Appendix TA - U

RAIL STRATEGY PLAN

PUBLIC

London Resort Company Holdings

THE LONDON RESORT RAIL STRATEGY

DECEMBER 2020

PUBLIC

London Resort Company Holdings

THE LONDON RESORT RAIL STRATEGY

PUBLIC

PROJECT NO. 70063529

DATE: DECEMBER 2020

WSP

WSP House
70 Chancery Lane
London
WC2A 1AF

Phone: +44 20 7314 5000

Fax: +44 20 7314 5111

WSP.com

QUALITY CONTROL

Revision	Description	Issued by	Date	Approved
00	Issue for DCO Submission	OL / JP / DD / IF	24/12/2020	WSP/LRCH

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

1.1 BACKGROUND AND STRUCTURE

1.1.1. Rail is a core component of our public transport strategy and, due to the proximity to the High Speed One (HS1) railway line, represents the fastest way to get to the Resort from central London among other key destinations in the South East. Our 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 and staff demand. The section outlines the current provision of rail services around the Resort site, our core and phased strategy, detail regarding stakeholder engagement, our forecast rail visitor and staff demand and a full description of our modelling methodology.

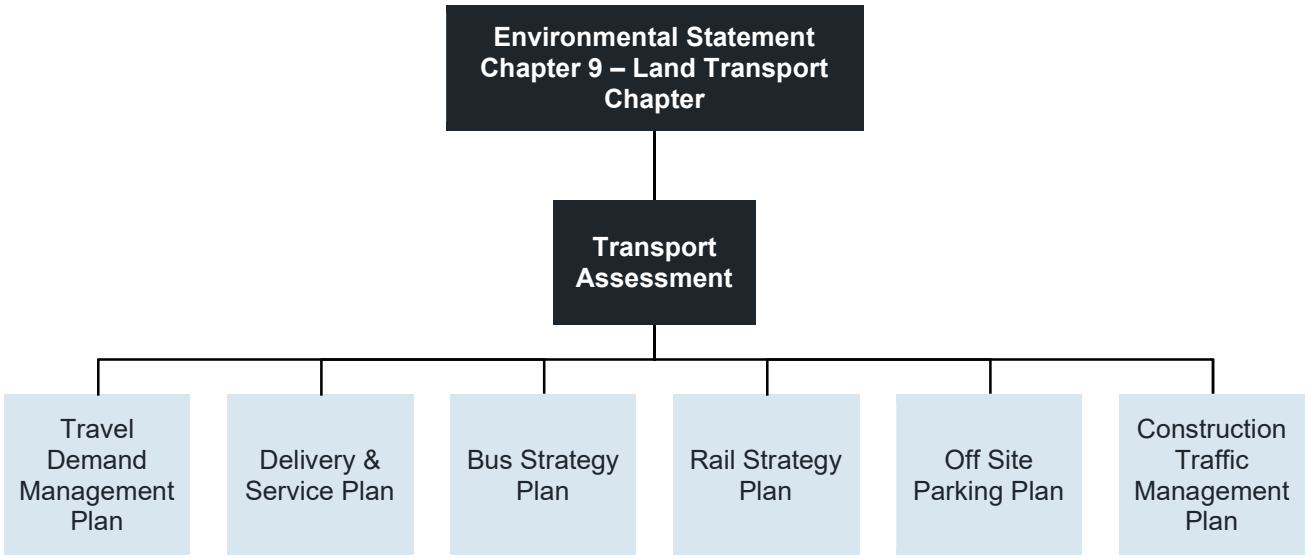
1.1.2. The network around the Resort site has **three key stakeholders** who have been engaged with this process throughout and whose concerns and priorities regarding capacity are critical to the success of the rail access strategy. The three stakeholders are:

London & South Eastern Railway Limited (Southeastern), the main Train Operating Company (TOC) along the line of route to the Resort;
High Speed One Limited (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.

1.1.3. 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 and therefore our analysis and decision-making process has been closely aligned with them and the other stakeholders in a joined-up industry approach. Further information about our engagement with stakeholders is detailed below.

1.1.4. The Rail Strategy is part of a suite of documents which address the transport impacts of the Proposed Development and identify where mitigation measures are required.

1.1.5. The suite of documents are headed up by the ES Chapter 9 – Land Transport (document reference 6.1.9). The following figure shows the relationship between the Land Transport Chapter of the ES, the Transport Assessment and the suite of transport management plans and strategies.



1.1.6. 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.

1.1.7. 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.

1.1.8. 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.

1.1.9. 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.

1.1.10. 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).

1.1.11. 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.

1.1.12. The document presents the expected provisional rail demand, pulling together information from TN1,2,3,4 and the Future Mobility Mode Share Model and the assumptions behind the numbers.

1.2 CURRENT NETWORK AND SERVICES

1.2.1. The current rail network around the site can be seen in the network diagram in Figure 1, with the access points being promoted as part of our rail strategy marked in red. These 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 services south of the river.

International Services

1.2.2. At the time of writing, there are no calls at Ebbsfleet International on international passenger services due to fallen demand post-COVID-19 however it is anticipated that these services may resume once demand has demonstrated a recovery. Prior to 2020, Ebbsfleet International was served by Eurostar International Limited (Eurostar), primarily as an outer London hub for UK-based passengers travelling to Paris or Brussels for business or leisure. Ebbsfleet International saw the following average weekday Eurostar services:

- 6 trains per day towards Paris;
- 3 trains per day towards Lille and Brussels (one also via Ashford);
- 1 train per day towards Marne-La-Vallée (Disneyland Paris).
- 9 trains per day from Paris (with irregular day-of-week stopping patterns);
- 5 trains per day from Lille and Brussels (two also via Ashford); and
- 1 train per day from Marne-La-Vallée (Disneyland Paris) with an extra on public holidays.

1.2.3. Ebbsfleet International did not see direct connectivity to Amsterdam Centraal or services further south in France. Eurostar is not a franchised rail operator, and it responds commercially to the opportunities which it perceives. It is envisaged that international visitors to the Resort will grow in numbers in the post-2029 period.

Domestic Services: London, Tilbury and Southend Railway

1.2.4. Domestic passenger services along the London, Tilbury and Southend Railway (LTSR) are currently provided by Trenitalia c2c Limited (c2c). Access to the Resort will be provided by a shuttle between Tilbury Town Station and Tilbury Docks, and a ferry service from Tilbury Docks to the Resort. This ferry service is also the "Park & Glide" service for road users north of the River Thames. The typical off-peak service to Tilbury Town consists of **2 trains per hour (tph)** in each direction:

- 2 tph to London Fenchurch Street via Ockendon; and
- 2 tph hour to Southend Central.

1.2.5. Peak services also connect beyond Southend to Shoeburyness. We envisage only a small number of people accessing the Resort by rail at Tilbury town (max 50 per hour).

Domestic Services: North Kent Line

1.2.6. Domestic passenger services along the North Kent Line (NKL) are currently provided by Southeastern and Govia Thameslink Railway (Thameslink) and run through Greenhithe, Swanscome and Northfleet. With the exception of a few services at peak times, all trains stop at these stations. The typical off-peak service to these three stations consists of **4 trains per hour (tph)** in each direction:

- 2tph (Southeastern) to London Charing Cross Semi-fast service via Sidcup;
- 2tph (Southeastern) to Gravesend;
- 2tph (Thameslink) to Luton via Greenwich, London Bridge, St Pancras International and Luton Airport; and
- 2tph (Thameslink) to Rainham.

Domestic Services: HS1

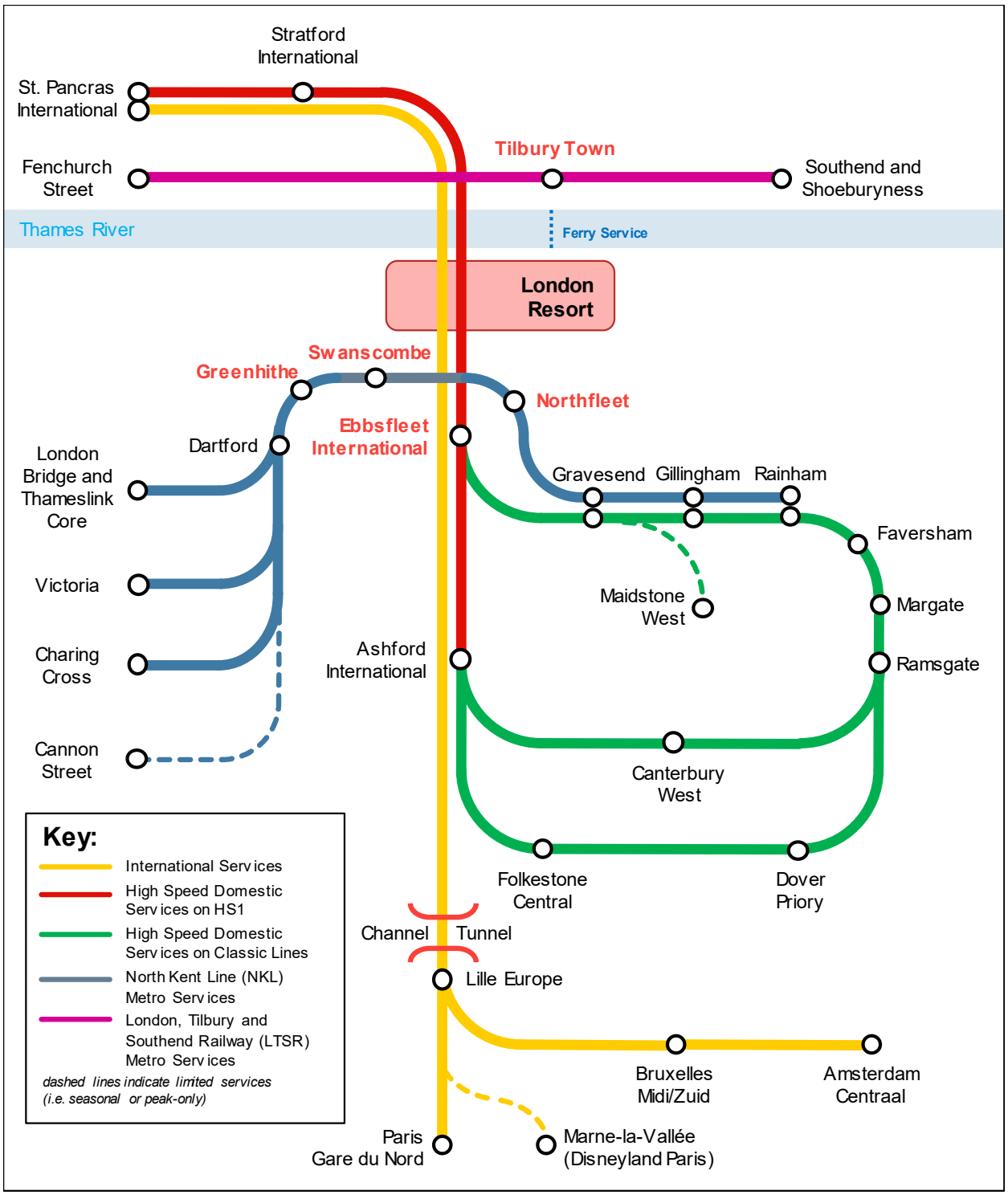
1.2.7. Domestic passenger services along HS1 are also provided by Southeastern, all of which currently continue on to the conventional railway network in and around Kent. With the exception of a few services at peak times, all trains stop at Ebbsfleet International. Trains stop at both Low Level Platforms 1 & 2 and High Level Platform 5 & 6. With the exception of a few services at peak times, all trains stop at Ebbsfleet International. The typical off-peak service to Ebbsfleet International consists of **4 trains per hour (tph)** in each direction:

- 4 tph to St Pancras International (2 tph from each Low and High platforms) via Stratford International;
- 2 tph to Faversham with 1 tph continuing to Ashford via Ramsgate and Dover;

- 1 tph to Margate via Ashford International and Canterbury West; and
- 1 tph to Dover Priory via Ashford International and Folkestone Central continuing to Gravesend via Ramsgate and Faversham.

1.2.8. It is to note that many of these services run a 'loop' around Kent and return back to St Pancras International.

Figure 1: Current Railway Network Access to London Resort



UK Franchise Environment

1.2.9. The operation of domestic passenger services in the UK is awarded based on competitive tender procured by the Department for Transport (DfT) known as franchises. These contracts are typically between 7 and 10 years long and operate a timetable largely specified by the DfT in consultation with stakeholders as part of a Train Service Specification (TSS) and incorporates forecast background growth levels. Under these contacts, the operator takes revenue risk: it collects farebox revenue and pays the DfT contracted franchise payments. The two domestic passenger service operators relevant to the Resort are:

- 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 and HS1 infrastructure; and
- Trenitalia c2c Limited (c2c) are the current operators of the Essex Thameside Franchise until their contract expires on 10 November 2029.

1.2.10. Eurostar is not a franchised rail operator, and it responds commercially to the opportunities which it perceives. In original discussions with Eurostar, they are open to providing more international passenger services to Ebbsfleet once demand for this has been demonstrated. It is envisaged that international visitors to the Resort will grow in numbers in the post-2029 period.

1.2.11. Due to the ongoing response to COVID-19 and the significant loss of demand to the rail network, these operators are currently operating under Emergency Recovery Measures Agreements (ERMAs). This changes the risk mechanism towards a concession-style management or cost contract in which the DfT takes revenue risk and the operator is paid a small management fee for running the service. While unconfirmed, given the ongoing political debates and reviews of the UK rail franchising system, it is anticipated that a concession-style management or cost model will be adopted in the long term going forward.

Background Growth and Forecast Changes

1.2.12. Between the time of writing and the opening of the Resort, background growth and associated capacity upgrades are expected to occur along and around the rail network and stations that serve the Resort. This is primarily driven by background housing and employment growth in and around Kent and the necessary increase in domestic passenger services, including the procurement of new rolling stock. This could be, for example, new services to new destinations (such as Hastings) or the strengthening of existing train services (by way of additional frequency, or lengthened rolling stock). While the business case for these services and associated rolling stock requirement is expected to be made in its own right based on growth forecasts, it is envisaged that some of this capacity could be utilised by Resort visitors and staff, notably in the contra-peak direction. LRCH is working together with HS1 and Southeastern to calculate this capacity in order to take this in consideration when determining the capacity required above and beyond this to meet Resort demand.

1.3 STAKEHOLDER ENGAGEMENT AND JOINT WORKING PLAN

1.3.1. As mentioned above, we have identified **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, these are Southeastern, HS1 and Network Rail. The Department for Transport has also been engaged as part of this process as they will ultimately be responsible for

the service specification which will be beyond the operational contract of the current franchisee, Southeastern. The three stakeholders have all responded to our 2020 round of consultation.

1.3.2. WSP, LRCH and the three key rail stakeholders Southeastern, HS1 and Network Rail 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.

1.3.3. An independent capacity study by an HS1-approved third-party supplier (on an existing framework) is being commissioned as part of this process. This capacity study will look to assess the following five items:

1. Validate LRCH demand assumptions and identify where there are likely to be capacity issues;
2. Identify additional HS1 route capacity needed (paths) to meet the demand created by the Resort;
3. Identify additional rolling stock capacity needed, including staffing and berthing requirements;
4. Identify HS1 station capacity constraints (across all HS1 stations) including high level enhancements; and
5. Identify the cost arising from additional capacity requirements identified in 2, 3 and 4 above.

1.3.4. Table 1 lists the meetings to date held with the respective rail stakeholders

Table 1: Rail stakeholder meetings

Date	Meeting Attendees	Description
30 Mar 2020	WSP, LRCH, HS1 and wider stakeholder group	Transport Workshop 1
22 May 2020	WSP, LRCH, HS1	Discussion about capacity across Kent and impact on Southeastern franchise
03 Jul 2020	WSP, LRCH, HS1 and wider stakeholder group	Transport Workshop 2
19 Nov 2020	WSP, LRCH, HS1, Network Rail, Southeastern	Joint working approach including initial findings of Southeastern analysis based on forecast visitor demand, discussion about need for independent study for capacity analysis and funding options
26 Nov 2020	WSP, LRCH, HS1, Network Rail	Discussion about scope specification for capacity study and requirement for independent nature to validate assumptions
04 Dec 2020	WSP, LRCH, HS1, Network Rail	Agreement of scope specification for independent study

1.3.5. At the time of writing, the timeline for the delivery for the independent capacity study has been agreed as per the line items in Table 2.

Table 2: Independent capacity study timeline

Programme Item	Date (Week from commencement)
Tender issued to suppliers	19 Dec 2020
Response proposal deadline	04 Jan 2021
Estimated Contract Award Date	11 Jan 2021
Inception meeting	w/c 11 Jan 2021 (Week 1)
Transfer of inputs and models	by 15 Jan 2021 (end of Week 1)
Progress meeting, clarification of assumptions	22 Jan 2020 (end of Week 2)
Progress meeting, demand forecast / impact	29 Jan 2020 (end of Week 3)
Progress meeting, first pass interventions	05 Feb 2020 (end of Week 4)
Draft report submission	12 Feb 2020 (end of Week 5)
Draft report review discussion:	19 Feb 2020 (end of Week 6)
Final report submission	26 Feb 2020 (end of Week 7)

1.4 CORE AND PHASED STRATEGY

1.4.1. The **core strategy** is centred around the **HS1 route** with **Ebbsfleet International** being the primary rail access point to the Resort, ensuring there is sufficient capacity from an on-train and station concourse perspective and using demand management interventions to push/incentivise/manage demand to this access point. This core strategy includes limited access to and from the NKL stations at Greenhithe, with an onward transfer by bus, and to Northfleet, with onward transfer to Ebbsfleet International. 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 problem and the necessary interventions. The core strategy includes a rail access point at Tilbury Town on the north side of the River Thames with an onward transfer by bus and ferry, however our forecast visitor demand here is low and would not necessitate any major infrastructure interventions.

1.4.2. Through ongoing consultation with the stakeholders and responses to our consultation, a potential upgrade to Swanscombe has now been identified as a potential rail access solution on the North Kent Line. This forms part of our **phased strategy** which will provide added resilience and capacity for growth in advance of the opening of the Second Gate. While our DCO submission includes information about the core strategy only, the phased strategy will be investigated in more detail through ongoing engagement with Network Rail.

Route Capacity

1.4.3. The core strategy assumes that no additional services can be accommodated on the NKL metro services and that forecast demand in excess of NKL capacity is to be demand-managed to the HS1 access point. The strategy therefore anticipates that additional train services will be required along HS1 to meet Resort demand.

1.4.4. HS1 has confirmed that there is little concern regarding the availability of paths, however the operational viability (timetable) and funding (access charges) needs to be taken into consideration and this has been included as a component for the independent capacity study. This includes the lengthening of existing services (doubling where not already) to increase capacity.

1.4.5. The additional services will likely be shuttles between St Pancras International and Ebbsfleet International via Stratford International. The independent capacity study will investigate the operational constraints associated with turnbacks and the potential requirement to extend shuttles to Ashford International and/or Gravesend.

1.4.6. It is expected that any additional rolling stock procurement will align with the ongoing investigation into rolling stock requirements to meet background demand for the network in and around Kent, and that efficiencies will be achieved by delivering this capacity in an integrated manner.

1.4.7. The independent capacity study will also investigate additional stabling or depot requirements, along with the recruitment and training of additional traincrew (drivers and guards) necessary to operate the services.

1.4.8. The core strategy assumes no change is required to LTSR services due to the low peak demand on this route.

Station Capacity

1.4.9. The core strategy assumes that no additional station capacity will be provided on the NKL stations and that forecast demand in excess of NKL station capacity is to be demand-managed to the HS1 access point. The strategy therefore anticipates that a platform and concourse upgrade will be required at Ebbsfleet International to meet Resort demand.

1.4.10. The operational requirements (platform and concourse capacity, platform clearance time, increased gateline throughput, horizontal and vertical circulation) and funding (possession and construction costs) need to be taken into consideration and this has been included as a component for the independent capacity study.

1.4.11. Interventions at Ebbsfleet Low Level (Platforms 2&3) and High Level (Platforms 5&6) are anticipated, along with the interface between the two. The study will also investigate St. Pancras International and Stratford International as access points. HS1 has made it clear that there is an appreciation that St. Pancras or Stratford could be the first Resort touchpoint from a customer experience perspective and are keen to maximise the benefit and value of this.

1.4.12. The core strategy assumes no change is required to Tilbury Town due to the low peak demand on this route.

1.5 FORECAST DEMAND AND ASSESSMENT METHODOLOGY

1.5.1. This section summarises the rail demand forecast for 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 works undertaken to identify the need for capital investment on the High Speed 1 (HS1) network to accommodate increased demand generated by the Resort.

1.5.2. The analysis methodology builds on a set of bespoke and standard analysis inputs from WSP's transport planning team, standard modelling inputs from the Department for Transport's TAG (Transport Appraisal Guidance) Databook, and other assumptions from WSP's rail planning team.

1.5.3. The base assumption for rail demand modelling is that on any operational day 30 percent of all visitors and staff will access the Resort via rail, either through Ebbsfleet International, Greenhithe and Northfleet to the south of the Resort, and through Tilbury to the north of the Resort. This mode share is in line with available evidence on comparable theme parks and entertainment complexes and reflects London Resort Company Holding's (LRCH) aspirations in making rail an important access mode in order to:

- Reduce the environmental footprint of the Resort and improve sustainability of operations; and
- Limit the impact of additional demand on the highway network, as well as associated negative externalities.

1.5.4. The rail mode share figure of 30 percent is a **higher** figure than the baseline mode share calculated in the Mode Share Model (ie. 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.

1.5.5. Rail demand generated by the Resort (comprising of visitors and staff) is derived through the following stages, with each described in detail in the following sub-sections:

1. **Journey Time**: In order to determine which rail access point a rail user will choose, the journey time is calculated for trips between all UK mainline rail stations and Ebbsfleet International (for HS1 services), a grouping of Greenhithe and Northfleet (for NKL services) and Tilbury Town (for LTSR services).
2. **Value of Time:** The attractiveness of choosing Metro services on the NKL or LTSR over HS1 services is determined by incorporating a value of time assumption and a time penalty to reflect the equivalent fare difference associated with the choice of slower Metro services over the faster but HS1 services. Each mainline station in the UK therefore has propensity of access point choice.
3. **Demand Allocation:** Visitor and staff demand by local authority as forecast by the Trip Generation model is allocated to each UK mainline station. Using the propensity of access point choice figures, rail demand is allocated to HS1, NKL or LTSR services.
4. **Demand Profiles:** Total daily demand is disaggregated based on service type, time of day, arrivals/departures, and destination.

STAGE 1: Journey Time

1.5.6. Journey time is one of the key characteristics that is likely to influence demand. GIS analysis was used to calculate the journey times between all UK mainline rail stations and Ebbsfleet International (for HS1 services), a grouping of Greenhithe and Northfleet (for NKL services) and Tilbury Town (for LTSR services), assuming an arrival time at the Resort between 7am and 10am. If a trip could not be made assuming an arrival in this three-hour window from a station it was excluded from the analysis. This journey time includes both the in-vehicle time and an interchange penalty and was calculated using the May 2020 rail timetable[1].

STAGE 2: Value of Time

1.5.7. It is assumed that the propensity to choose Metro services over HS1 services will be influenced by a combination of journey time differences, fare differences, and the assumed Value of Time (VoT) of the visitors and staff. The propensity to choose faster services is influenced by the time and cost saving associated with a trip and a passenger's perceived VoT: the higher a passenger's VoT, the greater the propensity to choose faster services.

1.5.8. In order to increase the granularity and accuracy of propensity modelling, a range of inputs were defined with regards to these key factors. To accurately map the impact of cost savings on travel decisions, an HS1 surcharge factor was defined based on fare differences between Metro and HS1 services, as follows:

- Fare difference between HS1 and Metro services to the Resort from London: £4.00
- Fare difference between HS1 and Metro services to the Resort from Kent: £0.002

1.5.9. These fare differences were calculated using the National Rail Enquiries rail journey planner and are representative of the fare difference on an average weekday in the morning peak period in 2020.

1.5.10. With regards to Value of Time, the analysis defines a lower and a higher bound VoT for visitors and staff separately, representing the following scenarios:

- Lower bound Value of Time: visitors and staff perceive their value of time in line with **standard** TAG Databook assumptions for leisure and commuting respectively (July 2020 Databook).
- Upper bound Value of Time: visitors and staff perceive their value of time in line with a **target** VoT that comprises the impact of LRCH's proposed interventions to increase the attractiveness of HS1 as a rail access point and direct demand to high speed services.

1.5.11. Value of Time assumptions used in the analysis are shown in the Table 3 below.

Table 3: Value of Time assumptions used in the analysis

	Organic	Target
Visitors (Leisure VoT)	0.36 £/min	2.17 £/min
Staff (Commuting VoT)	0.79 £/min	0.79 £/min

[1] While it is to note that the May 2020 timetable was never actually implemented in the UK, it provides the most accurate reflection of the anticipated service provision that a post-pandemic timetable will contain.
[2] In the morning peak particularly, metro services and high speed services are subject to the same fare regulation and therefore the fare difference is £0.00, however the modelling has included this input to provide the ability for ticket fare sensitivities to be tested.

1.5.12. The target VoT for visitors is set at 6 times the DfT TAG value to reflect the nature of the leisure journey at hand, being a high-value, low frequency (one-a-year, special occasion-style) trip. It is also understood that rail VoT is typically the higher of all public transport VoT figures. The target VoT for staff has been set the same as the organic VoT

STAGE 3: Demand Allocation

1.5.13. Total daily visitor and staff demand is forecast by the Trip Generation model and is disaggregated by local authority. The demand thereof to the rail network is derived using the target rail mode share of 30 percent.

1.5.14. Demand by local authority is distributed uniformly to each UK mainline station within each local authority.

1.5.15. Using the propensity of access point choice by UK mainline station figures calculated as part of Step 2, rail demand is allocated to HS1, NKL or LTSR access points.

1.5.16. It is to note that the daily demand figures use exclude trips to the Resort from on-site hotels but include trips to on-site hotels the evening before a Resort visit.

1.5.17. The demand data is extracted and processed for three analysis years, 2025 (opening of Gate One), 2029 (opening of Gate Two) and 2038 (Resort maturity). This is extracted for the analysis days, the Peak day (maximum in a given year) and Design day (85% of max demand in a given year). For the central case forecast of 2029, two attendance forecasts were evaluated in this instance as follows:

- Design day: currently assumed to Mondays in July, eg. 09 July 2029
- Peak day: currently assumed to be Saturdays in July, eg. 07 July 2029

1.5.18. Table 4 and Table 5 display total daily visitor forecast and rail demand for design and peak days in 2019 respectively, using the 30 percent mode share assumption.

Table 4: Visitor forecast and associated rail demand forecasts for Design day in 2029

	Visitor Arrivals	Visitor Departures	Staff Arrivals	Staff Departures
Design day attendance	35,700	35,901	9,743	9,743
Design day rail demand (total trips)	10,710	10,770	2,923	2,923
	21,480		5,846	
	27,326			

Table 5: Visitor forecast and associated rail demand forecasts for Peak day in 2029

	Visitor Arrivals	Visitor Departures	Staff Arrivals	Staff Departures
Peak day attendance	49,197	49,190	12,101	12,101
Peak day rail demand (total trips)	14,759	14,757	3,630	3,630
	29,516		7,260	
	36,777			

STAGE 4: Demand Profiles

1.5.19. Demand for rail across is calculated and output in 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 (85%) Day
- Years 2025 (opening), 2029 (design) and 2038 (maturity)
- Minimum and maximum mode shares

1.5.20. Table 6 indicates the total Design Day demand for each rail line access route: HS1 (Ebbsfleet International), NKL (Greenhithe, Swanscombe and Northfleet) and LTSR (Tilbury). This is the 85% day in 2029 and includes visitor and staff demand combined. This includes arrivals and departures (two-way demand) and therefore the total number of rail users are half these figures. Table 7 indicates the same for Peak day 2029 demand.

Table 6: 2029 Design Day Total Demand (arrivals and departures) by Rail Line Access Route

	From London	Towards London	Total
HS1	15,306	1,428	16,734
NKL	9,245	224	9,469
LTSR	1,079	44	1,123
Total	25,630	1,696	27,326

Table 7: 2029 Peak Day Total Demand (arrivals and departures) by Rail Line Access Route

	From London	Towards London	Total
HS1	20,651	1,877	22,528
NKL	12,445	302	12,747
LTSR	1,442	60	1,502
Total	34,538	2,239	36,777

Figure 2 and

1.5.21. Table 8 indicate 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 shape of the profiles for the Peak day are assumed the same with a higher absolute level of demand.

Figure 2: Design Day Arrival and Departure Profiles by Rail Line Access Route

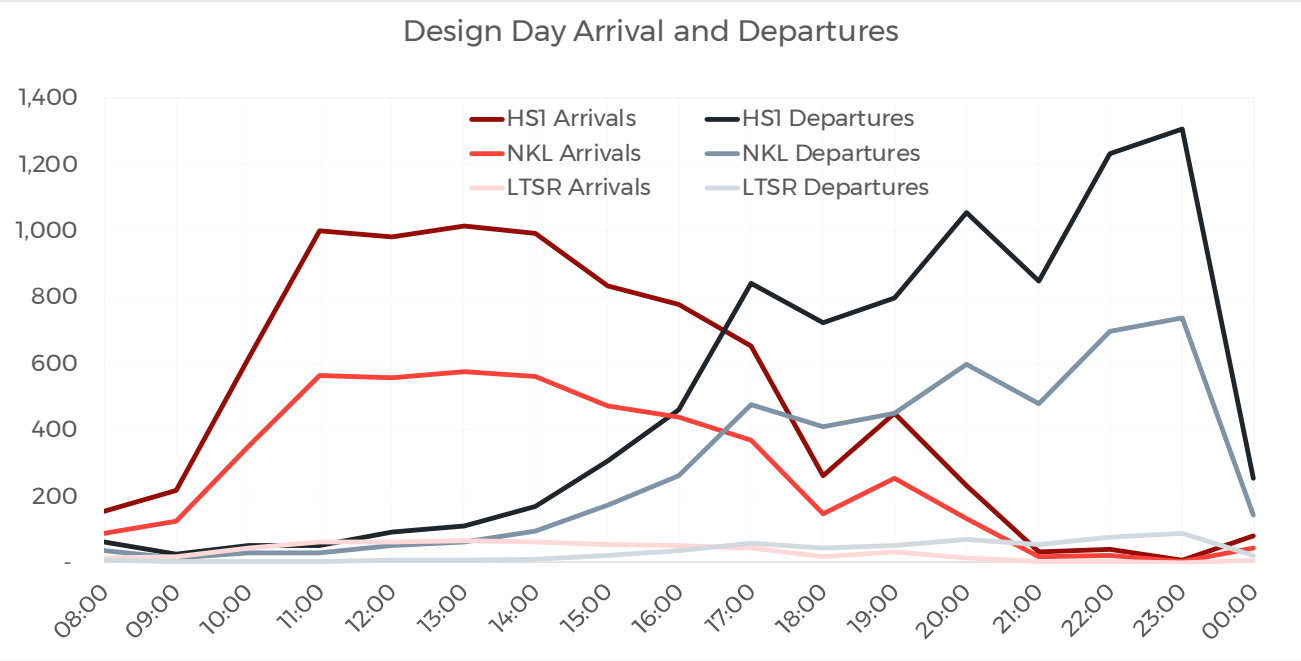


Table 8: Design Arrival and Departure Demand by Rail Line Access Route

		HS1 Arrivals	HS1 Departures	LTSR Arrivals	LTSR Departures	NKL Arrivals	NKL Departures
00:00	08:00	155	64	14	5	88	36
08:00	09:00	218	25	20	2	124	14
09:00	10:00	617	51	44	3	349	29
10:00	11:00	998	51	64	3	565	29
11:00	12:00	982	93	63	6	555	53
12:00	13:00	1,015	110	67	7	575	62
13:00	14:00	992	171	62	11	561	97
14:00	15:00	833	305	54	22	472	172
15:00	16:00	778	461	50	37	440	261
16:00	17:00	653	842	43	58	369	477
17:00	18:00	262	722	18	46	148	409
18:00	19:00	451	797	32	52	255	451
19:00	20:00	232	1,054	16	70	131	596
20:00	21:00	32	850	2	54	18	481
21:00	22:00	41	1,233	4	78	23	697
22:00	23:00	8	1,305	1	88	5	738
23:00	00:00	79	253	7	22	45	143
TOTAL		**8,349**	**8,386**	**561**	**563**	**4,724**	**4,745**

1.5.22. Figure 3 and Table 9 indicate the forecast Design Day arrival and departure numbers by year for each rail line access route. Again here, this is the 85% day and includes visitor and staff demand combined. The shape of the profiles for the Peak day are assumed the same with a higher absolute level of demand. Table 9 highlights 2025 for opening day demand, 2029 for design year demand and 2038 for Resort maturity demand.

Figure 3: Forecast Design Day Arrivals Year and by Rail Line Access Route

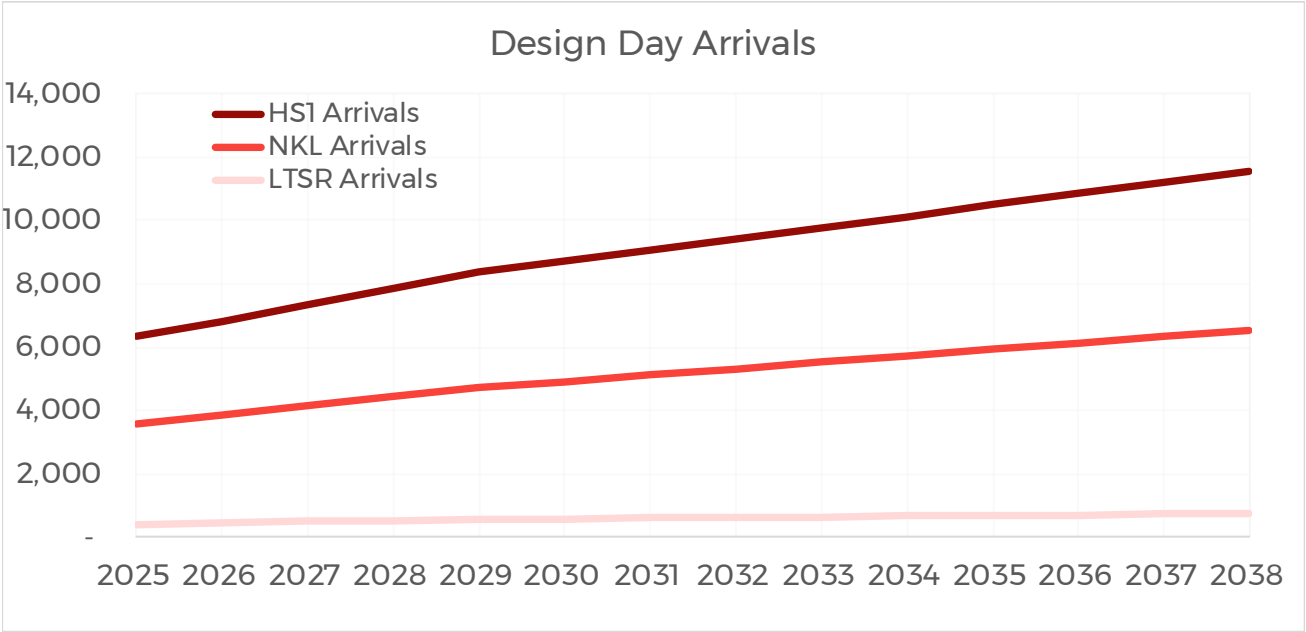


Table 9: Forecast Design Day Total Demand by Year and by Rail Line Access Route

	HS1 Arrivals	HS1 Departures	LTSR Arrivals	LTSR Departures	NKL Arrivals	NKL Departures
2025	6,334	6,353	422	423	3,584	3,594
2026	6,838	6,861	457	458	3,869	3,882
2027	7,341	7,369	491	493	4,154	4,170
2028	7,845	7,877	526	528	4,439	4,457
2029	8,349	8,386	561	563	4,724	4,745
2030	8,705	8,742	583	585	4,926	4,947
2031	9,062	9,099	605	607	5,128	5,148
2032	9,419	9,456	627	629	5,329	5,350
2033	9,776	9,813	649	651	5,531	5,552
2034	10,132	10,169	671	673	5,733	5,754
2035	10,489	10,526	693	695	5,935	5,956
2036	10,846	10,883	715	717	6,137	6,158
2037	11,203	11,240	737	739	6,339	6,360
2038	11,560	11,596	759	762	6,541	6,561

WSP House
70 Chancery Lane
London
WC2A 1AF

wsp.com