction traffic.

Table 15-10: Difference Trip Generation for Construction Traffic and Existing Industries Traffic for Cars

	Construction Traffic			Existing Industries Traffic			Net Change		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
0600-0700	414	0	414	190	66	256	-224	66	-158
0700-0800	414	0	414	327	89	416	-87	89	2
0800-0900	0	0	0	429	159	588	429	159	588
1700-1800	0	0	0	94	397	491	94	397	491
1800-1900	0	828	828	51	144	195	51	-684	-633
0600-1900	828	828	1,656	2,951	2,864	5,815	2,123	2,036	4,159

Table 15-11: Difference Trip Generation for Construction Traffic and Existing Industries Traffic for OGVs

	Construction Traffic			Existing Industries Traffic			Net Change		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
0900-1000	23	22	45	26	26	52	-3	-4	-7
1000-0900	22	23	45	24	23	47	-2	0	-2
1100-1000	23	22	45	24	23	47	-1	-1	-2
1200-1300	22	23	45	26	23	49	-4	0	-4
1300-1400	23	22	45	24	25	49	-1	-3	-4
1400-1500	22	23	45	22	21	43	0	2	2
1500-1600	23	22	45	23	24	47	0	-2	-2
1600-1700	22	23	45	17	17	34	5	6	11
0900-1700	180	180	360	186	181	367	-6	-1	-7

15.6.2. As presented in **Table 16-7**, the existing movements related to the existing industrial property are approximately 950 arriving in the AM peak period 0600-0900 with between 500-550 departing between 1700-1900.

15.6.3. As the HGV movements forecast during the peak construction period are similar to those currently generated from the existing industries, there seem to be no issues if some of the HGVs continued to arrive or depart the Resort via London Road. This would depend on their destination on site and which site compound they were directed towards.

SUMMARY OF HIGHWAY ASSESSMENT DURING CONSTRUCTION OF GATE 1

15.6.4. The Highway Assessment during the construction of Gate 1 includes the forecast traffic arrivals and departures expected to arrive between 07:00-08:00 and depart between 18:00-19:00 these flows have been assessed within the traditional network AM and PM peak hours in order to provide a robust assessment.

15.6.5. The highway assessment during the construction of Gate 1 is presented in detail in Chapter 13 of this document. The addition of construction traffic on the highway network is forecast not to have a considerable impact on the highway operation and as such is not considered as a serve impact.

15.7 CONSTRUCTION WORKER TRAVEL DEMAND STRATEGY

15.7.1. As with the operational stage, the Travel Demand Management (TDM) plan will be implemented by the London Resort during construction. The delivery of the TDM plan will through a Resort Travel Coordinator (RTC) appointed by LRCH. The aim of the document is to reduce single occupancy car trips, promote public transport, encourage active travel and manage construction worker parking demands. The TDM plan measures cover a broad spectrum and are grouped under the following themes:

- Enhanced Access to Public and share mobility – Shuttle Coach Services, Employee Travel Credit, Integrated Smart Ticketing and Shared micro-mobility;
- Travel Information and Targeted Communications: Mobility Portal, Mobility service arrival and departure information and Personalised Travel Plans;
- Managing Car-based Mobility – Parking Management Plan and ridesharing platform; and
- Corporate Travel and Working Policy – Construction Worker accommodation and welfare facilities and guaranteed journey home scheme.

15.7.2. As the TDM Plan will be a 'live' document this will be updated accordingly following monitoring.

15.8 SUMMARY

15.8.1. The Construction Traffic Management Plan has been drafted to minimise the impact of construction traffic on the highway network, the aim will be to provide up to 80% of material via the River with the remaining 20% travelling on the highway network. The HGV construction routing will require minimal use of the local highway network, with all construction vehicles heading towards the Kent Project Site being required to utilise the A2 Ebbsfleet International exit. Construction vehicles associated with the Essex Project Site will be required to utilise the A1089 towards the Port of Tilbury.

15.8.2. As a worst case for travel generation purposes during the peak construction period, allowance has been made for 6,000 construction workers to be present each day at the London Resort. It is proposed that 25% of the construction workers will live on-site during week, the remaining 75% will be Daily Commuter construction workers. During the peak construction period in Phase 1 it is forecast that the Kent Project Site will generate 1,008 movements a day (equates to 2,016 two-way trips) these will be split across the day between 06:00-1900 with no trips arriving or departing in the AM or PM peak. The Essex Project Site will generate 206 movements a day (equates to 412 two-way trips) these will be split over the arrival (06:00-0800) and departure (1800-1900) periods for the construction workers.

15.8.3. During Phase 2 of the construction process the number of construction workers required is forecast to drop by 50% to approximately 3,000 per day throughout peak construction period. Similar to Phase 1, 25% of the total construction staff will be residing on-site associated are forecast to drop. During the peak construction period in Phase 1 it is forecast that the Kent Project Site will generate 439 movements a day (equates to 878 two-way trips) these will be split across the day between 06:00-1900 with no trips arriving or departing in the AM or PM peak. The Essex Project Site will generate 81 movements a day (equates to 162 two-way trips) these will be split over the arrival (06:00-0800) and departure (1800-1900) periods for the construction workers.

15.8.4. The highway assessment forecast that the impact of construction is considered a serve impact due to the temporary nature of construction activity.

15.8.5. The Travel Demand Management (TDM) plan will be implemented by The London Resort, its delivery will be the responsibility of the Resort Travel Coordinator. The TDM plan will provide a range of measures to encourage the use of public transport, promote active travel and minimise single occupancy car driver trips. The TDM plan will be a 'live' document which will be updated accordingly following monitoring.

CHAPTER 16

DELIVERY AND SERVICING PLAN

16 DELIVERY AND SERVICING PLAN

16.1.1. This section provides a summary of the Delivery and Servicing Plan (DSP) which is included in **Appendix TA - AE** of this document.

16.2 DELIVERING AND SERVICING PROPOSALS AND MANAGEMENT

16.2.1. The Resort will be serviced from the Back of House (BOH) area located to the south of Gate One, to the east of the HS1 railway line and a second smaller servicing yard located at Bell Wharf to the rear of Gate Two. The servicing yards on-site will be linked around the resort via internal roads / connections from the servicing yards to the wider resort with a fleet of electric vehicles to allow for the transfer of goods to various locations with the Resort. The second servicing yard located at Bell's Wharf will see redeveloped of the existing Wharf to increase its potential capacity as this will enable deliveries to occur throughout the day to Kent Project Site.

16.2.2. Whilst the Proposed Development is not located within Greater London; this document has considered TfL's best practice guidance provided within the document 'Delivery and Servicing Plans: Making freight work for you'. There is no specific guidance published by KCC for developing Delivery and Servicing strategies, however given the nature of the Site and the Proposed Development, it is considered that the TfL document presents the best available framework against which the strategy should be developed. The strategy for the London Resort proposes a number of management measures that are grouped as follows:

- **Design** – outlines the main vehicular and river access, how the site will accommodate special deliveries, the location of the servicing yards and the security measures;
- **Operation Efficiency** – presents the delivery restrictions and enforcement, promotes the usage of a freight information portal, a servicing booking system to control the number of vehicles on-site, deliveries will be encouraged to arrive and depart out of hours and a consolidation centre will be located in the Port of Tilbury to improve reliability and efficiency;
- **Road Trip Reduction** – outlines how the resort will benefit from delivery and servicing via river barge from the consolidation site at PoTL and RD&E and Hotel outlets will be encouraged to use the same delivery companies for deliveries;
- **Waste Management** – the Resort will provide sufficient facilities, storage and collection of segregated waste and the Resort will promote waste collection outside of the peak hours; and
- **Complaints and Investigation Strategy** – outlines the procedure for dealing with formal complaints relating to the delivery and servicing movements.

16.2.3. The forecast trip generation for deliveries and servicing has been provided by ProFun, based on commercially sensitive data and standard practices to enable a robust estimate of the likely number of delivery and service vehicles that are expected. As outlined within chapter 1, ProFun are considered industry experts in the Theme park attraction sector.

16.2.4. Security for the servicing yards will be of significant importance to the Resort, technology will be implemented via the use of automatic number plate recognition (ANPR) or similar at security gate entrances to identify planned deliveries. This will be supported through the servicing vehicle booking/ management system to manage and schedule vehicle activity within the service yards and at the Port of Tilbury. This approach will avoid conflicts in delivery slots and improve the traffic management around each of the Project Sites.

Delivery & Service Vehicle Profile and Trip Generation

16.2.5. In order to account for the servicing strategy that seeks to reduce the impact on the highway network by delivery and servicing vehicles, the profile provided by ProFun has been adjusted to remove arrival and departures in peak periods. **Table 16-1** presents the adjusted profile, while **Table 16-2** presents the adjusted profile for a Friday in July.

Table 16-1: Delivery & Service Vehicles Arrival and Departure Profiles Readjusted to remove peak hour traffic

London Resort
Service Vehicle/Deliveries Arrival and Departure Profiles

Venue	Max	Arriving pre 8 am	8-9 am	9 -10 am	10-11 am	11-12 noon	12-1pm	1-2 pm	2-3 pm	3-4 pm	4-5 pm	5-6 pm	6-7 pm	7-8pm	8-9 pm	9-10 pm	10-11 pm	11:00p-12:00a	Departing Post Midnight
Service Vehicle Arrivals	62%	62%	0%	2%	2%	2%	2%	2%	2%	2%	4%	0%	2%	2%	2%	2%	5%	7%	
Service Vehicle Departures	37%	37%	0%	22%	2%	2%	2%	2%	2%	2%	2%	0%	4%	2%	2%	2%	4%	6%	7%
Service Vehicle On-Site	25%	25%	25%	5%	5%	5%	5%	5%	5%	5%	7%	7%	5%	5%	5%	5%	6%	7%	0%

Table 16-2: Service & Delivery Vehicles Arrival and Departure Readjusted to remove peak hour traffic

Peak Day / Peak Season Daily Vehicle Deliveries

Total Vehicle Deliveries 35

Venue		Arriving pre 8 am	8-9 am	9 -10 am	10-11 am	11-12 noon	12-1pm	1-2 pm	2-3 pm	3-4 pm	4-5 pm	5-6 pm	6-7 pm	7-8pm	8-9 pm	9-10 pm	10-11 pm	11:00p-12:00a	Departing Post Midnight
Service Vehicle Arrivals	22	22	0	1	1	1	1	1	1	1	1	0	1	1	1	1	2	2	0
Service Vehicle Departures	13	13	0	8	1	1	1	1	1	1	1	0	1	1	1	1	1	2	2

16.2.6. **Table 16-2** presents the forecast delivery profile with the readjusted profile to remove traffic from peak periods. The deliveries that are forecast to arrive throughout the day are likely to be via barge from the consolidation unit in the Port of Tilbury. This will minimise the impact on the highway network and allow for servicing of the Resort to occur throughout the day when required. As outlined earlier, the vast majority of vehicular servicing movements to the Resort will occur between 2300-0700.

16.3 ROUTING STRATEGY

Kent Project Site Vehicle Routing

16.3.1. Where deliveries cannot be made to the proposed marshalling yard at Port of Tilbury for delivery by river barge (for example perishable produce grown in Kent) The Kent Project Site will be accessed via the Strategic Road Network from the A2 Ebbsfleet junction . The primary route for delivery and servicing vehicles will be via the new access road on the northern arm located between the east bound on and off slip roundabout. A secondary route for delivery and servicing vehicles will be via the A2260, A2260 Ebbsfleet Gateway, A226 Thames Way/ A226, A226 Stonebridge Road, A226 Gallery Hill Road, A226 London Road and enter the Resort via what is currently known as Manor Way. This will only be used for local businesses to access the site rather than travelling around to access the resort corridor. **Figure 16-1** presents the primary and secondary delivery and servicing routes from the A2 exit.

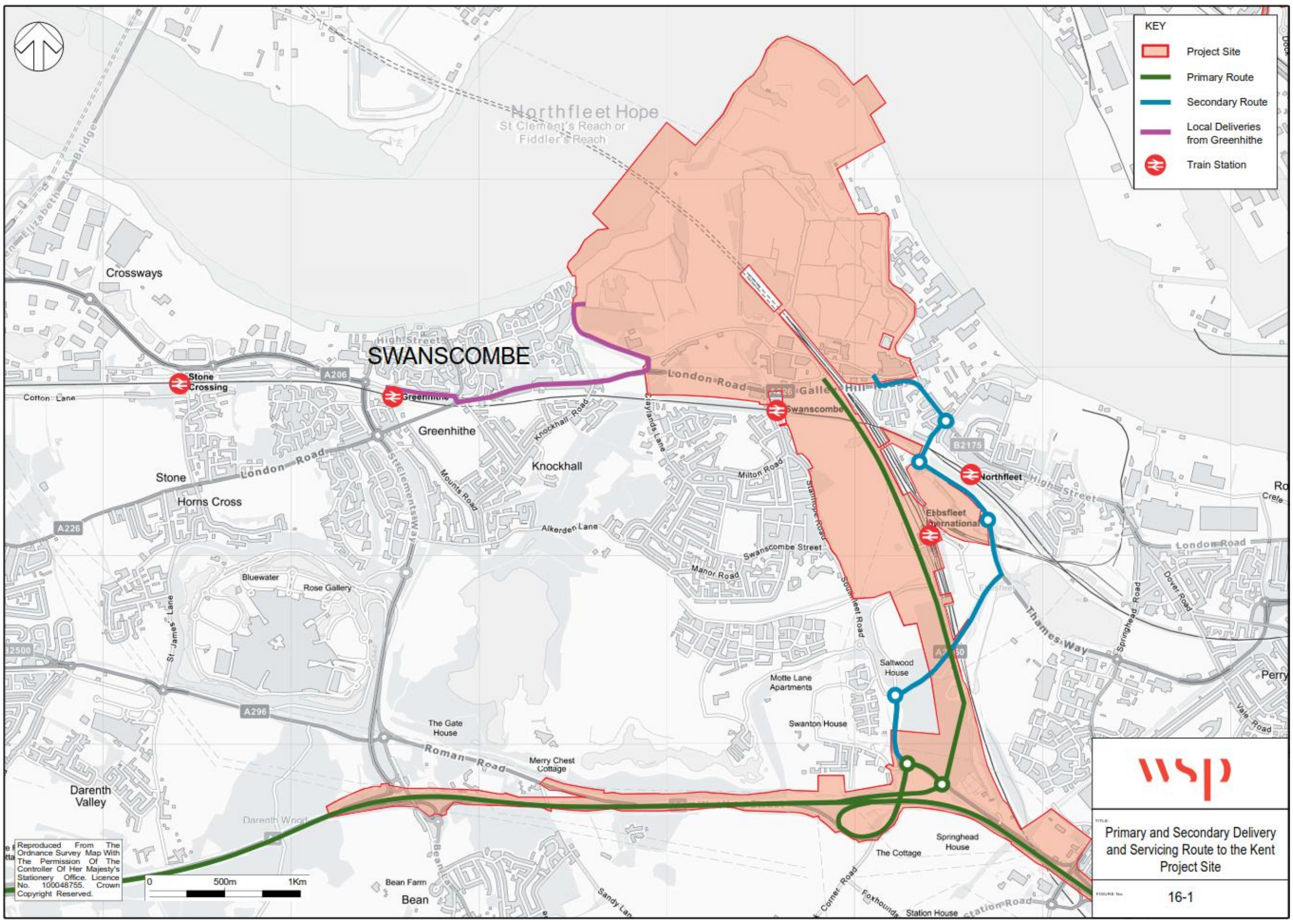


Figure 16-1: Primary and Secondary Delivery and Servicing Routes to The Kent Project Site

16.3.2. There are HGV restrictions on the local highway network in the vicinity of the London Resort, on the B259 Southfleet Road with a 7.5 tonne vehicle limit in operation, this is due to the railway bridge at Swanscombe Station and through Swanscombe High Street.

Essex Project Site Vehicle Routing

16.3.3. The Essex Project Site will be access via the Strategic Road Network via the A13 and A1089. **Figure 16-2** presents the delivery and servicing to the consolidation unit in the Port of Tilbury.

Figure 16-2: Delivery and Servicing Route to the Essex Project Site

16.3.4. There are no restrictions in the vicinity of this route for delivery drivers using the SRN and primary road network.

16.3.5. There will be a point of contact at the site who will enable residents or other local businesses to report any misuse or inappropriate route choice. This will allow the Resort to pro-actively approach suppliers and drivers to ensure they are aware of the route choices and strategy in place.

16.4 IMPLEMENTATION/ MONITORING AND UPDATING

16.4.1. The Resort will utilise firms who operate under the Freight Operation Recognition Scheme (FORS) as part of the servicing strategy. The London Resort will be responsible for informing supplies of delivery restrictions and implementing the booking/ management strategy on site. Additionally, the London Resort will ensure the site provides sufficient facilities for storage and collection of segregated waste in accordance with guidance contained in the LFP.

16.4.2. A programme of monitoring and review would be implemented to generate information by which the success of the Delivery and Servicing Plan can be evaluated against the objectives, outlined in chapter 2 of the Delivery and Servicing Plan. This will be co-ordinated with the Travel Demand Management Strategy monitoring processes.

16.4.3. A delivery and servicing survey will be undertaken after the site is occupied. The surveys will be undertaken simultaneously with the travel surveys associated with the implementation of the TDM Plan, where timescale permits. This process will be as follows:

- review the bookings system to understand the forecast number of movements;
- review the routes taken by the delivery and service vehicles to check they align with the routing strategy; and
- updating the strategy where appropriate following a review of the surveys taken annually, with a monitoring report provided to summarise the results of each survey for submission to the local planning authorities.

16.5 SUMMARY

16.5.1. The aim of the Delivery and Servicing Plan is to enable safe freight activity to and from The London Resort as well as on-site. The document aims to minimise the impact of delivery and service movements on the nearby highway network by a range of measures grouped into five groups; Design, Operational Efficiency, Road Trip Reduction, Waste Management and Complains and Investigation Strategy.

16.5.2. The location of the London Resort will allow for delivery and servicing to be undertaken by road and river; a consolidation unit will be acquired in the Port of Tilbury. This will allow for delivery and servicing to occur throughout the day as the majority of road-based delivery and servicing will be limited to arriving and departing between 2300-0700.

16.5.3. The routing strategy to the Kent and Essex Project Sites will be adopted to ensure that the HGVs follow an appropriate route that reduces any travel through sensitive areas and promotes the use of the strategic road network.

16.5.4. The London Resort will be responsible for implementing and enforcing the correct usage of the Delivery and Servicing Plan. A monitoring process will be undertaken annually, and the document will be 'live' and will be updated accordingly following the monitoring.

16.5.5. This plan will mitigate the impact on the local highway network from deliveries and service vehicles as well as provide best practice guidance for servicing and service vehicles.

CHAPTER 17

SUMMARY AND CONCLUSIONS

17 SUMMARY AND CONCLUSIONS

17.1 INTRODUCTION

17.1.1. WSP has been engaged to provide transport advice and input to the proposed development of the London Resort at the Swanscombe Peninsula, Kent; developing the transport, highway and infrastructure master plan for the development business case. WSP has since been commissioned to prepare supporting transport documents for the Development Consent Order (DCO) application which will include a suite of documents.

17.1.2. This Transport Assessment (TA) should be read in conjunction with a number of supporting Technical Notes which provide in-depth information on different aspects of assessment and have been used to evaluate the impacts of the development proposals. These are appended to this document.

17.2 SUMMARY

CONSULTATION / DCO PROCESS

17.2.1. This TA has outlined the consultation undertaken as part of the DCO process to date, engagement with statutory consultees, the responses WSP has received which have been incorporated, where applicable, into the assessment of the development proposals and helped inform the over-arching Transport Strategy.

POLICY CONTEXT

17.2.2. The policy and guidance documents presented in detail within chapter 2 have been used to influence and underpin the assessment of the Resort, ensuring that the methodology and analysis are compliant with local, national and regional policy as it relates to transport.

EXISTING CONDITIONS

17.2.3. Existing strategic and local highway accessibility has been reviewed north and south of the River Thames with consideration given to consented and proposed schemes, such as Tilbury2 and LTC, which will alter the existing transport conditions prior to and alongside the delivery of the London Resort.

17.2.4. The Kent Project Site is in proximity to four railway stations – Ebbsfleet International, Greenhithe, Swanscombe and Northfleet. Dartford and Gravesham are currently served by an extensive range of bus services, include Fastrack which operates between key public transport nodes and the proposed development, as well as Bluewater Shopping Centre.

17.2.5. The Essex Project Site is located in proximity to Tilbury Town Railway station and an existing bus service connects the station to the Port of Tilbury. Jetstream Tours operate an existing foot and bicycle passenger ferry between Tilbury and Gravesend, offering services 6 days a week all year.

17.2.6. The results of a parking study have been presented to demonstrate the key areas in which off-site parking might occur. An off-site parking strategy has been developed to manage the impacts of visitors or staff parking locally.

A detailed review of Personal Injury Accident (PIA) data has been undertaken and the analysis highlights that generally, several incidents involving cyclists have been recorded on A226 London Road; the transport strategy has been developed to minimise any increases in accidents that the proposed Resort vehicular trip generation could cause.

DEVELOPMENT PROPOSALS

17.2.7. The London Resort will be a next generation entertainment resort, it will comprise of a Gate 1 and Gate 2, a leisure core, entrance plazas, retail, dining and entertainment zone (RD&E – “the market”), a waterpark, a ‘conferention’ centre, approximately 3,550 hotel rooms and suites across four hotels and 500 units for staff living on-site, accommodating 2,000 staff members.

17.2.8. The London Resort will provide a dedicated Resort Access Road from the A2 Ebbsfleet junction, the access road will be a two lane in each direction dual carriageway and will link into the existing junction which will be upgraded to a signalised gyratory. The Resort will provide a new transport Interchange Plaza at the heart of the Resort, integrating a People Mover with Fastrack and local bus services arriving from Ebbsfleet International and travelling on to a new ferry terminal at the London Resort jetty.

17.2.9. The London Resort will provide up to 10,000 visitor car parking spaces once the Resort reaches maturity in 2038. These will be split 75:25 between the Kent and Essex Project Site – a proportion based on the UK Home Origin of visitors and their expected route to the Resort. Visitors who park at Tilbury will be transferred to the Resort via ferry. This access strategy will minimise vehicular trips generated by the Resort from having to utilise the Dartford Crossing in order to reach the site.

17.2.10. The coach parking will provide up to 200 spaces with a range of short and long stay spaces this will be split 75:25 between the Kent and Essex Project Site. The staff parking will be provided at the Kent Project Site only, within the back of house area, and will have a capacity of up to 500 spaces. The Resort will provide sufficient cycle parking to meet local cycle standards, to be defined through the detailed stage, and space has been reserved for this.

17.2.11. The ProFun, Volterra and LDP research and analysis was based on the development proposals outlined above. The data presented by industry experts underpins the Transport Assessment and primarily forecasts the trip generation, distribution and arrival/departure profile for visitors and staff to the Resort for each of the assessment years.

TRIP GENERATION

17.2.12. The visitor demand for the London Resort was provided by industry experts and WSP translated these figures into vehicle movements based on the robust vehicle mode share. The assessment of the London Resort will be based on the 85th%ile day in terms of visitor demand at the Resort. This is a day occurring during the peak operating period in the summer months but would still be occurring during school term time (worst case).

17.2.13. The total two-way vehicle demand in the PM peak commuter peak from The London Resort is 876 in 2025, 1,181 in 2029 and 1,639 in 2038 on the 85th %ile Day, this accounts for both visitor and staff demand. These development flows have been taken forward for inclusion within the strategic, VISSIM and local junction modelling assessments included in this Transport Assessment.

TRIP DISTRIBUTION

17.2.14. In order to calculate the likely trip distribution for visitors to the London Resort and ascertain the level of attraction relative to their location from the site, a trip distribution model has been developed and calibrated using population data from the 2011 Census, grouped by distance travelled from home origin to site.

17.2.15. The Gravity Model has been used to calculate the trip distribution for day visitors travelling from a UK home origin to The London Resort on the day of travel. The Gravity Model has also been used to calculate the distribution associated with visitors whose sole purpose of visiting the London Resort is the Retail, Dining & Entertainment zone.

17.2.16. Likely staff trip distribution associated with The London Resort has been calculated using Journey to Work (JTW) data available from the 2011 Census and has been analysed as the most suitable and relevant information regarding staff travel patterns in the local area and in other areas containing comparable sites.

17.2.17. The trip distribution methodology for visitors is based on:

- LDP market analysis providing the visitor breakdown of UK / Domestic, European and International;
- a detailed review of anticipated visitor home origins for UK visitors based on the construction of a validated trip distribution model;
- analysis of the likelihood for overnight stay of all visitors based on home origin distance to The London Resort and domestic/international overnight visitors' statistics;
- a breakdown of existing temporary accommodation availability in the surrounding area and likely distribution relative to The London Resort; and
- assessment of the likely distribution on the day of travel to The London Resort to ascertain the visitor day trip origin;

17.2.18. Staff trip distribution to The London Resort site has been taken from Volterra's staff distribution note which uses:

- an evaluation of the staff trip distribution based on Journey to Work Data from the most recent data from Census 2011 at the MSOA level; and
- appraisal of staff distribution for similar amenities in England with and evaluation of the anticipated London Resort staff distribution based on expected distance travelled by Local Authority in the surrounding area.

MODE SHARE

17.2.19. To calculate the likely mode shares expected for visitors and staff to the Resort, a number of assessments have been undertaken, ranging from a worst case (in terms of high numbers of vehicles) to those that incorporate travel behaviour as well as other variables, such as cost and travel demand measures.

17.2.20. The Base mode shares set out in TN3 (Appendix TA-O) outline what the mode shares could be if the car parking on site was utilised to its maximum. This approach largely ignores any existing travel choices available for non-London visitors and assumes that people will drive where possible. TN3 sets out further assessment of London based trips as it is recognised that the travel options and behaviours from those users are likely to be different from rest of the UK.

17.2.21. The TN3 base mode shares have been used in the modelling for capacity and highway impact assessments as it represents the worst case, and therefore highest demand expected on the site.

17.2.22. TN4 (Appendix TA-P) builds upon the work in TN3 but applies further assessment and analysis to look at the likely shift in mode that could occur to visitors and considers the future mobility and accessibility to public transport and active travel. WSP's Future Mobility team has developed a bespoke tool for estimating key mode shares for each person group. The mode share estimation tool calculates the potential baseline mode share for seven unique person groups, across ten modes. The key modes included are private vehicles, non-public transport modes, river, rail, bus, and active modes.

17.2.23. These mode shares have been used in the non-vehicular mode assessments (public transport etc) as they represent the likely uptake of those modes and therefore should be used in the tests against existing capacity.

17.2.24. Finally, a review of the potential and aspirational mode shares that could occur following the implementation of the Travel Demand Management Plan (Appendix TA-C) has been undertaken. This provides a series of measures for both visitors and staff alike, which will have the goal to reduce reliance on private vehicle use where possible. These targets are set out for information at this stage and will be reviewed as the site develops.

HIGHWAY MODELLING METHODOLOGY

17.2.25. Analysis undertaken within TN1 (Appendix TA-M), TN2 (Appendix TA-N) and TN3 has been combined to determine the full hourly arrival and departure distribution profile, at a local authority level, for the 85th percentile day in each assessment year. Online journey planning tools were used to determine origin-destination routes to/from the Resort and input the resulting trip generation and distribution, into traffic flow diagrams.

17.2.26. Using inputs from the A2B2 strategic model, traffic count data, LTC forecasting report, TEMpro growth factors and 2018 Road Traffic Forecasts, a spreadsheet-based model has been developed for use in determining the local and strategic highway impacts of the proposed London Resort visitor and staff demand. The spreadsheet model has been used to provide Air Quality and Noise (AQ&N) outputs to Buro Happold to inform their environmental assessment.

17.2.27. Highways England's A2BE operational VISSIM model was developed by Atkins and obtained by WSP for use in assessing proposed London Resort development flows. The Micro-Simulation model will be used to assess the operation of the proposed junction improvements and access to the dedicated Resort Access Road in each of the outlined assessment years.

17.2.28. Local junction models, in the form of ARCADY, PICADY and LinSig have been built to represent junctions along key transport corridors that are likely to see a change in operational capacity with the additional of The London Resort development flows.

17.2.29. Merge and diverge assessment have be undertaken on on-slips and off slips of the strategic road network to determine the impact of the London Resort development flows at these locations.

WALKING AND CYCLING STRATEGY

17.2.30. A site visit and transport audit were undertaken in September 2020 to observe existing walking and cycling conditions, identify barriers opportunities and recommendations for inclusion in the transport strategy and review the active and sustainable accessibility of the Kent and Essex Project Sites

17.2.31. This active travel strategy highlights the barriers to and opportunities for active travel, identified through the site audits and data analysis, to provide a joined up cohesive route for staff and visitors accessing The London Resort. Where achievable, the active travel strategy proposals for the London Resort follow the design guidance outlined in LTN 1/20 for active travel infrastructure, as noted in the Summer 2020 consultation responses.

17.2.32. It is proposed that the crossing facilities at the London Road / High Street / Pilgrims Road are upgraded for pedestrians and cyclists accessing the main active travel entrance of the Resort. West of the Kent Project Site, it is proposed that two alternative routes to London Road will be proposed with obligation from LRCH to help fund improvements such an upgrading of routes, signage, wayfinding, lighting and security to be secured as part of the Section 106 agreement, with an access provided in the vicinity of Titman Avenue and Manor Way, together with a route from the south of A226 London Road serving the staff accommodation.

17.2.33. East of the Kent Project Site, Thames Way has been identified for improvement with the incorporation of a footway-level cycle track along the north bound carriageway which would connect residential areas south east of the Resort to Ebbsfleet International Station and the dedicated off-road active travel route between the station and the main interchange plaza.

17.2.34. At the Essex Project Site, it is proposed that the existing advisory cycle lane on Montreal Road is improved with additional implementation of further advisory cycle lanes on Dock Road and Calcutta to support trips from visitors and staff living in Tilbury or arriving by rail into Tilbury Town station to cycle to the Ride and Glide facilities.

PUBLIC TRANSPORT STRATEGY

17.2.35. It is recognised that public transport must play a major role in facilitating the movement of both visitors and staff to and from the London Resort as a key element in ensuring sustainability and addressing future potential traffic congestion issues in the area. A public transport strategy has been developed to facilitate the expected demand associated with visitors and staff to the proposed London Resort.

17.2.36. From the perspective of passenger rail services, the franchise operator is currently Southeastern (SE), whose franchise is responsible for both local train services in the Kent Thameside area (including the North Kent Line) and domestic high-speed trains on High Speed One (HS1). Discussions are on-going with SE, HS1 and Network Rail with regard to the required infrastructure improvements necessary to accommodate trips to and from the Resort (primarily work at Ebbsfleet International Station) and any requirements for additional rolling stock to support the demand forecasts.

17.2.37. A dedicated high frequency People Mover system will be provided to transfer visitors from Ebbsfleet International Station to the Resort using a new road-based connection, which will not be open for public usage.

17.2.38. In relation to bus-based public transport, Kent County Council already has proposals for the continued development of the Bus Rapid Transit service (‘Fastrack’), and negotiations are on-going with regard to future routeing and required capacity, including diverting one of the services to operate via the dedicated link between Ebbsfleet International Station and the main entrance to the Resort, as well as providing a direct connection between the Resort and Greenhithe Station.

17.2.39. Additionally, there will be a key role for the network of local bus services, primarily operated by Arriva, which is being developed, in particular for the 480/490 services, which connect Dartford with Gravesend and the Gravesham area passing close to the main entrance to the Resort. Other local bus services are being considered for enhancement in order to provide connections either to the Resort itself or to Ebbsfleet International Station, where transfers to either the People Mover or to Fastrack are easily achieved.

17.2.40. For the Tilbury area, it is envisaged that direct bus links will be provided from the surrounding areas of Grays with an improvement to the connection between Tilbury Town Station and Tilbury Ferry terminal.

17.2.41. It is considered that the 75-minute high-speed river service from central London to The London Resort will offer a sustainable alternative to private vehicle or rail trips for visitors with a UK Home Origin within London, or international tourists staying in hotels within London boroughs. The Park and Glide service will provide a cross-river shuttle between Tilbury and The London Resort enabling the efficient transportation of visitors choosing to arrive at Tilbury Town station or park within the proposed car park at the Port.

PARKING STRATEGY

17.2.42. The London Resort will seek between 10,000 visitor spaces at the site in total as part of the DCO. It is important to note that at opening, the Proposed Development will have approximately 5,000 visitor spaces. This will increase in line with uptake in visitor numbers up to a maximum of 10,000 spaces.

17.2.43. LRCH are committed to developing world leading mobility strategies at the London Resort, and whilst some car parking will be provided, it is the intention that reliance on private vehicle is kept to a minimum wherever possible and feasible.

17.2.44. Car parking and coach parking numbers form part of the DCO application and therefore are a fixed number. No more than 10,000 visitor car park spaces and no more than 200 coach parking bays will be permitted as part of the Proposed Development.

17.2.45. As part of the parking strategy, a review of both on-site and off-site parking implications has been undertaken. A monitoring process will be established to consider off site parking and identify whether any changes in demand arise which may be attributable to the Resort. In the event that this is shown to occur measures will be implemented to prevent this such as the introduction of a phased Controlled Parking Zone, this will be funded through the Section 106.

DEVELOPMENT IMPACT

17.2.46. In 2038, when the Resort is forecast to reach maturity, approximately 75% of traffic from Swanscombe will use the A2 westbound to access the M25 and from there the wider strategic road network. The remainder will use local roads to access sites in and around Gravesham and will use the A2 eastbound to access Kent.

17.2.47. Using the A2BE micro-simulation model, a VISSIM model has been developed to assess the A2 Ebbsfleet junction roundabouts and determine the impacts on journey times and queueing within the vicinity of the Kent Project Site. The implementation of the dedicated Resort Access Road and proposed access junction improvements minimise the impacts that the Resort demand has on the highway network and improves the journey time and queueing for vehicles accessing Ebbsfleet via the A2 eastbound on and off slips.

17.2.48. The individual junction assessments of the four main junctions forecast a negligible impact at three of the junctions. It proposed to provide part signalised junction at the Asda Roundabout to reduce the impact of the development traffic and forecasts significant improvement in the junction operation compared to the Tilbury2 mitigation scheme.

17.2.49. The merge diverge assessments along the key corridors of concern forecast that the development flows from the Resort have little or no material impact on the provision provided for the majority of assessments. The merge diverge locations where the development traffic forecasts a change in provision it is worth understanding that the purpose of the DMRB CD122 guidance is to provide guidance on investment decisions at new junctions.

17.2.50. It is important to recognise that given the existing industrial site uses, which will make way for the Proposed Development, there will be a net reduction in traffic arising from the Resort rather than a gross increase.

TRAVEL DEMAND MANAGEMENT PLAN

17.2.51. The Travel Demand Management (TDM) Plan outlines a comprehensive and flexible approach to managing the travel demands of key audiences that will travel to and from the London Resort.

17.2.52. The TDM focuses on demand-side measures, designed to help optimise transport and mobility networks by influencing how and when people travel to and from the Resort. The measures set out in the TDM are drawn from a review of international best practice and considering the context and wider transport evidence base for the London Resort. This includes use of marketing communications, ticketing options, Resort operations, journey planning advice and measures to proactively manage car-based travel.

17.2.53. The TDM measures outlined in the document, for the most part, scalable in response to changing travel patterns and demands over time. This means as the TDM is delivered there will be opportunities to shape the exact detail and scale of each measure as required, informed by monitoring data and feedback from site users. Specific measures that are proving particularly effective could then see further investment to scale up their application or embrace new and enhanced technologies or services that emerge over time. Similarly, measures which prove less effective or popular with Resort visitors and employees can be scaled back or revised, informed by the evidence.

17.2.54. This represents an approach to TDM planning that is Future Ready – whereby measures are identified at this stage ahead of Resort opening but in recognition of rapidly changing social and transport trends that may influence travel demands and behaviours in the future. The TDM should retain flexibility to adapt and introduce new, presently unknown, measures that may provide highly effective in managing travel demands at a future point.

17.2.55. Travel patterns and transport impacts associated with the Resort will naturally change over time and gathering a comprehensive and robust evidence base will be important for on-going decision-making and investment in supporting measures. The TDM has set out indicative interim targets for visitors that will be reviewed over the implementation of the resort. The use of those targets in the analysis of parking demand has shown that measures and initiatives in place would have a positive benefit for retiming trips and encouraging modal shift away from private vehicle use.

CONSTRUCTION AND MANAGEMENT PLAN

17.2.56. The Construction Traffic Management Plan has been drafted to minimise the impact of construction traffic on the highway network, the aim will be to provide up to 80% of material via the River with the remaining 20% travelling on the highway network. The HGV construction routing will require minimal use of the local highway network, with all vehicles access required to access the Kent Project Site will utilise the A2 Ebbsfleet International exit. Construction vehicles associated with the Essex Project Site will be required to utilise the A1089 towards the Port of Tilbury.

17.2.57. From the worker job creation perspective, work undertaken by Volterra has identified that between 3,500 – 6,000 roles will be required during the peak construction period. This will reduce during later stages of the buildout. As a worst case for travel generation purposes during the peak construction period, allowance has been made for 6,000 construction workers to be present each day at the London Resort.

17.2.58. It is planned that 25% of the construction workers will live on-site during the week, the remaining 75% will be Daily Commuter construction workers. Impact.

17.2.59. The TDM plan will be implemented by the London Resort; this will outline a range of measures to encourage the use of public transport, promote active travel and minimise single occupancy car trips. The TDM plan will be a 'live' document which will be updated accordingly following monitoring.

17.2.60. The Construction Traffic Management Plan aims to reduce the impact of construction traffic on the highway network.

DELIVERY AND SERVICING PLAN

17.2.61. The aim of the Delivery and Servicing Plan is to enable safe freight activity to and from The London Resort as well as on-site. The document aims to minimise the impact of delivery and service movements on the nearby highway network by a range of measures grouped into four groups; Design, Operational Efficiency, Road Trip Reduction, Waste Management and Complains and Investigation Strategy.

17.2.62. The location of the London Resort will allow for delivery and servicing to be undertaken by road and river; a consolidation unit will be acquired in the Port of Tilbury. This will allow for delivery and servicing to occur throughout the day as the majority of road-based delivery and servicing will be limited to arriving and departing between 2300-0700.

17.2.63. The routing strategy to the Kent and Essex Project Sites will be adopted to ensure that the HGVs follow an appropriate route that reduces any travel through sensitive areas and promotes the use of the strategic road network.

17.2.64. The London Resort will be responsible for implementing and enforcing the correct usage of the Delivery and Servicing Plan. A monitoring process will be undertaken annually, and the document will be 'live' and will be updated accordingly following the monitoring.

17.2.65. This plan will mitigate the impact on the local highway network from deliveries and service vehicles as well as provide best practice guidance for servicing and service vehicles.

17.3 CONCLUSION

17.3.1. This TA has presented the impacts of the proposed London Resort development on the local transport networks through the assessment of visitor and staff demand during the traditional AM and PM peaks at four key phases of the build-out timeline: 2020, peak construction year; 2025, Gate One opening; 2029, Gate Two opening; and, 2038, when The London Resort is forecast to reach maturity.

17.3.2. The existing conditions surrounding the Kent and Essex Project Site have been thoroughly reviewed to consider the current accessibility of the site by highway, public transport and active modes of transport. Site visits and observations have helped to determine current barriers to sustainable and active travel within the vicinity of the site and influenced the development of the Public Transport and Active Travel Strategy. A parking study revealed the key areas for consideration in the Off-Site Parking Plan, developed to address concerns of local residents about visitors or staff parking locally and walking to the resort.

17.3.3. Information supplied to WSP by the industry experts (LDP, ProFun and Volterra) underpins the transport assessment and the trip generation, trip distribution and mode shares for the 85th percentile day, in each of the assessment years have been determined using this analysis.

17.3.4. A worst-case private vehicle mode share, determined using a car park accumulation exercise, has been used to assess the impacts of the London Resort demand on the local and strategic highway network within the vicinity of the Kent and Essex Project Sites. Whilst it is acknowledged that the Resort will generate significant increases in vehicles, the dedicated access road and improvements proposed at the A2 Ebbsfleet junction roundabouts mitigate impacts on journey times and queueing, not impacting the safety of the existing junction operation.

17.3.5. A Walking and Cycling (Active Travel) Strategy has been developed to outline proposed improvements to pedestrian and cyclist routes north, east, south and west of The London Resort and as part of the Section 106 agreement, LRCH will seek to help fund improvements and upgrades to existing facilities in order to ensure provision of a cohesive and connected active travel network, in line with LTN 1/20 guidance. The strategy proposes improvements that will overcome some of the barriers to active travel that were identified through research, site audits and the PIA data. The dedicated off-road walking and cycling route between Ebbsfleet International Station, the Resort and London Resort jetty will overcome the barrier of the existing railway line and upgrades to routes west of the Kent Project Site will help to overcome the barrier of London Road and further encourage the use of active travel as a mode of transport.

17.3.6. In order to determine suitable mitigation strategies for public transport, the potential impacts on rail, bus and river have been assessed and presented within this TA. A comprehensive provision of additional bus service provisions or diversions is proposed to accommodate the transporting of people from rail stations or ferry terminals to The London Resort, in addition to benefitting staff or visitors whom live locally.

17.3.7. To support the Active Travel Strategy and the Public Transport Strategy, a Travel Demand Management (TDM) Plan has been developed to outline measures to influence how and when people will travel to/from the Resort; the TDM Plan provides methods to encourage sustainable and active modes of transport and it also encompasses strategies to prevent travel during the most congested times on the highway network – the traditional AM and PM peaks. Under a robust and effective management structure, the TDM Plan will successfully deliver the measures and achieve the plan’s vision and desired outcome, in addition to supporting LRCH in creating the most sustainable the park destination in the World that is net carbon neutral in operation.

17.3.8. With the dedicated access road and proposed junction improvements at the A2 Ebbsfleet access roundabouts, The London Resort trip generation will have a negligible impact on journey times along the A2 and will improve journey times for vehicles accessing and egressing the A2 eastbound.

17.3.9. As part of the development proposals and the wider strategy documents, The London Resort will contribute towards the upgrading and improving of the local walking and cycling network and the proposed new connection between Ebbsfleet International Station and London Resort jetty has the potential to benefit visitors/staff to the Resort in additional to local residents or commuters wishing to use the new ferry service. The enhanced bus connections set out within the bus strategy will further enhance connectivity between rail stations, places of work and residential areas within Dartford, Gravesham and north of the river in Thurrock.

17.3.10. The London Resort will provide a significant boost to the economy in the region as well as providing an enhancement to the Public Transport systems in the area, that benefit local residents as well as visitors and staff to the Resort.

17.3.11. The highway modelling has assessed a worst-case private vehicle mode share using car-park accumulation however it is considered that through the measures outlined in the Active Travel Strategy, Public Transport Strategy, Off-Site Parking Plan and the TDM Plan, vehicle mode shares can be brought closer to the targets identified and incentives to influence travel outside of the peaks will further improve impacts.

17.3.12. It has been demonstrated that the objectives and aims of local and national policy can be met by the Proposed Development and overall this Transport Assessment demonstrates that, with the introduction of specific and tailored highway improvements, the highway network can accommodate the additional traffic associated with the Proposed Development. Any impact will be further reduced by the implementation of a robust and specific Transport Demand Management Plan and other supporting Plans.

17.3.13. In conclusion, in accordance with the NPPF, it has been demonstrated that the residual cumulative impacts of the Proposed Development would not have a ‘severe’ impact in terms of transport matters.

Appendix TA - A

LDP SUPPORTING INFORMATION

PUBLIC

Appendix TA - B

MR PROFUN SUPPORTING INFORMATION

PUBLIC

Appendix TA - C

VOLTERRA SUPPORTING INFORMATION

PUBLIC

Appendix TA - D

HIGHWAYS ENGLAND CONSULTATION RESPONSES

PUBLIC

Appendix TA - E

KENT COUNTY COUNCIL CONSULTATION RESPONSES

PUBLIC

Appendix TA - F

ACTIVE TRAVEL MODES SITE AUDIT TECHNICAL NOTE

PUBLIC

Appendix TA - G

PERSONAL INJURY ACCIDENT (PIA) DETAILED ANALYSIS

Appendix TA - H

STAKEHOLDER ADVISORY TECHNICAL DOCUMENT (SATD)

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PEOPLE MOVER OPTIONS APPRAISAL

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Appendix TA - J

ACCESS TECHNICAL NOTE

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Appendix TA - K

ACCESS DRAWINGS

PUBLIC

Appendix TA - L

PARKING PROPOSALS

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Appendix TA - M

TECHNICAL NOTE 1 (TN1) – TRIP GENERATION

PUBLIC

Appendix TA - N

TECHNICAL NOTE 2 (TN2) – TRIP DISTRIBUTION

PUBLIC

Appendix TA - O

TECHNICAL NOTE 3 (TN3) – MODE SHARE

PUBLIC

APPENDIX TA - P

TECHNICAL NOTE 4 (TN4) – FUTURE MOBILITY

PUBLIC

Appendix TA - Q

TOTAL VEHICLE TRIP DISTRIBUTION

PUBLIC

Appendix TA - R

LONDON RESORT TRAFFIC FLOW DIAGRAMS

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Appendix TA - S

SPREADSHEET MODELLING METHODOLOGY NOTE

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Appendix TA - T

LONDON ROAD / HIGH STREET PEDESTRIAN / CYCLE CROSSING

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Appendix TA - U

RAIL STRATEGY PLAN

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Appendix TA - V

BUS STRATEGY PLAN

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Appendix TA - W

UBER BOATS BY THAMES CLIPPER OPERATIONAL PROPOSAL

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Appendix TA - X

CAR PARKING ACCUMULATION

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Appendix TA - Y

OFF-SITE PARKING PLAN

Appendix TA - Z

MICROSIMULATION IMPACT

PUBLIC

Appendix TA - AA

JUNCTION ASSESSMENTS

PUBLIC

Appendix TA - AB

MERGE/DIVERGE ASSESSMENTS

Appendix TA - AC

TRAVEL DEMAND MANAGEMENT PLAN

PUBLIC

Appendix TA - AD

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

PUBLIC

Appendix TA - AE

DELIVERY AND SERVICING PLAN

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